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Murat Yülek *Editor*

Economic Planning and Industrial Policy in the Globalizing Economy

Concepts, Experience and Prospects

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To the hardworking people
of the developing World ...

Preface

National economic planning aims at defining strategic economic objectives and priorities for a country and designing longer term policies and institutional frameworks to achieve them. Complemented in some cases by industrial policies, economic planning is a dynamic attempt to change the structure defining parameters and policy mix of an economy.

In market based economies ranging from Western Europe to Asia, planning has been practiced since the end of the Second World War as a key developmental tool. Industrial policies have a longer history that could be traced back to at least Alexander Hamilton. Again, they have been employed in different countries under different forms.

Economic development has still been an ongoing quest and successful economic development is probably needed more than before by many nations. Since 1980s, however, with significant changes in the dynamics of the world economy, economic planning and industrial policy have been less discussed in academic and policy circles.

As external and domestic conditions have changed, so should planning. However, although it continued to be practiced one way or another in many countries, lack of discussion leads to either "planning as before" (being called economic planning or under the disguise of various other tools) or no formal planning. The former is likely to be inadequate or even inappropriate under new surrounding conditions. On the other hand, economic planning under different forms consists of related but generally uncoordinated developmental tools such as public sector strategic plans, revived forms of physical infrastructure planning, new versions of industrial, technology, innovation, cluster, and/or R&D policies. They are also likely to suffer from ineffective and/or cost-inefficient outcomes as they are generally ad hoc policy responses. On the other hand, it could also be argued that countries which opted or opt for no formal economic planning in fact practice certain aspects of planning this way or that way.

Owing to waning interest in economic planning and industrial policy, important questions such as the following are not receiving the proper attention: In what ways and areas, are economic planning and industrial policy being conceptualized and implemented in today's world? Are there still reasonable roles for economic plan-

ning in today's world in assisting nations' quest toward economic development? What are the other tools forming an ecosystem of planning and industrial policy that can help accelerate economic development?

This book examines such questions and considers new roles for economic planning, industrial policy, and related contemporary tools to support economic development and national competitiveness. Firstly, it broadly discusses national economic planning in terms of the earlier theoretical and practical motivations. Secondly, it looks at selected country experiences with economic planning in retrospect and prospect. Thirdly, similarly, it looks at industrial policy in selected countries/regions. Finally, it discusses new economic planning approaches and complementing developmental tools such as learning systems, technology policy, cluster policy, and links to regional development.

The Chapters

The book is organized under four parts. The first part provides a background to economic planning and industrial policy. In the first chapter, I introduce the book and present a general background for economic planning, industrial policy, and related developmental tools. In Chap. 2, Mun HengToh provides a concise review of the major theoretical contributions to economic development since the Second World War. Backed by the Harrod–Domar growth model, economic development strategies in the 1940s till 1960s were much dominated by the debate between balanced growth championed by Ragnar Nurse and Rodenstein-Rodan and unbalanced growth led by Albert Hirschman. Unbalanced growth doctrine favors using the limited resources to develop the identified strategic sector which will then pull and push other sectors to support and achieve overall growth. The unbalanced growth approach somewhat jived with theories based on economic dualism associated with researchers like Arthur Lewis, John Fei, and Gustav Ranis. The basic dual economy theory explains how an agrarian economy with no modern industrial sector is transformed into a mature industrial economy. The idea of development as transformation from primitive traditional society to one characterized by high mass consumption was skillfully described by Rostow's book in 1961. By the end of the 1980s, new theories that have substantive impact on economic development were propounded by academics and researchers in field of business strategies, urban planning, and spatial economics. Many of these have neoclassical economics foundation and also have derived insights from increased spatial interdependence and competition attributed to globalization and availability of new communication technologies. New concepts like competitive advantage, agglomeration economies, and global value chain become increasingly familiar in development economics.

In the third chapter, Mehmet Babacan further discusses the theoretical underpinnings of national planning with reference to neoclassical and structuralist views. In selectively explaining the evolution of economic planning debate, he touches upon

the relationship between national economic planning, industrial policy, and regional economic planing.

Part II covers experience of selected nations with economic planning. In Chap. 4, Takeshi Niizeki discusses the role of Japanese government to enhance the total factor productivity (TFP) growth rate during the "growth miracle period" (1955–1973) as well as the "two lost decades" (1990–2009). He argues that the TFP was the driving force for the rapid economic growth (1955–1973) and a decline in the TFP growth rate was responsible for the sluggish economies, particularly in the 1990s. Further, he suggests that if continued bank lending to unproductive sectors is a major cause of slower TFP growth rate, opening the markets and letting firms compete through deregulation would be one promising policy the Japanese government could enact in order to boost the TFP growth rate.

In Chap. 5, Ahmet Kesik assesses economic planning in Turkey. Turkey has experimented with a relatively wide range of planning approaches; industrial plans in 1930s, development plans from 1960s to 1980s, national development plans starting from 1980s, and a transition period to strategic plans more recently. Kesik looks at the evolution of the concepts and the implementation of planning in Turkey through a historical perspective.

In Chap. 6, Yoshihisa Godo argues that land use planning and implementation in Japan were not successful, implying costs for future generations. He suggests that learning from Japan's failure of land use planning, today's developing countries should make efforts to introduce citizens' participation into local administration.

In Chap. 7, Toh Mun Heng argues that the Singapore economy has shown remarkable adaptability and nimbleness to restructure and restrategize to ensure economic viability and sustainability. He underlines that modern concepts of development such as competitive advantage, value chain, cluster analysis, and agglomeration economies have been utilized by Singapore decision makers to foster growth.

In Chap. 8, Richard Haines discusses economic planning and industrial policy in South Africa. South Africa's experience provides interesting insights enriched by constraints posed by the apartheid regime as well as the pressure of globalization accompanying the period following the abolishment of the apartheid regime. Moreover, he analyses state–private sector relations in a country which experimented with a range of industrial policy frameworks along with economic planning.

Part III covers industrial and innovation policy experience in selected countries. In Chap. 9, Ali Akkemik discusses the evolution of traditional Japanese industrial policies toward knowledge-based industrial policies since the 1990s. He explains the salient features of both the traditional and knowledge-based industrial policies and compares them from the perspective of the role of the government. He argues that there is still an influence of the developmental state practices in policy-making in Japan, presenting recent changes in the policy making process as well as the economic mindset with reference to the official documents on industrial policies.

In Chap. 10, Franco Mosconi underlines the recent prominence regained by industrial policy on the European scene. He sheds light on the substance of the new industrial policies by looking at the approach that the European Union—in particular, the European Commission—developed between 2002 and 2012. In this context,

in the center of the "new" industrial policy lies "knowledge-based investments, which have become all the more critical now that manufacturing is reclaiming its vital role in advancing vibrant economic growth." He further argues that "what comes to the surface is a picture in which the rhetorical recourse to market failure is nothing more than the simplest, and least controversial, method for justifying industrial policy." He suggests that industrial policies can assist European manufacturing regain a strong position within the "new international division of labour."

In Chap. 11, Alan Gray examines the origins of Ireland's export-oriented industrial policy and reviews the success of this policy over the past 50 years. He places this within the context of a remarkable history of both overall economic successes and failures of a small open economy. He argues that the experience of Ireland shows that industrial policy does not operate in a vacuum and failures in macroeconomic, fiscal, and banking policies can undermine the success of even the best designed industrial policies.

In Chap. 12, Paul Rivlin discusses government's role in Israel in supporting high technology and innovation sectors. Over decades, Israel has moved, from a highly controlled economy with dominant state sector to a market orientated one. Government has provided both direct and indirect support to achieve the development of high technology sectors including supporting private R&D. The Israeli military also played a role in the development of high technology in the country.

In Chap. 13, Hans Wissema and Julia Djarova explore the coming issues of innovation policy. They review three stages in the development of industrial and innovation policy, drawing "lessons" from each stage. An analysis of the current driving forces and newly emerging insight results in key suggestions for future innovation policy.

Part IV covers the ecosystem of economic planning in today's world include strategic planning, learning systems, regional development, and clusters. In Chap. 14, Erinc Yeldan, Ebru Voyvoda, Kamil Taşçı, and Emin Özsan examine the macroeconomic effects of two complementary policy environments to invigorate growth, employment, and income equality across two broadly differentiated regions in Turkey: Poor and High/Mid-Income. With the aid of a regional computable general equilibrium model that disaggregates the production structure into 13 sectoral activities and two geographical regions, they first study the long run dynamic effects of a regional production and investment subsidization programme. Second, they supplement this environment by a productivity enhancement programme in the poor region. Their results reveal that regionally differentiated productivity enhancing measures coupled with a subsidized investment programme to facilitate capital accumulation and reduce the outflow of factors out of the poor region are of utmost importance in designing a sustained growth path to pull the aggregate economy from the dual traps of middle income and of poverty.

In Chap. 15, Melih Bulu and Murat Yalçıntaş discuss the role of government and private sector in cluster development. In analyzing the Turkish experience with cluster-based development policies, their findings show that even if a vast amount of resources were spent by the state organizations for the cluster development projects, the outcome is not as successful as the cluster development projects led by the

private sector. Their findings may assist fine-tune government's role in developing successful clusters.

In Chap. 16, Seyithan Ateş, examines the green development strategy of South Korea. He argues that the "Green Growth Strategy" (GGS) proposes a new paradigm for the countries aiming a successful transition to a sustainable economy. South Korea aims to embed different aspects of GGS into a single, coherent policy framework. The government has actively participated in the process by enacting necessary laws and establishment of the presidential committee. Other nations may draw lessons from South Korea's initiatives.

In Chap. 17, Ahmet Faruk Aysan, Mehmet Fatih Ulu, and Sadık Ünay discuss central bank related aspects of economic planning. In particular, they first examine historical development of central banking and underline that the central banks were first established to ensure financial stability. They then suggest the utilization of "consumption planning" as a form of strategic planning by central banks with a view to ensure financial stability. In their view, consumption planning was a key ingredient of the macroprudential measures—including some of the recently introduced unorthodox central bank policies—introduced following the global financial crisis products of strategic thinking.

In Chap. 18, Murad Tiryakioğlu suggests introducing national learning systems into the economic planning effort. He argues that the need for rapid development requires developing nations to close the technological gap with the developed ones. That in turn requires policies to increase national technological and learning capabilities of both private and public sectors. He underlines that in developed countries the driver of the technological capability is "learning by research" whereas in developing countries it is rather "learning by doing". Moreover, developing countries lack both sufficient absorptive capacity and sufficient funds to support private and public R&D. Therefore, economic planning as a way to determine developmental priorities as well as allocating resources should be redesigned incorporating effective national learning systems.

Ankara Murat Yülek
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Part I
Revisiting Concepts

Revisiting National Economic Planning and Industrial Policy: Concepts, Experiences and the Ecosystem

Murat Yülek

1 Introduction

Public decision makers have implemented some form of an economic strategy for their nations for centuries. Notwithstanding the success or failure of such strategic planning, even wars have been caused by conflicting economic strategies, ranging from those that caused the Kadesh battle[1] in the thirteenth century BC to those ultimately leading to the First World War.

Formal economic planning is, however, a relatively new phenomenon, having evolved primarily after the Second World War. During the 1950s and 1960s, experience with economic planning spread to many countries of the world, including socialist and non-socialist, developed and developing countries. The primary objective of economic planning has been influencing the resource allocation in such a way to accelerate the attainment of developmental objectives.

Since then, times have changed. By the late 1980s and early 1990s, economic planning had mostly fallen off the academic and policy agenda[2] and is less in vogue today. The increasing influence of neo-liberal economic thought that some labeled as the "Washington Consensus" has contributed to that fall.

Meanwhile, changes in global circumstances, in just the three decades since the 1980s, have generated a significantly different economic environment: demographics and consumption habits, currency arrangements, capital flows, products and production technologies, balance of economic power between East and West, if not

[1] The Battle of Kadesh led to the first known recorded international treaty in history between the Hittites and Egypt. The reason for the battle was that both sides wanted to gain control of the Mesopotamian trade routes.

[2] Estrin and Holmes (1990) stress that some of the successful developed economies, including Japan and Sweden, continued to utilize economic plans during the 1980s.

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North and South, immigration and the like. More importantly, economic debate has continued to change.

This introductory chapter provides an overview of economic planning and industrial policy, discussing their origins, taxonomies and the motivations behind them with a view to explaining the basis for their role in the current world economy.

2 Economic Planning: A Brief Background and Early Context

Though the first Soviet economic plan was launched in 1928, it would be right to say that formal planning is mostly a post-World War II phenomenon. *Dirigiste* France's[3] first economic plan was drawn by the *Commissariat général du plan*, in 1947.[4] That plan can also be considered the first known formal economic plan in a non-socialist economy. Starting around the same years as the French in the late forties and subsequently in the fifties, other countries in Western Europe, such as the Netherlands, Norway, Sweden and Italy, launched economic planning, as did one Asian country: Japan.

2.1 1950s, 1960s and 1970s

In the 1950s and 1960s, there was an increasing interest in planning in developed as well as in developing economies.[5] Wellisz (1960)[6] argues that following the Second World War, "several western European countries … experimented with economic planning within mixed systems in which private enterprises continued to play an important part. Economic planning in those countries consisted of two processes: forecasting the activities of the private sector and translating national policy goals into concrete government actions." Early Western European planning inspired other European economies; Belgium, Germany, and even the UK made some efforts to adopt some kind of planning into their economies.[7]

While war-torn (but nevertheless relatively developed) Western Europe[8] hosted some of the first non-socialist economies to launch formal economic planning, most

[3] Some economists are careful to distinguish planning and *dirigisme*, the latter considered to refer to heavy government intervention in the economy without a formal strategy or plan. See Kindleberger (1967, p. 287).

[4] Kindleberger (1967), Wellisz (1960).

[5] Estrin and Holmes (1990), Millikan (1967, pp. 3–4).

[6] Wellizs (1960, p. 252).

[7] Kindleberger (1967).

[8] Wickham (1963).

of the subsequent economic plans were drawn by socialist or developing[9] countries in 1960s and 1970s, with varying patterns of success or failure. Moreover, in addition to its use in many non-socialist developing countries, planning accompanied the successful and rapid development experience of a number of East Asian countries following World War II. Baum and Tolbert (1985) report that in the three decades prior to 1985, some 300 national economic plans were drawn up. The World Bank and foreign aid agencies also played an important role in encouraging economic planning.[10]

2.2 Who Planned?

Smaller and larger states differed in their early planning models, in that a primary objective of planning in smaller economies was an adaptation to external market forces.[11] Smaller European economies in the post-war era stayed between liberalism and statism.[12] Arrow (1958, p. 89) pointed out that for Tinbergen (1956), the pioneer of Dutch planning, economic policy was there to maximize the nation's "social welfare function subject to constraints imposed by technology, resources and to some extent political feasibility." Swedish planning was "a type of indicative planning midway between the French system of highly centralized, detailed planning and the 'mild' form of coordination used in the US."[13] In Norway, the planning agency was part of the government, unlike Holland, where it was organized rather as an independent think tank. While planning in Holland used more sophisticated econometric and economic tools than in Norway, state power over the economy was higher in Norway than in Holland. Over time, by the 1970s, the political importance of the public sector in Norway increased further. The programmatic nature of Norwegian plans and their focus on sectors intensified.[14]

Have all countries, in particular the leading and large economies, practiced economic planning? Except for a few, many economies have planned one way or another, including large economies such as the USA. As the largest economy in the world, the USA may warrant some attention with regard to economic planning.

It is worthwhile to first note that the USA, which is generally considered a non-planning economy, practiced planning and industrial policy under various forms, if not at the national level by a central planning agency. The USA required 4-year recovery programs from European countries (and their overseas territories) participating

[9] Balassa (1990), Lopes (2013).

[10] Balassa (1990) remarks that the World Bank's 1949−1950 *Annual Report* (p. 18) stated that member countries "know, too, that if they formulate a well-balanced development program based on the [Bank] Mission's recommendations, the Bank will stand ready to help them carry out the program by financing appropriate projects."

[11] Katzenstein (1985, p. 61).

[12] Katzenstein (1985 p. 61).

[13] Katzenstein (1985, p. 61), Barbash (1972, p. 7), Lindbeck (1973, pp. 168−169).

[14] Katzenstein (1985, pp. 116–118), Erichsen E (1978).

in the Marshall Plan.[15] Moreover, the "Reconstruction Finance Corporation (RFC)" (established in 1932 and quite active during the New Deal) acted more or less as a development banking institution and can be considered as an industrial policy tool, rather than a tool strictly to combat a depressed economy. The RFC was modeled after the War Finance Corporation (WFC), the precursor of industrial policy in the defense sector, which in turn, was established as an independent agency in 1918 and "provided support to war industries and banks that aided them, and assisted in the transition to peace; financed government-controlled railroads and made loans to US exporters; made agricultural loans to financial institutions and cooperative marketing associations; established agricultural loan agencies and cooperated with livestock loan companies" until 1939 when it was abolished.[16]

As Colm (1964, pp. 40−41) stresses,[17] the federal, as well as state, administrations have actually employed planning tools. The Employment Act of 1946 established, "by statute, a procedure for guiding economic and fiscal policies creating a Council of Economic Advisers in the Executive Office of the President and a Joint Economic Committee in the Congress each with a professional staff. …This law, which require[d] the setting up of a goal and a statement of the steps which are needed to accomplish the goal, represents a mandate for planning. … The legislation did establish a planning mechanism for the guidance of economic, fiscal and monetary policies of the government. It must be admitted, however, that today, 17 years after the adoption of the Employment Act, planning has not yet developed into a routine mechanism."[18]

American states also planned. As Eisinger (1990, pp. 513−514) noted, "a number of American states in the 1980s began to develop economic plans with the following characteristics: they enunciate economic goals, they often specify a time line, they perform strategic audits, they target key industries or sectors and they are indicative or non-coercive. Many states have been less successful, however, in developing the bureaucratic structures present in other countries that prepare and monitor economic planning. By 1988, at least thirty-seven states had written formal strategic plans or were in the process of doing so."[19] Finally, it has to be noted that planning

[15] Balassa (1990, pp. 1–2).

[16] US Government Records of the War Finance Corporation (1918). In fact, it is well known that Hamilton (1791) was a pioneer in the discussion of industrial policy.

[17] See also Galbraith et al. (1976).

[18] As Colm summarized, under the legislation, the President would generate annually, an "Economic Report" including macroeconomic targets (such as employment and production) under the current economic environment, setting forth targets and developing policies (by suggested changes in the existing frame work required to influence economic development in the direction of the goals set forth). Those are indeed indicative planning functions.

[19] That trend has continued. *The Five-Year Economic Development Strategy for the District of Columbia*, adopted in November 2012, defines itself as "the first document from the District to lay out a clear roadmap for sustained, sector-driven economic development." The plan "contains the visions, strategies and initiatives that will transform the District by creating 100,000 new jobs and generating $1 billion in new tax revenue to support city services over the next five years." See Government of the District of Columbia (2013, p. 12).

at the local level is done and is supported by the US government through the US Economic Development Administration.

Planning has been actively debated in the USA; Leontief (1976) was an American economist when he argued that "The notion of national economic planning that I have in mind is meant to encompass the entire complex of political, legislative, and administrative measures aimed at an explicit formulation and practical realization of a comprehensive national economic plan. Without a comprehensive, internally consistent plan there can be, in this sense, no planning. But the preparation of a script is not enough; the play has to bè staged and acted out." By the time the liberal policies, often referred to as the "Washington Consensus," were gaining popularity in the 1980s, there were still important currents in the USA that proposed economic planning. Lavoie (1985, pp. 92–210) identifies at least two currents other than Leontief's, with one led by Reich (1983) and Felix Rohatyn that meshed economic policy with industrial policy.

Who planned on behalf of nations with market economies? In some cases there has been a strong central planning institution (South Korea's Economic Development Board in the 1960s, France's Commisseriat Generale du Plan), while in others there has been none (for example, in Scandinavian countries[20]). In Japan, the central planning organization that prepared plans was separated from the executing agency, which was the Ministry of International Trade and Industry. The powers of the planning body also varied as discussed earlier; in the Netherlands, the planning agency was basically a public think tank, whereas in France it had considerable powers, including influence over state enterprises and banks. Again, in Japan, the executing agency, not the planning agency, had executive and directive powers.

2.3 1980s Onwards

Since 1980s, economic planning has been less and less considered as a "savior," or at least it has become less popular as a key economic tool in the eyes of public decision makers and academics. Part of the reason of this "fall" is that even indicative economic planning is a form of public intervention into the economy. Moreover, as planning was generally accompanied by direct government intervention such as public investments in the manufacturing sector in many countries, when those economies started running into problems in the 1970s and neo-liberal policies started to gain weight with the Reagan administration in the USA, and Thatcher's government in the UK, the "trust" in economic planning weakened.[21] In turn, the structural adjustment programs of the World Bank and the IMF, under the influence of neo-liberal economics, emphasized a reduction of the state's role in the economy, recommendations that included abolishing the setting of prices, the privatization of state enterprises in business sectors, liberalization of trade and finance and the liberalization of

[20] Chang (1999).

[21] See, for example, Balassa (1990) for neo-liberal criticisms of planning.

capital movements. Importantly, while efforts have been made, it may be fair to say that adequate assessment of planning experiences has not been made. The debate has been, and still is, more on the normative dimension of "market versus plan."

Contrasting the lessening status of economic planning in the eyes of public decision makers, though some regions such as Africa witnessed "a wholesale abandonment of planning,"[22] economic planning did not disappear. Many countries still plan, although it would be fair to argue that some of the economic planning at the national level that exists today is a result of "historical inertia." However, even where there is no official central planning body or where planning functions are not distinguished as planning activities per se, planning or some of its main functions have often been undertaken by various actors, sometimes a few or sometimes many. As Malinvaud (1992, pp. 23–24) remarked in early 1990s, under a broad definition, planning exists even if there is no plan or planning functions are performed outside of any central planning body. Such functions "even are sometimes performed without being identified as an important role of those so acting. Prospective studies are made in universities, in private or public institutes and in many other organizations. The concerted definition of a strategy may occur under the leadership of a parliamentary committee, of a ministerial authority, of a group of banks or large industrial firms, of a trade association or trade union. Public projects often are evaluated and controlled by the competent ministries. One should not be surprised when noting the diversity of the institutional arrangements that are found in different countries, or even in the same country at different times. It is a consequence of a natural flexibility in the actual organization of complex structures for the processing of information and the decentralization of decisions."

One has to also underline that there are other developmental tools closely related with planning that have been or are being developed and utilized, such as industrial policy, cluster policy, regional and local economic planning initiatives, green growth strategies, expectation formation tools such as "forward guidance" becoming popular among central banks and public strategic management. Possible new incarnations of economic planning would have to make use of its growing ecosystem of tools.

3 Planning: Early Justifications

Early economic justifications for economic planning were quite straightforward; they included strategies to optimize the allocation of resources when markets were impeded by imperfections arising from factors such as externalities or public goods,[23] to accelerate growth[24] (which assumed importance especially in the post-war atmosphere), to achieve balanced growth when structural rigidities and

[22] Lopes (2013).

[23] Arrow (1958, p. 95), Lange (1949, p. 166, 170), Klosterman (1985, p. 6–9), Moore (1978).

[24] Lange (1949, p. 167), Black (1968, p. 305).

lack of perfect foresight prevented markets from allocating resources optimally,[25] as well as to improve distribution. Lange (1949) emphasized that economic planning in the context of socialist economies also aimed at changing the social, political and "cultural" aspects of the country, policies that he equates with industrialization, which requires transfer of labor from agriculture to industry.[26]

Further justifications for indicative national economic planning centered on market failures arising from informational asymmetries and lack of policy coordination. Following Estrin and Holmes (1990) we concentrate here on three possible welfare-enhancing roles suggested for economic planning: information pooling, expectation formation and policy coordination.

Indicative economic planning has been considered a way to generate information (projections) and a conduit that facilitates exchange of that information among economic agents (firms), which may have fewer means to generate and exchange such information.[27] The generation of such information may be considered a public good that risks being underprovided if the responsibility is not undertaken by an objective, central public institution.[28] Estrin and Holmes (1983a) argue that information sharing/exchange among private agents may be impeded by transaction costs and bounded rationality. That, in turn, could lead to inferior equilibriums or even systematic disequilibrium caused by unfulfilled expectations.[29]

As Massé (1962) suggests, agents may have projections of future demand and supply that could interplay through forward markets. If forward markets do not exist, however, "formulation of a common view of the future on which people acted could substitute for the missing markets."[30] Estrin (1990), with reference to Meade (1970), argued that, "in principle, exchange of information via indicative planning could exactly duplicate the Arrow-Debreu equilibrium obtainable if markets existed." By reducing uncertainty, information exchange driven by economic planning practices could have welfare-improving properties. On the other hand, as private generation and sharing of economic information have developed over time, it can be argued that the void and the constraints to be otherwise filled by planning would diminish.

Economic planning may shift the economy into a new "expectational equilibrium" that may have positive effects on welfare. Beckerman (1975) argued that such expectation forming effects of planning may enhance growth expectations as well as lower inflation expectations. The former was considered particularly relevant to situations where weak expectations by firms about future demand conditions lowered their physical investment plans.[31] Inflation expectations of private agents could

[25] Chenery (1975).

[26] Lange (1949, p. 167).

[27] Black (1968, p. 310).

[28] Malinvaud (1992, pp. 22–23).

[29] Estrin and Holmes (1990, pp. 532–533).

[30] Massè (1962).

[31] As Estrin and Holmes (1990, p. 535) argue, that was probably the case for post war Europe.

also be lowered by a credible economic plan. Estrin and Holmes (1990, p. 536) stress that some plans (such as the Dutch and Scandinavian plans) had inflation expectation formation as a key objective while others, such as the French, did not. It is interesting to note that by the 1990s expectation formation had become a key ingredient of monetary policy schemes based on targeting inflation.

A final justification for planning along these lines has been suggested based on its role as a policy coordination tool. A planning body may form solid projections and share that information with private agents, as well as government ministries. However, if this is not complemented by policy coordination, the benefits may be limited. Even in the context of no (or loose) economic planning, policy coordination among various public and private agents is necessary to reduce conflicting strategies, policies and actions, as well as to increase their synergies. Economic planning could bring about short- and long-term policy coordination.[32]

Another line of thought can be traced to Gerschenkron (1962) and Johnson (1982). Gerschenkron argued for concentrated government effort to accelerate economic development in developing countries. Although concentration of resources does not necessarily require planning, state-led development aims at transforming the economy over a longer term, which would call for some kind of planning. Johnson, among others, extended a similar concept under the term "developmental state," and argued for a state structure organized to implement a transformation of the economy towards developmental objectives. In a developmental state, the transformation process was to be managed[33] by the planning agency.

Chang (1999) usefully revisits the definition of the developmental state as ranging between narrower (a state that derives political legitimacy from its record in economic development, which it tries to achieve mainly by means of selective industrial policy) and broader (a state that intervenes to promote economic development) ends. He argues that other than in South Korea, Japan and other East Asian countries, the state in Scandinavian countries and France could then be defined as developmental, at least during certain periods. In all these countries, economic planning and the planning agency played a key role in the process. Chang (1999), disputes what Johnson (1982) argued, stating that the USA enjoyed a developmental state in the eighteenth century based on the pro-industrialization ideas promoted by Hamilton (1791).

A final justification for planning that has been discussed in the literature is based on sustainability concerns. Sternberg (1993, pp. 107−108) criticizes modern microeconomics as "commoditizing" human labor and human beings by modeling consumers "universally behaving according to an innate calculus of gain and loss" and that "unchecked" market forces would lead to a degradation of environment and social structure. He argues that planning can be simultaneously social and physical and can be both an activity and a place. He bases this argument on his interpreta-

[32] Leontief (1976, p. 10) also emphasizes the coordination role of planning. Colm's (1964, pp. 40–41) account of the USA also could be interpreted as a policy coordination role for the Council of Economic Advisors and the President's *Annual Economic Report*.

[33] Dent (2004, p. 81).

tion of Polanyi's views that "human habitation is composed of multiple domains, some with integral features warranting a planning response (such as natural environment, urban built form, and the security of family and community life), but others composed of discrete items meriting allocation by markets (the production of ordinary goods and services). Planners need to learn how to protect and rebuild the integral features of human habitation that unchecked markets would tear apart, but also to know how to recognize where markets have an appropriate role. … [W]e cannot properly found planning practice on principles of externalities and cost and benefit." This line of thought can thus be interpreted as calling for integrating environmental and social objectives into the practice of planning.

3.1 Performance of Economic Planning

How well has planning served nations? Economic planning outcomes have been debated since the 1940s.[34] However, while some studies have been undertaken, assessing the performance of planning is quite a difficult task for various reasons.

First of all, it is not easy to separate and measure the effects of planning from those of other domestic and international policies[35] on an economy. As Baum and Tolbert (1985) emphasize, it is easy to attribute high performance to an economic plan when things are going well for reasons other than the plan itself. Conversely, when things are going badly, the assessment of an otherwise "good" plan may go sour. Moreover, some of the poor performance of planning may have resulted from a poor selection of accompanying policies.

Second, separating the effects of the design of a plan from its implementation is also difficult. There have been different means and organizational structures to implement and monitor plans. Some must certainly be better than others. But identifying the implementational issues and measuring their effects on the success or failure of plans is not an easy task. In various cases, implementational failures have led to unsuccessful plans (though the plans themselves were sound).[36]

Third, a major form that assessments have taken has been to check the accuracy of forecasts and/or targets,[37] but a major reason for the emergence of plans was the overwhelming economic uncertainties surrounding nations; significant inaccuracies in forecasts would not be too unexpected under those conditions. An economic plan, after all, is a game plan based on forecasts of selected exogenous and endogenous variables.

Fourth, as in the Japanese case, plan targets may seriously underestimate actual performance, such as gross domestic product (GDP) growth rates, investment rates in sectors or growth rates in sectors. Would that be considered a low-performing economic plan?

[34] Perroux et al. (1949), Kindleberger (1967), Estrin and Holmes (1990), Malinvaud (1992).

[35] Malinvaud (1992, p. 17).

[36] Malinvaud (1992, p. 24).

[37] See McArthur and Scott (1969), Estrin and Holmes (1990).

One could argue that because of such difficulties in assessing the performance of economic planning, a significant part of the debate surrounding it has been on theoretical, philosophical or political dimensions. The main axis of debate has been the "state versus free markets" argument. Could state intervention achieve a better outcome than no intervention?

In their arguments against economic planning, the critics have accorded a central role to the "Knowledge Problem" or the "Calculation Problem" developed by Mises (1949) and Hayek (1945).[38] That line of thought argued against the viability of socialist planning based on its overruling of price signals. Nevertheless, arguments against planning in market economies also followed similar logic.

While the role of state intervention continues to be a central theme of discussion in economics, there is not much contemporary discussion and assessment of economic planning. Consequently, what is missing today are efforts to understand whether the current forms of economic planning (together with related developmental tools) serve nations well in today's conditions and whether there are better ways to plan (as well as to implement, monitor and assess the impact).

4 Quantitative Tools in Planning

Economic planning calls for quantitative tools in order to analyze and forecast macroeconomic and sectoral data and to assess social costs and benefits of proposed economic policy and projects. Quantitative tools and methodologies employed in early economic planning had varying degrees of sophistication. The Vanoni Plan was primarily a result of partial calculations based on simple capital/output and labor/output ratios, both of which were assumed fixed for planning purposes. The early French plans also used capital/output ratios in assessing the returns on public investments. On the other hand, Dutch planning involved relatively complex macro-econometric models and forecasting efforts.[39] The input/output approach and cost benefit analyses were other widely used tools in early planning.

It is not a coincidence that Tinbergen and Frisch were awarded the Nobel Prize simultaneously in 1969; Holland and Norway had contributed significantly to the development of systematic economic planning tools. Dutch economic planning relied more on the credible ability of economic forecasting than the coercion-based French planning did. Providing technically sophisticated Dutch economic plans utilized sophisticated econometric methods and the application of economic science to Dutch economic issues.[40]

Increasing sophistication in computing technologies has assisted the application of quantitative techniques to planning.[41] Consequently, economic planning after its

[38] See Lavoie (1985) or Kirzner (1984), among others, for that discussion.

[39] Wellizs (1960).

[40] Katzenstein (1985, p. 61), Wellizs (1960).

[41] Millikan (1967, p. 6).

initial phases in the post-war period has made heavier use of quantitative tools including sophisticated macroeconomic modeling, input–output analysis, econometric tools, cost-benefit analysis and computerized general equilibrium (CGE) models.

However, in their retrospective analysis of the use of quantitative methods in planning in the early 1990s, economists like Chakravarty (1991) and Malinvaud (1992) noted that "at the stage of 'quantification', there is a great temptation to ignore what is not easily quantifiable or, what is equally bad, to indulge in games involving spurious precision."[42]

5 Planning: Taxonomies

From an economic perspective, a national economic plan is an effort to influence the distribution of (or better, concentrate) the resources of a nation in selected areas in order to attain targeted economic results. Early Western European economic plans adopted operational objectives such as accelerating growth, developing certain sectors or regions, increasing employment, or restoring trade balances.[43]

Looking at actual past experience, on one extreme one can note the Soviet model of hard-planning,[44] in which a group of quantities was set by a central planning body, totally overruling price signals and market forces. These quantities included production levels for almost all of the production of consumer and capital goods, human and physical infrastructure investments, and the amount and distribution of labor into sectors and geographical areas. Under that framework, international trade was also managed with respect to quantities.

On the other extreme, one can observe soft-planning experience, such as in Western Europe, where price signals are respected and coercive powers of the plan are quite restricted. In these "mixed" economic models, the public sector provided some of the investments (infrastructure, as well as investments in direct production sectors), and it also introduced incentives for private investments in prioritized sectors. The Turkish plan, for example, was structured to be coercive on public sector activities but indicative for private sector agents. In such softer (indicative) planning settings there are still differences in the modalities of policy coordination.[45]

In the case of France, for example, Massé (1962, p. 1) notes that "while nationalizations of key industries" accompanied the launching of the first plan, "the method as a whole that forms the basis of French planning is not the result of a preconceived doctrine, the product of a school of thought, the privileged instrument of a political

[42] Chakravarty (1991).

[43] Wellizs (1960, p. 263), Hampton (1971, p. 338).

[44] Baum and Tolbert (1985) call this "comprehensive" planning.

[45] Estrin and Holmes (1990, p. 537), for example, explain the Dutch and Japanese planning, where the planning body is a relatively powerless think tank with basically no coercive powers vis-a-vis the other governmental departments, contrasted with early French planning where the planning body had significant powers.

majority." Nevertheless, Massé (1962, p. 2) also notes that, at the time when the first plan was launched in France, "the wind of reform which swept over France brought with it the idea of nationalizing key sectors, the idea of substituting the plan for certain market mechanisms which had failed before the war to remedy the social and economic aftermath of the great 1930 depression."

Since its launching in non-socialist economies, economic planning has taken different forms and used different instruments. In retrospect, there are various ways to adapt taxonomies to economic planning.

One simple taxonomy could be based on time frames. Planning is basically a long-term concept, and, various planning time frames have been adopted in practice. The terms of plans have generally been either 5 or 10 years. One pervasive theme is that long-term plans have been supported by shorter-term plans.[46] For example, Dutch long-term planning in the 1950s dealt with the question of design and application of economic policy to achieve higher growth rates and employment. Dutch short-term planning differed a lot from the French; the French government became directly involved in the formulation and even financing of physical investments and tax-subsidy systems to direct private investments, while Dutch short-term plans dealt mostly with macroeconomic issues.[47]

A more substantive taxonomy can be drawn based on coverage, the stakeholders involved in the preparation of the economic plan and the plan's coercive powers. Wickham (1963) provides two useful sets of categories for economic planning. Firstly, an authoritarian plan versus a democratic plan; a plan is authoritarian if "general purposes assigned to it are chosen at the discretion of a central body simultaneously responsible for the means to engage in its execution." It is democratic if "those persons concerned with the execution (customers, laborers, peripheral agents) have been consulted at the outset about the selected direction."[48] Secondly, a plan "is 'mandatory' (*impératif*) if it is completed together with line supervision. It is 'indicative' if it involves neither obligation nor sanction for those involved with its execution."[49]

Wickham's definitions may need further refinement. An authoritative plan could be redefined as a non-participatory plan; one which is drawn by a group of experts without much involvement by the plan's stakeholders. The degree of participation for a plan to be "participatory" or "democratic" is debatable. In the Turkish case, for example, plans were created with inputs from "specialized committees" consisting of the representatives of businesses and academia. Does that make the Turkish case fully "democratic?" Further, even for a mandatory plan, the agency may not have powers of execution or even of monitoring in actual practice. Lastly, there may be degrees of "mandatoriness" and "indicativeness" of the actual plan. A mandatory

[46] In some cases, such as Turkey, shorter term plans were called "programs." In the Turkish case, plans until recently were drawn for 5 years and programs covered a single year. In other cases, a longer, framework, such as 10 years, was programmed using 3-year plans.

[47] Wellizs (1960, p. 263).

[48] Wickham (1963, p. 335).

[49] Wickham (1963, p. 335).

Drawing of the plan:	Democratic	vs	Non-participatory		
	e.g. Turkey (participatory specialized committees)		*e.g. Holland 1950s, France 1950s.*		
Coverage of the plan:	Centralised	vs	Decentralised		
			Regional	Local	Departmental
	France 1950-60s; S. Korea 1960-1990s; Turkey 1960s onwards;		*e.g. Regional development plans; Turkey 2010s*	*e.g. London Development Plan 1969 or The Five-Year Economic Development Strategy for the District of Columbia 2013.*	*e.g. planning within ministries or subordiate units*
Powers of the plan :	Mandatory (for the public sector)	and/or	Indicative (for the private sector)		
			Pure indicative	Directive	
	e.g. Turkey 1960s onwards; S. Korea 1960-1990s; France 1950-1960s; India 1960-1970s.		*e.g. Holland 1950s*	*e.g. France 1950s; S. Korea 1960s; Turkey 1960-onwards; India 1960-1970s.*	

Fig. 1 A taxonomy of economic planning (not including command economies)

plan in a mixed economy is highly likely to be mandatory only for governmental units. Indicative plans in mixed economies may be indicative only for private agents or they could be indicative even for governmental units, such as in a rather idealized picture of the early Dutch planning.

Still another way of categorization could be the hierarchal coverage of the plan ranging between local, regional and national levels. We use the term "central planning" to mean coverage of the entire nation. Central planning may or may not be accompanied by plans affecting lower levels in the hierarchy.

Obviously, such a taxonomy would cover economic planning for market-based economies. In a non-market-based command economy where market institutions and prices are entirely replaced by administrative control, the planning agency and/or other public institutions may have certain responsibilities for allocating resources. Some, such as Lavoie (1985, p. 3), defined such planning as "comprehensive." Others, such as Baum and Tolbert (1985), defined comprehensive planning rather vaguely, meaning market-based economic planning at the national level. For the same economists (1985, p. 6), along with others, economic planning in non-market-based economies was defined as "central planning." Figure 1 can be considered a rough sketch of the possibilities discussed above.

5.1 Targets Versus Projections

The distinction between targets and projections has been discussed in the literature. That distinction becomes important as an economic plan includes both types of

variables; and, performance (success and failure) of a plan will need to be assessed with regard to selected key variables. Projected variables are considered to be those that are exogenous to the plan maker, and targeted variables are those that are desired to be reached[50] through policy variables.[51]

Leontief (1976) who advocated a relatively comprehensive type of planning for the USA argued that "a plan is not a forecast. The whole idea of planning assumes the possibility of choice among alternative feasible scenarios. Feasibility is the key word." On the other hand, other proponents of indicative planning emphasized the ability to forecast (by the planning agency), rather than the coercive powers of plans in directing private agents.[52]

5.2 Developmental State

A key theme in post-war Western European economics was reconstruction, with a heavy overtone of "development." In the Japanese context, however, development was the key theme.[53] Johnson (1982, p. 20, 1999, pp. 33–34) coined the term "developmental state" in explaining the behavior and methods of the Japanese governments during the Meiji Restoration period of the nineteenth century and the High Growth Period of 1953–1973, contrasting it with the "regulatory" state.

The regulatory state set the rules and supervised compliance, thereby setting as its priorities, objectives such as securing competition in markets and protecting consumers. Governments in Anglo-Saxon economies established anti-trust rules, trying to limit the market power of large firms, but they did not extend their intervention beyond that point, such as deciding in which sectors to expand production or where to make private physical investments.[54]

Johnson (1982, pp. 17–19) believed that the Japanese political economy and developmental state mimicked the German development approach; it set substantive social and economic targets, endeavored to change the structure of industry and to sharpen the competitiveness of its firms. Johnson's Japanese developmental state implemented industrial policies and led the industrialization process. Johnson stresses Weber's distinction between market economy (*Verkehrswirtschaft*) and a

[50] "Not at all costs, but by means of reasonable corrective measures" as Massé (1965, p. 266) notes.

[51] Tinbergen (1956) calls policy variables "means" or "instruments" which can be used to "reform" the "foundations," or to change "qualitative" (structural) or "quantitative" (macroeconomic) aspects of the economy.

[52] Black (1968).

[53] During the Meiji restoration and the High Growth Period (1953–1973), rapid development and "catchup" was a key theme in Japan. The process was accompanied by related slogans such as "fukokukyōhei" ("rich nation-powerful army") or "shokusan kogyo" ("develop industry and support firms").

[54] Johnson (1982, p. 18, 19).

"planned" economy (*Planwirtschaft*). It is worthwhile to note that he also makes an important distinction between "market-rationality" and "plan-rationality."[55]

Johnson's "developmental state" acted on the basis of "plan-based rationality," which he was keen to distinguish radically from the Soviet-type socialistic planning, which was ideological, not rational. The main features of the Soviet socialistic approach were value-based, not rationality-based. Finally, Johnson (1982, pp. 19–20) believed that the market-rational state "usually will not even have an industrial policy. Instead, both its domestic and foreign economic policy, including trade policy, will stress rules and reciprocal concessions. Its trade policy will be subordinate to its foreign policy, being more often used to cement political relationships than to obtain strictly economic advantages."

6 Ways to Overrule the Market: Static Versus Dynamic Interventions

Classical economists have argued that the flow of resources into economic sectors should be determined by price signals, a process ultimately leading to an economically optimum distribution. It is well known that classical economic theory has justified government intervention in the economy under certain conditions. In the economic literature, the most widely accepted justification for government intervention is the existence of typical market failures driven by public goods, externalities and certain market structures.

In practice, government interventions in the economy have taken many forms:

- Provision of public goods, such as investments in physical and human infrastructure, which might be under-provided in the absence of such intervention[56]
- Tax subsidy schemes for income distribution purposes
- Tax subsidy schemes to provide incentives to private agents to take certain actions:
  - To accelerate regional development (as in Italy, to develop the poorer southern regions; in the UK, to develop the northern regions; or in the case of some of the EU structural funds)
  - To accelerate innovation or technological development
- Direct production and provision of goods and services that could be undertaken by private businesses, such as production of farm products, textiles, cars or hotel services.

In the microeconomic sense, standard theory thus emphasizes what could be called "static" (or one-off) interventions. The typical, and rather idealized, theoretical story could unfold as follows: the benevolent public authority identifies the (static)

[55] Johnson (1982, p. 18).

[56] In addition, Barro (1990) showed that in an endogenous growth model, productive government investment spending can lead to higher growth rates.

market failure, assesses alternative ways of intervention, implements the preferred intervention and (hopefully) reaches the second best outcome. An informed public authority may also run ex ante and ex post impact analysis prior and/or subsequent to the policy implementation. When a new, related or unrelated, market failure is identified, the same sequence is repeated.

Planning is thus an effort to intervene in the economy, overruling market forces with the justification that it could "correct" market failures to achieve second bests. Indeed, in the post-war period, economic planning has been considered, to a large extent, as a feature of socialist economies.

Under this perspective, economic planning, essentially a macroeconomic concept, could be seen as a "dynamic," forward-looking policy framework to address various levels of market failures. A forward-looking government may be considered to have a dynamic policy framework where the sequence now runs something like the following: assess today and forecast tomorrow's domestic and international economic environment; identify the failure(s); assess alternative ways to intervene; implement the preferred intervention from a dynamic point of view; and (hopefully) reach the second best outcome given the targets. A good plan would also evaluate results ex post facto and draw lessons and best practices for future use.

In a static market intervention, the objective is likely to be rather a typical economic one, such as eliminating the under-provision of a public good or eliminating the negative effects of an externality. A dynamic intervention, on the other hand, would deal with developmental issues such as:

- Physical planning in sectors such as transportation, education, agriculture: For example, forecasting transportation demand, designing the consequent future transportation infrastructure configuration.
- Building dynamic comparative advantage: As has been done in countries such as South Korea and Japan, an effort to change the static comparative advantage of the country away from primary to secondary sectors, for example, from agriculture towards more income-elastic industrial sectors.
- Planning human resources: In line with building dynamic comparative advantage, a government may plan quality aspects of its manpower to assist the transformation of its economy.
- Industrial policy: A plan may include aspects of industrial policy, ranging from subsidizing private R&D to incentives (through various tools such as tax advantages) for the transfer of manpower to the industrial sector to choosing better competitive policies.

7 Planning: Management and Strategic Perspectives

During the previous three decades, while the concept of economic planning largely fell off the agenda of public decision makers, the concept of corporate (strategic) planning saw a simultaneous rise in the agenda of the academic, as well as the

business world. In fact, the two concepts, economic and strategic planning, are related to each other, although they address the issues faced by two different actors: state (public decision makers) and businesses (private decision makers). The literature of business administration, based on Fayol's early studies, defines the five functions of management and leadership as planning, organizing, directing (commanding), coordinating and controlling. Fayol has also included forecasting/prediction in his definition of management's planning function.[57]

There is no universally accepted definition of strategy.[58] Johnson et al. (2008, p. 3) define strategy as the "direction and scope of an organisation over the long term, which achieves advantage in a changing environment through its configuration of resources and competences with the aim of fullfilling expectations."

Strategic planning has now become standard practice in a large number of public and non-profit organizations.[59] Taking the above definition as a basis, it is clear that the need for a strategy is as valid for governments as it is for businesses. Governments, like businesses, need "a direction and scope … over the long term, [that] would achieve advantage[s] in a changing environment" through resources and competencies based on certain targets and expectations. In a democratic system of government, the political parties offer their economic and social vision/targets to the populace, and the elected party is held accountable for the achievement of those targets.

Indeed, Bryson (2004, pp. xi–xii) argues that leaders and managers of public entities must be effective strategists if these entities "are to fulfill their missions, meet their mandates, satisfy their constituents, and create public value in the years ahead. … Strategic planning is a set of concepts, procedures, and tools designed to assist leaders and managers with these tasks." Strategic planning, according to Bryson (2004, pp. 10–12), can accrue a number of benefits to public decision makers, such as improved decision-making, enhanced organizational effectiveness and coordination of decisions by various public entities. The latter is important, as has also been emphasized in the economic planning literature, because big challenges in education, health, employment, and poverty typically need to be conceptualized at the "supra-organizational," or "system" level.[60] Government is made up of an internal administrative structure comprised of various departments grouped under different units, such as central government ministries, other central government bodies and local administrations. Each of these units, in turn, has its own internal administrative structure, just like a firm having an internal structure.

Thus in today's world, a government, which is basically an administration, may obviously benefit from planning, as earlier proponents of planning also suggested. An obvious and significant difference between a governmental administration and a business administration is that governmental administration has powers extending

[57] As discussed in previous sections, targets versus forecasts were debated during the 1950s in economic planning circles and forecasting has been an especially prominent part of Dutch economic planning.

[58] Quinn et al. (1988, p. 1).

[59] Bryson (2004, p. xii).

[60] Bryson (2004, pp. 11–13).

beyond the limits of those of a firm, shaping the structure of an entire economy and the environment for firms and households. A government manages the public resources of an entire nation. It possesses regulatory powers beyond its authority to tax. These regulatory powers allow the government to directly intervene in the economy or create incentives, with or without a need to directly spend fiscal resources, as private businesses and households are producing output. In other words, private agents will face the market incentives, as well as those that are government-designed, in making their decisions.

Economic theory envisages businesses as spending their resources with the ultimate objective of maximizing profits. While a number of alternatives have been suggested, it would be reasonable to argue that primary objective of a government is to maximize long-term welfare of the nation. To attain that objective, the government receives and spends tax and non-tax revenues. From that perspective, planning of some sort is necessary for the government administration.

8 Economic Planning and Regional Development

Regional development has been an important objective of government interventions. Economic planning at regional and local levels has been receiving increasing attention by economists.[61] In Western Europe, for example, "regional policy became a prominent part of the widening economic and social policy intervention undertaken by all governments from the 1950s to the 1970s."[62]

Countries have tried different strategies to achieve regional development. In Belgium, the regional development laws of 1959 and 1966 were based successfully on attracting international investment in depressed regions. Swedish regional development policy, in contrast, was based on manpower training policies, especially vocational training. Thus, both the main thrusts and financing sources differed substantially between these two small European states.[63]

The Vanoni plan for Southern Italy considered public and private investments to eliminate the developmental gap with the North, including the establishment of a development agency for the South. Early French planning was based on an effort at recovery, including at the regional level; nevertheless, the concepts of regional development or planning would need further time (until the 1960s[64]) to develop.

After the 1970s, regional development witnessed a paradigm change. The authority of the central government devolved to regional actors and agencies that would have a greater understanding of their respective regions.[65]

[61] Stimson et al. (2006, p. 4).

[62] Bachtler and Yuill (2001, p. 6).

[63] Katzenstein (1985, pp. 118–119).

[64] Fremont (1993).

[65] Bachtler and Yuill (2001). This was the case for Western Europe. In the USA, the states and cities under them were already regional actors. Other, especially developing, countries gradually followed suit in trying to devolve powers to regional authorities.

Economic planning, as a unifying and coordinating framework, may be useful in achieving efficiencies in regional development efforts. It is thus not a coincidence that, more recently in countries such as Turkey, regional development has been the mandate of the economic planning body (Ministry of Development). In the USA, increasing efforts to plan at the state and local level[66] also demonstrate local acceptance of economic planning. It is probably also a reflection of the federal system of government and the doctrine of "states' rights."

9 Industrial Policy and Economic Planning

Industrial policy and economic planning are bi-directionally related. Therefore, it is no coincidence that various economic plans have been accompanied by industrial policy, such as the early French, Japanese, Indian (Mahalanobis) or South Korean planning experience. Economic planning aims to cover the entire economy; the industrial sector, obviously a major part of the economy, as well as a major component of foreign trade, cannot be ignored in a plan. It has to be noted, however, that the planning agency need not be the designer (or the implementer) of industrial policy.[67]

On the other hand, industrial policy aimed at changing the industrial structure and influencing manpower flows towards industry is a medium- to long-term effort by its very nature and it thus involves or is part of planning. The dilemma faced by governments in opting for an industrial policy has been similar to the one faced in deciding whether to plan or not: how and how much to intervene in the markets.

As Katzenstein (1985, p. 118, 119) remarks, some of the smaller European states,[68] as well as larger ones like France in Europe and Japan in Asia, relied heavily on planned methods of large scale economic reconstruction or deliberate modernization. Katzenstein (1985, p. 118, 119) further argues that "the planning policies of small European states, designed to make changes in the national economy more predictable and less costly, differed from those in large industrial states. The USA, Britain and West Germany, with their commitment to liberalism, rapidly dismantled the machinery of economic control in the late 1940s and early 1950s; Japan and France, meanwhile, embarked on policies of state-initiated and supervised sectoral transformation. The small European states carved a path between liberalism and statism; it led them toward indirect forms of economic control."

China's early plans, especially the first (1953−1957) and the second (1958−1962), targeted development of medium-sized and heavy industries. From 1920 to 1950, Turkey adopted "industrial plans," again targeting state-led industrialization.

[66] Including the programs of the US Economic Development Administration providing financial support to strategic development plans drawn by communities.

[67] The most typical example could be Japan where the plans were drawn by the Economic Planning Agency and the designers and implementers were the MITI and the genkyokus.

[68] Katzenstein (1985, p. 61).

In both cases, the plans were narrower industrial policy tools and were technically not economic plans, as they lacked the wider economic scope of the post-war economic plans in France and Holland, with their macroeconomic targets/forecasts.

The industrial policy components of economic plans have been visible in the form of sectoral/sub-sectoral growth targets, programs for investment in public physical infrastructure, or incentive schemes to direct private investment to targeted sectors. Early Japanese, French and South Korean[69] plans targeted certain sectors (such as steel, petrochemicals, etc.) and subsequently shifted the focus to other sectors as development progressed. In Japan, these investments were undertaken mostly by private agents. In South Korea, the earlier phases of economic planning (1950s and 1960s) included significant government-led investments. That was even more pronounced in France in the 1950s. Early Turkish economic plans in the 1960s featured heavy government investment program components in business sectors, such as steel and textiles. Incentive programs for the private sector accompanied the plans. Likewise, early French plans included heavy public investment programs as well as the nationalization of key industries.

If the economic plan is designed with an industrial policy ingredient, the wider costs and benefits of supporting a given industry must be assessed.[70] Such ex ante impact assessments, however, were generally lacking in a wide range of country experiences. Even economic planning with ambitious industrial policy components, such as in Japan or South Korea, did not include high-powered assessments. In some cases, such as the French or Italian (Vanoni) plans, employment and its effects on growth were a primary priority of the government.

More recently, "traditional" industrial policies that target the development of selected sectors have given way to a newer generation of industrial policies based on innovation, R&D[71], technology and entrepreneurship. It could be argued that, for the developed economies in Western Europe, the USA and Japan, where stronger and relatively competitive industrial structures have been put in place (and reshuffled over time through processes giving way to the emergence of newer industries and the disappearance of others), these newer policy frameworks are appropriate. For developing and underdeveloped economies, however, where indigenous industrial structures have not yet assumed powerful and sustainable foundations, they may not adequately address needs.

Development-based public procurement is a public and industrial policy tool likely to gain weight.[72] Public procurement can assist countries in gaining capabilities in key industrial sectors. That, in turn, could increase the international competitiveness of firms and thus the economy. In addition to assisting industrial

[69] Wolf (1962, p. 23), Komiya (1975).

[70] Estrin and Holmes (1990, p. 538).

[71] Policies that supported R&D were used earlier in various countries, ranging from the USA and Japan to Scandinavian countries. While R&D support provides output to various industries, they still can be considered a type of industrial policy, as they are primarily directed towards technology-intensive sub-sectors.

[72] See Yülek and Taylor (2012), Eliasson (2010), Yülek (2013).

development, public procurement can also support technological development and innovation of companies.[73] Planned procurement practices, another public procurement policy tool that is a direct combination of industrial policy and economic planning, may trigger private sector R&D and innovation processes without any fiscal expenditure. Practicing planned public procurement calls for planning the activities of governmental departments as well as a regional and local administrations.

Looking to the future, industrial policies, including new generations or newer versions of what went before, are likely to be part of economic planning efforts.

10 Cluster Policies

Clusters are increasingly being considered a key tool in assisting companies to become competitive.[74] In turn, cluster policy is increasingly being used with a view to assist economic development in a wide range of countries including the USA, although clusters in many cases are being developed as a private sector-led, bottom-up process. Therefore, governments are considering their positions with regard to policies that supplement market forces shaping clusters.[75]

Cluster policies are closely related to industrial policies in many countries, in that they call for analysis of policy at the industrial level as well as designing innovation and other types of support.[76] Roeland and Den Hertod (1999, pp. 413–415) argue that clusters "offer useful insights into the linkages and interdependencies among networked actors in the production of goods and services and in innovation. … Cluster analysis offers a new way of thinking about the economy and organizing economic development efforts; it overcomes some of the limitations of traditional sectoral analysis."

The role of government in the design and formation of clusters is debated. Proponents of market-based cluster development maintain that governments may play an initial role (by taking an active stance in setting national priorities, formulating a vision for the future and involving actors in a dialogue) before leaving the clustering process to market forces with little government intervention.[77]

Nevertheless, even the proponents accord significant, "inducive" roles to the government to assist the strengthening of clusters including innovation supports, providing "vigorous competition and regulatory reform policy," providing strategic information through studies on the potential of technology, cluster studies, the formation of broker and network agencies and schemes.[78]

[73] Rothwell (1984), Edler and Georghiou (2007), Georghiou et al. (2014).

[74] Porter (2000).

[75] Feser (2004), Hefner (2009).

[76] Roelandt and Den Hertod (1999, p. 416).

[77] Roelandt and Den Hertod (1999, p. 418).

[78] Roelandt and Den Hertod (1999, p. 418).

These functions obviously require public resources to be put in place for the use of private agents. Thus a planning or policy framework for the public sector is necessary to answer questions such as: What kind of clusters would the government support? Expecting what kind of future results? Would these public resources be better spent on alternative policy areas?

11 Economic Planning and Industrial Policy: The Way Forward

Malinvaud (1992, p. 22) defines three key functions for economic planning: "It must look into the future and announce its likely features; it must define strategies; it must evaluate public projects and control their realization." Further, in line with the discussions on early justifications for economic planning, he argues that a case may be made that a reputable, objective central public body should take on the responsibility of using certain economic information to make projections regarding the generation of public goods for the market.

Looking forward, a country may or may not consider itself as utilizing economic planning, and these functions may or may not be executed by a formal economic planning body. However, again following Malinvaud, in many countries such functions are, in reality, performed by public (and private) administrations, through some other actors, if not by a centralized agency, with varying degrees of success in implementation, coordination and monitoring.

Times have changed since the heyday of economic planning and industrial policy. The economic environment is considerably different compared to the 1950s, 1960s and 1970s. Does that mean there is no longer a role for economic planning or industrial policy in today's world? Or, were economic planning and industrial policy actually tools of a bygone era featuring socialistic or softer intervention economies? Are there plausible roles and justifications for them in today's world?

This chapter has laid out a brief background and looked at past and current justifications for economic planning, such as information generation and sharing, the need for strategic planning in government administration as well as in resource planning at the national level, and dynamic interventions to achieve second bests when market imperfections exist. It has also discussed the ecosystem of economic planning: related policy and strategic tools that accompany economic planning.

Obviously, the methodology and process of drawing up an economic plan, the structure and the content (impact objectives, links to resources, etc.) of the plan, as well as monitoring and evaluation mechanisms would need to be adapted to the surrounding conditions. A government, like businesses, needs to continually reform its structure, tools and activities. That includes economic and strategic plans as well as their methodologies.

Economic planning has lost the greater popularity it had in earlier decades, but it has not disappeared. In fact, many nations are still practicing economic or strategic planning. Moreover, new tools that are related to economic planning and industrial

policy, and an inventory of experience with them, are now at hand. They include technology, policies promoting R&D and innovation, learning systems, green growth strategies, formation of clusters to exploit agglomeration effects and regional development and planning tools. Nations now have access to a wider set of tools than before to actively engage in development issues.

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Modern Economic Development Concepts

Toh Mun Heng

1 Introduction

Streeten (1972), who participated in the preparation of Gunnar Myrdal's *magnum opus* Asian Drama published in 1968, opined that 'development means modernization, and modernization means transformation of human beings. Development is an objective and development is a process both to embrace a change in fundamental attitudes to life and work, and in social, cultural and political institutions' (Streeten 1972, p. 30).

In less abstract form, economic development may be defined as the process by which a traditional society employing primitive techniques and therefore capable of sustaining only a modest level of per capita income is transformed into a modern, high-technology, high-income economy (Rostow 1961). The process involves the replacement of labor-intensive subsistence production by techniques that use capital, skilled labor and scientific know-how to produce a variety of different products consumed in an affluent society.

From a historical perspective, economists in the seventeenth to the nineteenth centuries were practically development economists concerned about issues like the political economy of production and distribution, trading with other countries, means of improving the health of the national coffer through productivity and reformation in the dominant agriculture sector. Often they were writing about a developing country (in many cases, Britain) going through a process of industrial transformation. Then in the 100 years before the Second World War, development economics took the form of protectionist arguments for industrialization. The mercantilists opined that the only way for the nation to create wealth is to promote export and curtail import. That idea soon gave way to that of Adam Smith that championed division of labor, free trade and the efficacy of the market (invisible hand) in the creation of wealth and prosperity. Nonetheless, the path of progress

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is never smooth. The negative sides of free enterprise and liberal capitalism as in squalid and unhygienic industrial towns, child-labor and general exploitation of labor had stoked the emergence of communism and injection of socialistic ideals in political organization and in management of the society and economy. The October Revolution in Russia in 1917 was a manifestation of the latter, and it ushered in economic planning and the emphasis on capital accumulation and dominance of heavy industries as in steel, machinery and chemicals to force-march economic growth and development. The world is offered an alternative to the free enterprise, light government, market-driven style of economic development embraced by then emerging European industrializing countries. This state of affair persisted for quite a long while until 1989, when the Berlin Wall fell and the subsequent dissolution of the Soviet Union.

There is no dearth of intellectual efforts by economists and professionals in other disciplines searching for the elixir or secret formulae to enable nations to grow and prosper. Even before the Second World War ended in 1945, economists were already considering what strategies can be employed to rebuild economies that were destroyed by the war. Economic development plan is not actually abhorred by economists oriented towards market and free trade. Often the plan is taken as a document delineating the intent/objective and actions to be taken to achieve the objective. This is in contrast to an economic plan in a socialist economy, in which market is subordinated and the basic questions in economics: what to produce? how to produce? and for whom is the produce? are addressed authoritatively and centrally administered. A good example is the Marshall Plan initiated by the USA after the Second World War to provide necessary resources for the rebuilding of European economies devastated by the war. The French government was famous for its use of rolling plans to guide economic development. Developing economies asking for financial assistance from the World Bank are required to submit their application with sound development plan indicating how the funds are being used. At one count, there were more than 500 economic development plans registered at the World Bank, though the information on whether plans were implemented and their efficacies is scarce.

These economic development plans were often supported by propositions or insights of planning models of the development economists. For instance, macro and sectoral planning models such as that of Feldman (1928), Leontief (1951), Harrod (1939), Domar (1947), Mahalanobis (1953) and Chenery and Bruno (1962) became the theoretical rationale for such development plans. As interest in development intensifies, many area-specific studies were conducted and many economic theories emerged.[1] The famous paper by Rosenstein-Rodan (1943) on ‘big-push’ theory or ‘balanced growth’ about economies in south-eastern Europe had stimulated a

[1] Chenery and Syrquin (1975) provide a classification of development theories: structuralist, Marxist, classical, Keynesian, neo-Marxist, neoclassical, post-Keynesian and the dependency school. Broadly speaking, the structuralist theories reflect assumptions in developing economies characterized by various institutional features and weaknesses, and that markets operate imperfectly, with the consequence that uncontrolled economic change directed by market forces does not result in the pattern of development which is desired.

stream of works by Chenery (1960), Hirschman (1958), Kuznets (1955), Lewis (1954), Nurkse (1953), Scitovsky (1954), Sen (1975, 1983) and others, that help establish development economics as a subject in University curriculum. Hirschman (1958) in particular argued for unbalanced growth in contrast to balanced growth that necessitates balanced (simultaneous) expansion by a large number of sectors to help raise the demand for output of all the other sectors. He recognized that concentrating resources on key sectors that have strong backward and forward linkages on other industries can spark-off a development process. This approach, he reckoned to be more applicable in situation of limited decision-making capacity and resource availability as in developing economies. An indispensable pre-requisite for the transformation to occur, amidst all the theories propounded, is the accumulation of capital, and this must be interpreted to include not just physical capital goods but also human capital, social capital and intangible capital as in relevant scientific knowledge.

Economic Development as a process of transformation is the principal theme of models by Lewis (1954) and Fei and Ranis (1964). In the Lewis–Fei–Ranis model, often called dualistic economy model, economic growth occurs because of the increase in the size of the industrial sector, which accumulates capital, relative to the subsistence agricultural sectors. The growth impulse is expected to ignite an unbalanced but virtuous cycle of growth.

The dismantling of colonial system and the setting up of international institutions World Bank and International Monetary Fund (IMF) at the Bretton Wood meeting of nations had given much expectation and hope about the new international economic order after the Second World War. Persistence of under development and imperceptible growth have led some to believe the new order is a modified continuation of the old. Within the structuralist/neo-Marxist/Marxist framework of analysis, the dependency theory of economic development takes center stage. Largely originated in Latin America and the Caribbean, it asserts that resources flow from a 'periphery' of poor and underdeveloped states to a 'core' of wealthy states, enriching the latter at the expense of the former (Frank 1969; Furtado 1970). It implies exploitation of the poor by the rich; increasing divergence of standard of living is the expected outcome.

The Fall of the Berlin Wall in 1989 had enhanced the role of neoclassical economics in development issues while diminishing the influence of Marxian and dependency theory. The neoclassicists contend that slow or negative growth results from poor resource allocation from nonmarket prices and excessive state intervention. Neo-classical growth theory emphasizes the reliance on market, private initiatives, deregulation and the importance of increased saving for economic growth. The Washington institutions of the World Bank, IMF and the US government have applied neoclassical analysis in their policy-based lending to less-developed economies. In fact, the neoclassical growth model (Solow 1956), predicts that incomes per capita between the rich and poor countries will converge. Mankiw et al. (1992) include human capital as an additional explanatory variable to physical capital and labor in Solow's model, and this helps to explain to some extent the slow convergence observed in reality. Relaxing the assumption that technology being exogenous

in the neoclassical model, gives rise to a new strand of theory: the new endogenous growth theory. When the level of technology can vary with different efforts (such as Research and Development, R&D; and human capital), speed of convergence between developed economies and less developed economies is determined by the rate of diffusion of knowledge (Romer 1994).

In the 1980s and the 1990s, development and growth theories propounded in the 1950s and 1960s have been subjected to criticism, evaluation and test of usefulness. Many aspiring developing economies did not find the predictions of the theories verified and in many cases missing out on important issues such as absorptive capability, institutional failure, spatial, interpersonal and inter-sectoral distribution problems prevailing in the economies. On the intellectual and research front, new theories of endogenous growth emerged to challenge the neoclassical model as well as revived and renewed interest of spatial economics. Concurrently scholars in business research have creatively exposed and enhanced the relevance of economic theories to business decision-making, and this ultimately filtered back into macroeconomic policy-making. The general acceptance of the market as a useful mechanism for coordination of economic activities and its potential in creating the appropriate incentives for optimal resource utilization has enabled the convergence of private and public interest in wealth creation. Concepts like agglomeration economies, clustering, competitive advantage, value chain and knowledge capital became new buzz words or vocabularies in the discussion of economic development.

In this chapter, we will briefly review the main new concepts like competitive advantage, agglomeration economies and cluster-based analysis used in economic development and planning in recent years. These concepts will be pertinent to the varied development experiences described in other chapters of this volume. Indeed in a separate chapter, the roles and usage of the new concepts in charting plans and policies that promulgate good economic performance of the Singapore economy are extensively discussed.

2 Modern Economic Development Concepts

During the 1980s, development economics researchers began to move away from the pre-occupation with studies on trends and changes in national aggregates and averages. These are criticized for ignoring absorptive capacities, institutional constraints, spatial diversity, interpersonal and inter-sectoral distribution problems. A particular strand of research proceeded to address and examine special features of developing economies, which most formal theories have not accounted for. Among these topics are such matters as foreign ownership of firms, dependence upon foreign technology, barriers to international trade, problems of income distribution and nutrition and requirements for institutional reform (Bardhan and Udry 1999). With no initial direct link to economic development, industrial organization and business management-oriented researchers in the quest for better understanding of the strategies pursued by successful enterprises develop concepts, theories and tools

on strategic management that soon found application not only for companies but also for nations vying for progress and prosperity. A notable contribution in this strand is the work of Michael Porter. Porter's diamond of competitive advantage forces, value chain and cluster analysis have become common vocabularies for business executives and government officials.[2] Meanwhile, economic geography and urban economics become in vogue after the seminal contributions of Krugman (1991, 1995) and that of Henderson (1997) and Glaeser (1992). These also somehow dovetailed into valuable contribution in the discussion of trade and economic development when the latter is often initiated and commenced in the cities. We shall highlight three main inter-related concepts in this section: competitive advantage, cluster-based analysis or agglomeration economies and value chain.

2.1 Competitive Advantage

The notion of competitiveness of a firm is elevated and extended by Porter to that of a nation. Porter defined the competitive advantage of a nation as its capacity to entice firms (both local and foreign) to use the country as a platform from which to conduct business. He introduced what has become known as the 'diamond of national competitiveness' with four 'facets' determining the competitive strengths and weaknesses of countries and their major sectors. They are:

- Factor conditions (e.g. human resources and research and information infrastructures);
- Firm strategy, structure and rivalry (a business environment that invests in innovation);
- Demand conditions (sophisticated customers will force firms continuously innovate and upgrade) and
- Related and supporting industries (complementary product and services).

Two other variables that Porter believed to be important, but nonetheless auxiliary, were government actions and chance events. Together, they provide the essentials of a new competitiveness framework for analyzing and guiding national economic development.

National prosperity, in Porter's view is created, not inherited. It is highly associated with the 'upgrading' of competitive advantage. There are three broad stages of economic development. The national competitiveness strategy should have a different orientation at each stage. In the beginning at the resource-driven stage, a nation tries to exploit its factor conditions to drive its development. At the next stage, the investment-driven stage, the nation starts attracting foreign technology and investing in capital equipment, while encouraging more savings. Labor- and resource-intensive industries are replaced by industries that are more capital- and technology

[2] As usual, Porter's work has subsequently spawned many other research efforts that improved and extended the basic competitiveness framework. Contributions include Moon and Perry (1995), Rugman and D'Cruz (1993), Yip (1992) and Zou and Cavusgil (1996), among many others.

intensive. The most successful companies are able to produce higher value-added through product and service differentiation. These companies concentrate on knowledge activities overseas. At final stage, the innovation-stage, the nation turns to innovation as a major driver of its national wealth. The emphasis should be on supporting institutions and extending incentives that reinforce innovation within the business sector. Companies should be encouraged to compete on the basis of unique strategies. The development of service export capacities should be a priority objective. The stages are not strictly sequential and they can overlap.

The differences between Porter's theory of national competitive advantage and the existing theory of international trade and investment are highlighted by their respective public policy implication. Government aims to maximize the level and growth of the nation's living standard, while Porter defines the primary policy goal as:

> to deploy the nation's resources (labor and capital) with high and rising levels of productivity… To achieve productivity growth, an economy must continually upgrading. This requires relentless improvement and innovation in existing industries and the capacity to compete successfully in new industries. (p. 617)

The appropriate role for government is to contribute to the conditions that are most conducive to the upgrading of competitive advantage working through each of the four corners of the national diamond and taking actions that improve the interaction between these influences. Porter's view of the appropriate role of government is:

> Government's role is a pusher and challenger. There is a vital role for pressure and even adversity in the process of creating national competitive advantage. (p. 681)

Grant (1991) provides several examples on the difference in policy emphasis. For instance, in the area of policy towards R&D, traditional approach recognizes government spending in R&D stimulates the innovation within the country. Defense-related research offers commercial spin-offs. Cooperative research pools efforts and avoids wasteful duplication. In contrast the Porter model emphasizes the importance of diffusion of technology, which implies that research within universities is more effective than research within government laboratories. Government should support research into commercially relevant technologies in preference to defense-related research. Government should support research institutions focused upon industry clusters or cross cutting technologies. Cooperative research may blunt rivalry. Nations that recognize the meaning and importance of competitive advantage and deploy their resources accordingly can expect to be winners in the global economy.

2.2 Cluster-Based Approach and Agglomeration Economies

The cluster concept has gained prominence as an economic policy tool aimed to foster innovation and the growth of a competitive private sector in developing countries. The oft-quoted and much written about cluster in the world is the Silicon Valley. International agencies such as United Nations Industrial Development

Organization (UNIDO), World Bank, Asian Development Bank (ADB) have supported cluster-based development programs that help in identifying good practices for adoption and implementation.

An 'economic cluster' is a set of businesses in the same or related field and located near one another, which are linked by service or suppliers relationships, common customers and supporting institutions or other relationships. They compete with one another but also complement one another. Overall, however, they draw productive advantage from their mutual proximity and connections (Cortright 2006). Cluster strategy is first and foremost, an economic development strategy. It provides a coordinated and efficient way to promote economic growth. Properly designed, cluster strategies are a low-cost way to stimulate innovation, new-firm start-ups and job creation by helping to link and align the many factors that influence firm and regional growth.

Clustering of economic activity has been observed for over a century. In his 1890 book *Principles of Economics,* economist Alfred Marshall noted the positive spillover effects that occur when related economic activity co-locates. 'Agglomeration' economies have been recognized by economists since at least that time. For the hundred years after Marshall's book, research on clusters was dominated by economic geographers studying the formation and growth of cities. In 1990, Michael Porter brought the cluster concept into mainstream discussions of business strategy and economic development with his extensive study of clusters, *The Competitive Advantage of Nations*. The advantages of clusters, as described by Porter (1990), are that firms benefit from a shared culture and learning experience, supply capabilities and local infrastructure, and that the resulting economies give them competitive edge in both domestic and international market (Dunning 2006).

A cluster approach and the coordination it brings also helps an industry set priorities and establish a constructive relationship with government. An industry cluster strategy allows public agencies to direct resources more effectively and efficiently. Instead of creating myriad programs that meet the needs of individual firms, public efforts can be focused on meeting the needs of many firms with similar issues.

Other benefits of effective cluster strategies come through firms' participation in an organized cluster. These benefits include:

- **access to a specialized workforce** (companies in clusters can draw on large markets of people with specialized skills and experience for related firms);
- **access to specialized suppliers** (companies in clusters have access to concentrations of specialized suppliers of inputs and services); and
- **access to extensive networks** (companies in clusters have access to information flows and technological spillovers that speed innovation).

An industry cluster strategy focuses on developing a workforce with the skills and training necessary to strengthen and build competitive, innovation-driven industries. An industry cluster has a clear advantage over individual firms in helping set education and training priorities within a region or state. The cluster also provides cues to students and current workers on future employment options and opportunities to gain both general and specialized skills.

Industry clusters are also a good way to build social capital (relationships that facilitate productive activities) within a community or region. The cluster brings together representatives of industry, government, education and other organizations to work together for the improvement of the economy. It helps to focus public policy on those issues that are likely to have the greatest long-term effect on the economic success of the region.

2.3 Global Value Chain and Global Production Network

The value chain describes the full range of activities that firms and workers do to bring a product from its conception to its end use and beyond. This includes activities such as design, production, marketing, distribution and support to the final consumer. The activities that comprise a value chain can be contained within a single firm or divided among different firms. Value chain activities can produce goods or services, and can be contained within a single geographical location or spread over wider areas.

The idea of a value chain becomes useful for analytical and policy purposes, once we include three further features:

a. the activities are often carried out in different parts of the world, hence the term global value chain (GVC);
b. some activities add more value and are more lucrative than others (the policy-makers' concern is to help local enterprises to move into the lucrative activities);
c. some actors in the chain have more power over the others (governance issues).

The powerful actors are often called the 'lead firms' who seek to 'govern' the chain. They set/or enforce the terms under which the others in the chain operate. A central concern of value chain analysis is to 'unpack' the relationships between global lead firms and local producers—and the opportunities and constraints that result from entering such relationships.

Coming up with good economic policy appropriate to the level of development in an industry and country requires an understanding of how local enterprises fit into the global economy. The way forward is to focus on the sectors in which the local enterprises specialize and then ask how the global market for products from this sector is organized. Often these markets are not free-for-all open spaces. The spaces are coordinated by global buyers who source different parts and services from around the world. There is increasing functional integration between internationally dispersed activities. The outsourcing of manufacturing and service activities from the high-wage to the low-wage economies accelerates this trend. Active participation in international trade and embracing capital and technological advancement via foreign direct investments are likely channels for high economic growth performance.

The rise of GVCs is seen as changing the balance of forces that determine the geographical distribution of economic activity; towards the forces of dispersion and away from those of agglomeration. To put this in another way, the increased ease of

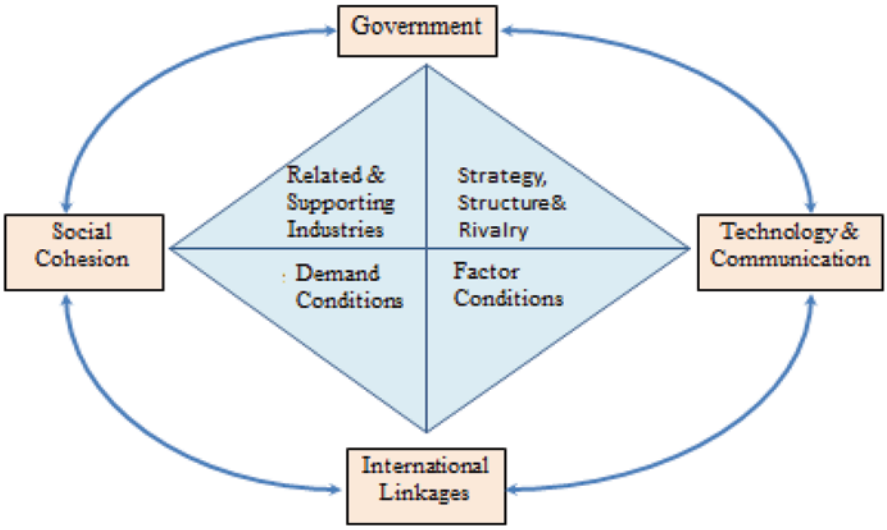

Fig. 1 Determinants of nation's development advantages

coordinating activities across space and reduced costs of communication, that are thought to be behind the growth of GVCs, reduce the benefit of clustering activities (such as in the larger US market) thus allowing them to become more disperse and to take better advantage of geographical differences such as in wages.

The quality of domestic linkages and domestic support systems plays a crucial role in creating international competitiveness. Being competitive internationally requires an effective domestic value chain. This means suppliers that provide on-time delivery of high-quality inputs, as well as support institutions that can test the quality of the inputs and certify conformance with international standards.

Value chain analysis helps the policy maker to find out where the bottlenecks are and provides a framework for sector-specific action. The value chain perspective ensures that action plan of policy makers does not stop with domestic linkages. It highlights the importance of facilitating linkages with the global economy. Multi-lateral trade rounds championed by World Trade Organization (WTO) and/or regional free-trade agreements are channels in which the global linkages can be expanded.

As an attempt to summarize the gist of competiveness framework for development in a diagrammatic form, four additional factors are superimposed on the Porter nation's diamond to form the ***lens of development advantages*** in Fig. 1.

Government can be an effective facilitator of economic activities by providing essential infrastructure such as power, utility, roads, ports and telecommunication networks. It can also encourage the use of technology and R&D for both product and process improvement in the economy through grants, fiscal rebates and investment subsidy. In a globalized world, enterprises' profitability and viability can be enhanced by selling abroad and procuring lower-cost material inputs from overseas.

Active government participation in multi-lateral trade negotiation and free-trade agreements, and being open to the presence and participation of foreign multinational corporations in the business sector are also a means to enable the economy to develop international contacts and expand market access in foreign countries. All the development efforts will count to naught, however, if citizens cannot identify with the aspirations of the country. There is a need of social cohesion so that the raw forces of competition will be tamed to improve the well-being of the citizens, and individuals are not rendered into callous digits, devoid of care and compassion by fellow human beings.

3 Conclusion

After the Second World War, the basic Harrod–Domar growth model has become a standard theory used by many practitioners in their preparation of economic development plans. Economic development strategies in the 1940s till 1960s were much dominated by the debate between balanced growth championed by Ragnar Nurse and Rodenstein-Rodan and unbalanced growth led by Albert Hirschman. Unbalanced growth doctrine favors using the limited resources to develop identified strategic sector, which will then pull and push other sectors to support and achieve overall growth. The unbalanced growth approach somewhat jived with theories based on economic dualism associated with researchers like Arthur Lewis, John Fei and Gustav Ranis. The basic dual economy theory explains how an agrarian economy with no modern industrial sector is transformed into a mature industrial economy. The idea of development as transformation from primitive traditional society to one characterized by high mass consumption was skillfully described by Rostow's book in 1961.

By the end of the 1980s, new theories that have substantive impact on economic development were propounded by academics and researchers in field of business strategies, urban planning and spatial economics. Many of these have neoclassical economics foundation and also have derived insights from increased spatial interdependence and competition attributed to globalization and availability of new communication technologies. New concepts like competitive advantage, economic cluster, agglomeration economies and GVC become increasingly familiar in development economics.

Appendix: Main Economic Plans and Reports for Singapore

1. **The Singapore Economy: New Directions**
   Published in February 1986

The Economic Committee was convened in April 1985 to review the progress of the Singapore economy and to identify new directions for its future growth. The work of the Committee is published in this comprehensive report. The Executive Summary outlines the causes of recession and policy changes recommended, future position and new directions, and highlights the fundamentals, strategies and key policies for Singapore.

2. **The Strategic Economic Plan: Towards a Developed Nation**
   Published in December 1991

The report sets out the strategies and programmes for Singapore to realize the vision of attaining the status and characteristics of a first league developed country within the next 30–40 years. The report is divided into two parts: Vision & Strategies and Implementation. There are six chapters in Part I, providing an overview of the economic landscape. It includes economic plans of Singapore, the vision, key macros strategies and two areas of specific interest, namely, industrial strategy and economic resilience. Part II iterates the strategic thrusts mentioned in Part I, in conjunction with the respective programmes identified to support the objectives of the strategic thrusts. There are a total of 8 strategic thrusts and 17 programmes.

3. **Committee on Singapore's Competitiveness Report (1998)**
   Published in November 1998

The report summarizes the Committee on Singapore's Competitiveness (CSC)'s assessment of Singapore's economic competitiveness in the short term and over the next decade. Although the CSC was formed in May 1997 with the aim of assessing Singapore's longer-term competitiveness, the onset of the economic crisis in July 1997 necessitated a critical re-examination of Singapore's competitiveness in the light of major changes in the external environment. The CSC's recommendations are presented in three parts. Part I focuses on immediate actions to enable the Singapore economy to weather the crisis. Part II looks beyond the crisis and proposes strategies to position Singapore for the eventual recovery. Part III contains the detailed sectoral plans for manufacturing, finance and banking, hub services and domestic businesses.

4. **The Manpower 21: Vision of Talent Capital**
   Published in 1999 by Ministry of Manpower

The Manpower 21 blueprint seeks to transform Singapore into a country known for its talents, ideas and capital flows. The Singapore of the future will thrive on innovations and knowledge exchanges, encouraging further innovation among its people and attracting creative visitors to its shores. Our workforce will be transformed

into prized intellectual capital with the necessary skills, knowledge, experience and capability to enhance Singapore's global competitiveness.

5. **Reports of the Economic Review Committee**
   Published in February 2003

The report of the Economic Review Committee reviewed policies related to taxation, wages, CPF and land; promoting entrepreneurship and internationalization of Singapore companies; upgrading and growing the manufacturing sector; developing services sector; growing domestic enterprises; developing our human capital and helping Singaporeans to respond to changes and take advantage of new opportunities.

6. **Science and Technology Plan 2010**
   Published in January 2006

SINGAPORE is at an exciting phase of growth as we face new challenges to sustain economic growth and prosperity. While we will continue to build on our existing strengths of an efficient workforce, clean government and world-class infrastructure, we need new strategies to differentiate ourselves and develop peaks of excellence in selected areas where we can build a sustainable comparative advantage. We should leverage on our tradition of excellence in science, mathematics and technology to grow a strong base of scientists, researchers and technologists who will provide the leadership in the next phase of knowledge and innovation-driven growth.

7. **Report of the Economic Strategies Committee**
   Published in February 2010

To sustain Singapore's development as well as ensure that growth is inclusive, the Economic Strategies Committee (ESC) recommended seven strategies for the next decade. They aim to make skills, innovation and productivity the basis for economic growth and for a broad-based increase in living standards for all citizens. They also aim to make Singapore a distinctive global city and an endearing home.

8. **Research, Innovation and Enterprise 2015**
   Published in 2011

Research and Development (R&D) is an important part of Singapore's economic strategy. It is a source of innovation and value creation. Since the first National Technology Plan in 1991, our investments have supported the transformation of Singapore's economy by upgrading existing industries and catalyzing new growth areas.

To further boost research, innovation and enterprise (RIE), the Singapore government will invest $ 16.1 billion over 2011–2015. The RIE2015 Plan sets out Singapore's key R&D strategies, to support our long-term vision to be a research-intensive, innovative and entrepreneurial economy like Sweden, Finland or Israel.

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Change and Continuity in National Economic Planning: A Methodological Survey

Mehmet Babacan

1 Introduction

Understanding economic development as a change in economic life, Schumpeter (2004, p. 63) argues that the explanation of economic development should be sought at the social facts outside the economic theory. Changes in economic data may be just pointing out to a simple adaptation of the economy while economic development encompasses wider and deeper changes in the structure of the economy.

Neoclassical line of economic research until 1990s, disregarded the role of technology or geography as well as institutions or policies in determining the pace of growth and providing sustainable development. However, as discussed by Easterly (2002), Acemoglu and Robinson (2012), among others, these factors explain income and welfare differentials among nations. Further, endogenous growth theory, introduced by Romer (1986 and 1990) and others (i.e., Aghion and Howitt, 1992) revisits the Schumpeterian notion of "creative destruction" based on technological achievement in defining sustainable growth. In this context, structural change in the economic sectors or economy as a whole were realistic and relevant factors shaping the developing economies suffering from severe market imperfections and lack of proper basis for industrialization without government intervention.

Even though the new institutional economics underlined the importance of institutional factors in explaining long-run economic performance, as stated by Easterly (2006a), a Big-Push planner at the top was not considered to overrule the economic development led by agents motivated from the bottom.

Structuralist perspective however diverged sharply from the neoclassical view. Neoclassical view assumed free factor mobility across the sectors as well as self-fulfilling market dynamics unlike the assumptions of structuralists advocating comprehensive economic planning. Planners were much more concerned over quantities

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both on input and output levels. The main divergence between the two thus centered on the efficient allocation of resources and prices signaling true economic values for the goods and services (Baum and Tolbert 1985, p. 21).

The term "planning" however might refer to various definitions. Lavoie (1985, p. 2) for instance include only "policy measures" that aim at shaping the whole economy under a specific government agency. The long adventure of economic planning first was in a "comprehensive" form envisioned by Marxist critique of capitalism, which meant administrative control of the whole economic forces. Until the mid-1950s, comprehensive planning was implemented in most of the socialist economies under the Soviet control. National economic planning then transformed into a more fragmented version in the case of developing countries outside the Soviet world. Softer comprehensive planning played an important role for countries like India, Bangladesh, Turkey, Sri Lanka or Ethiopia during the whole course of 1960s. Detailed and comprehensive planning based on structuralist approach within the period of 1950s and 1960s did not succeed in achieving targets, however. Even at times where targets were met, there was unsatisfactory implementation while plans were too often overambitious.

In 1960s, input–output models by Leontief and Kalecki's Harrod- and Domar-type growth models that incorporate new planning elements on the methodological front were introduced. Leontief's non-comprehensive economic planning models of input and output indicated a shift towards less extensive modeling efforts while the central planner as the policy-maker still enjoying its superior informational position over the rest of economic actors. Lavoie (1985, p. 96) for instance credits Leontief among other non-comprehensive planning proponents since he was aware of the "knowledge problem" relevant for rational policy-making as well as the lack of adequate data to rely upon when providing sectoral targets. Accordingly, he insisted "that planning was a general method for improving the process of policy formation and implementation…" (Lavoie 1985, p. 97).

Following Tinbergen's use of extensive quantitative economic planning models, central planning agencies with 5-year development plans gained critical importance both in targeting economic indicators and analyzing interindustry relations. Having incorporated econometric models that predict much of the macroeconomic indicators, Tinbergen–Theil model prevailed during the 1960–1980s, until the prevalence of the rational expectations models.

Proponents of economic planning abandoned traditional aspects of comprehensive planning after mid-1960s as operational plans for 1 or 5 years were often including sector-based targets with a general framework of perspective planning that envisions a certain rate of gross domestic product (GDP) growth, capital-output ratio, and efficient investment ratio. A very basic difference between the planner's assessment of the role of markets and the operating of firms however was on the decision-making processes. While neoclassical view argued that markets did also suggest what to produce, how to produce, and at what price to sell in light of perfect information, planners envisioned the market forces as commanded or at least guided economic actors in those terms. On the economic policy front, economic planners seem to have lost ground while neoclassical arguments tended to include some ele-

ments—though not explicitly—from economic planning experiences since 1980s. Easterly (2006b, p. 9) for instance cites the continuity in the mindset for planning at the backstage where he extends the definition of economic planning and refers international institutions such as the United Nations (UN), World Bank, and even International Monetary Fund (IMF) as playing the role of planners. Again despite the formal demise of economic planning in the literature and political discourse over the last half century, Easterly (2006b, p. 48) argues that planners increased the level of top-down intervention after each failed planning experience. Baum and Tolbert (1985, p. 22) at this point state that neither the neoclassical view of pure market mechanism nor the structuralist approach envisioning a central comprehensive planning, which requires enormous number of data as well as advanced techniques for analysis, would be sufficient to grant economic development alone.

National economic plans in different countries gradually began to pay more attention to market forces. Some Eastern European countries such as Yugoslavia and Hungary experienced greater reliance on prices and markets as early as 1950s and 1960s, respectively. Followed by China in 1970s and even the Union of Soviet Socialist Republics (USSR) in early 1980s, countries with centralized comprehensive planning exhibited new forms of aggregate planning with an increased use of sophisticated mathematical tools. As suggested by Baum and Tolbert (1985, p. 24), combination of public investment programming and forecasting (not targeting) for the private sector is advantageous over the pure structuralist or neoclassical views of economic development.

The process of *learning by doing* has been essential especially in the planned economies. Governments preferred to adapt new approaches including several additional elements into their programming of public investment as well as carrying out policy tasks. These could be listed as consultation, flexibility, selectivity, policy coordination, and information and monitoring (Baum and Tolbert 1985, p. 25).

As an extension to the debate around change in methodology and continuity in the logic of planning comes from Ackoff (1977, pp. 210−211) claiming that the real reason behind widening gap between developed and developing nations (with an emphasis on Mexico) was not economic or technological but cultural. He cites corruption, paternalism, patronage, conformity, and waste of time as the five examples of critical cultural obstructions to Mexico's development. This line of discussion, which requires a distinction between theoretical and practical aspects of planning, is however out of the scope in this study.

2 Theoretical Aspects of Quantitative National Economic Planning

On theoretical and purely scientific fronts, socialist economic system of simultaneous perfection or rationalization of resource allocation as well as ex post distribution of wealth is very much alike the perfectly competitive markets as suggested by Schumpeter (1954, p. 989). Following the Walrasian system of equations to settle

all the markets (goods, finance, etc.), a capitalist economy will technically enforce efficiency, which could also be attained via a central social agency[1] that has the perfect information of individual behavior and market indicators. Therefore, it seems that both the neoclassical framework and socialist planning are in search of perfect (or symmetric) information. Any framework including that of Edgeworth or Pareto to develop a general mechanism of economic behavior would therefore converge at the socialist framework, which provides a more static version according to this view.

Walras could be said to precede Leontief in terms of systematic modeling of interindustry relationships. The first is important in neoclassical while the latter is very significant in (socialist) economic planning literatures. Nevertheless, quantitative dimension in economic planning gained its utmost importance with Jan Tinbergen. Acting both as an econometrician and first director of Dutch Central Planning Bureau from 1945 onwards, Tinbergen derived formal conditions to "control" a linear economic system. Providing an instrument vector that could guarantee fixed targets under static or linear system of equations, Tinbergen's (1956) approach resolved the issue of how to formalize economic policy variable/instrument into the model. However, the foremost limitation of the model was that the number of instruments should not fall below the number of targets. Theil's theoretical extension to Tinbergen's model eased the rigid condition of specific targets and made them flexible.

Tinbergen, Theil, Frisch, and other founders of theory of economic policy put more emphasis on normative aspects of an aggregate economic policy rather than understanding the effects of specific policy instruments. Therefore, Tinbergen's (1956) contribution is on the formation of central planning and the role of governments. His basic methodology in central planning will be discussed under one of the next sub-sections.

3 Experiences in National Economic Planning Methods

For the last half century, numerous economic plans have been formulated all around the world, especially developing countries. Despite the common major elements however, distinct economic planning schemes emerged either by region or economy. Countries in sub-Saharan Africa for instance were often guided by former colonial institutions, while in Latin American nations; mostly less formal plans were in place with almost no real implementation. Emerging Asian economies such as Japan, Korea, Singapore or Taiwan on the other hand managed to find a way to invent their own type of economic plan, usually referred as comprehensive coopera-

[1] Schumpeter (1954) pictures an economic system with a definite amount of resources to be distributed among "comrades" when he cites Wieser, Pareto and Barone as *de facto* economic planners or inspirers of a socialist economic modelling. Barone's (1935) "The Ministry of Production in the Collectivist State" (in Collectivist Economic Planning, ed. F. A. Hayek) and Oskar Lange's (1936b and 1936a) "On the Economic Theory of Socialism" are considered as pioneers in socialist economic planning theories that somehow compromise with the tools of neoclassical analysis, i.e., "market socialism."

tive planning. Other nations such as Mexico, Thailand, and Hong Kong relied less upon central planning while putting more emphasis on well-functioning markets and price movements in order to guide investment (Baum and Tolbert 1985, p. 20). Even Hayek (1935, p. 22) stated that "labeling partial planning as irrational was equivalent to saying that the only form of capitalism which could rationally advocated was complete *laissez faire*."

3.1 Comprehensive Economic Planning

Comprehensive economic planning followed the end of WWII, with a strong push in many developing countries. Since 1950s, most of economic planning efforts turned into a guided public sector investment and development rather than dictating a comprehensive economic plan with selective inputs and target outputs. The most well-known types of comprehensive planning were in the USSR, followed by Eastern European and some Asian nations. These were highly "comprehensive and *dirigiste*" which means they include intensive direction and control elements (Baum and Tolbert 1985, p. 19). Given the Russian 5-year plans, wartime plans made in the USA, post-war national development programs led by governments in European nations, the Japanese efforts for national economic development aided by international institutions such as the World Bank, comprehensive economic planning became highly popular in the rest of the world (i.e., developing countries). One should definitely note the apparent success of Soviet-led socialist economic planning took place between mid-1950s and late 1960s. The rapid industrialization in certain sectors under the Soviet-type economic models inspired many other nations to pursue such a goal whether via import-substitution based development or central planning with heavy involvement of governments.

3.2 Socialist Economic Planning as a Special Case

Rightly to be discussed under the comprehensive or traditional economic planning beginning with early 1920s as a Marxian experiment, Boratav (1982, p. 40) states that the Soviet-type planning put structural change in economic sectors forward as the ultimate goal or the strategic objective. Beginning with early 1950s, Eastern European and Soviet states adapted a planning model where strategic sectors were defined in accordance with the countries' industrial experience. Agriculture was usually determined as the foremost strategic sector in order to provide capital surplus that would in turn support rapid industrialization in certain sectors. Nevertheless, transfer mechanism between agricultural and industrial sectors to promote the main targets of central planning as well as a collectivist agricultural base were uneasy tasks to fulfill in most of the Soviet countries.

Hayek (1935) discussed the means and ends of both socialist and modern planners while he was more concerned over the means rather than the ends since he

asserted that those means could be in use for achieving other ends. Ownership of economic factors was clearly at the center of his critical arguments. In spite of referring to different types of socialism (i.e., Continental and Eastern European), Hayek (1935, p. 18) insisted on that there was at least a minimum assumption of "central control which would still enable the community to retain command over the income derived from the material means of production." Needless to say, Hayek saw no way out for planning without some sort of central control which was intolerable for him.

Following traditional socialist planning, perspective planning in Soviet economies also targeted fast-forward industrialization and high growth rates via capital accumulation provided by less advanced sectors and distribution towards more advanced sectors. Both in traditional planning based on either regional or sectoral preferences and perspective planning that envisions a comprehensive framework, catching up with Western industrial countries' technological frontier was seen as the only way out poverty as well. Perspective planning and operational planning (practically similar to first generation planning models) were different in their bottom-up and top-down approaches which could also be defined as comprehensiveness and fragmentation. Perspective planning and operational planning both in Eastern European and Soviet states were usually implemented together, thus being complementary to each other. While operational plans (whether 1 or 5 year) were based on sectoral divisions and targets, perspective planning is more comprehensive. 1961–1975 Polish perspective plan prepared by Kalecki, for instance, guided 1961–1965 operational plan.[2] This model was so similar to that of Harrod and Domar's growth model both in terms of its formulation and even the definitions. However, basic difference came from its ability and use of certain techniques to dismantle the items in the comprehensive model in order to determine the inefficient investments, composition of consumption, and trade to revise the capital-output ratio and domestic productive investment ratio.

Resulting from discussions around the approach to central planning during 1960s, socialist economies went through a gradual series of reforms that granted business enterprises a higher role and autonomy in their economic decisions. Boratav (1982, p. 258) refers this movement towards less central planning scheme in the socialist economies as a switch in implementation of the plans from highly central model based on policy directives to decentralized model based on parameters. Despite the rise of perspective planning in one hand during 1960s, this description is also consistent with Kalecki's experiment in Poland where the comprehensive model allows for revisions in the capital-output and productive investment ratios. On the implementation phase (i.e., operational plans), business enterprises were now granted a central role in the socialist world.

As it happened to be the case in Poland, rapid industrialization with a central planner in play (i.e., State) was true for most of the Eastern European countries, following the WWII. Lange (1949) regards those examples of comprehensive economic

[2] For further discussions on the relationship between perspective and operational planning, see Boratav (1982), pp. 46–50.

planning as success stories. Accordingly, those economies consisted of two sectors, one of which was socialized and the other was a private enterprise sector. While for the first one normative plans were operational, for the latter it was a set of certain previsions (forecasts) made. In all cases, Eastern Europe was regarded as efficiently operating planned economies by Lange (1949, p. 170) due to their operation on the basis of full employment which exists in an agrarian surplus population form while that surplus population was utilized by rapid industrialization process.

3.3 Aggregative Planning (Input–Output Models)

Most used versions of input-output models would take central planners from final demand (aggregate demand in a Keynesian framework) to sectoral structure (i.e., gross production) in an economy. With the rapid improvement in computer science and technology, one could easily observe the increasing role of more numerical and mathematical models to be incorporated into development plans. Beginning with implementation of Leontief's input–output models for depicting the interconnectivity between sectors, further achievements in computer technology enabled planners to utilize other techniques such as linear and optimal programming. Surprisingly however, socialist planning models seemed to adapt such mathematical programs very lately compared to the Western or other developing nations which were carrying out less centralized and comprehensive economic plans.

A more mathematical approach to planning in socialist economies emerged by late 1950s, however with a later implementation date. Despite their significant contributions to the mathematics of economics, socialist plans dismissed the role of more analytical and mathematics-based approaches for a long time. Negative sentiments and attitudes towards Western economic schools derived such ignorance in the socialist countries that retained those economies from the use of mathematical tools in planning.

Leontief's input–output models however usually took an *ex post* from rather than an *ex ante* which made their use more limited in planning in the socialist economies. Basic difference between the Western-type input–output models and the Socialist-type was about the latter's inclination towards reconcilement between standard input–output models and traditional planning methodologies. In sum, the socialist input–output models were emphasizing the quantity produced far more, compared to their Western counterparts. Input–output models were also used to test the consistency of traditional central plans. Also sectoral implications were expected to be derived.

A final point in terms of the change in methodology should be made on *optimal planning* which is a form of linear programming adapted to national economic planning. Operating under a set of constraints and aiming at either minimizing or maximizing the objective function's mathematical expression, central planners in socialist economies made effective use of optimal planning during 1970s. This concept of planning picked up from industrial divisions (i.e., partial equilibrium analysis)

while ending up with a general planning scheme (i.e., general equilibrium analysis) for the whole economy. Still, discussions around the use of mathematical models in socialist economic planning were partly seen as secondary, where arguments on policy shifts being considered as primary.

All in all, mathematical models including input–output techniques, optimal planning tools or perspective planning could be assessed as an ongoing effort to build up a more comprehensive planning framework on the theoretical front while achieving more consistent results at industrial level on the practical front. In socialist world's experience, mathematical models were used in construction of plans whereas in implementation of plans there was a tendency of unsystematic decentralization.

That new wave of change in planning methodology manifested itself by less central organization and designing of plans and more dismantled approach to planning. For instance, the emphasis on quantity produced and its value in total GDP shifted towards profitability and margins at operational level. Highly detailed and centralized models were gradually simplified by 1965. Since mid-1960s, comprehensive perspective planning was used as a tool for rapid industrialization in the much developing world. Even the UN was referring to the guidance of comprehensive planning for operational planning. A major criticism of this approach to the first generation of planning methodology could be defined as the lack of sectoral diversity in industrial development. In aggregative planning based on input–output models, there are specific uses such as the ability to make sectoral and regional analysis, calculate foreign reserve/currency requirements for developmental projects, test the effects of import substitution policy, enable to make investment choices, help preparing national budgets, calculate the requirements of a certain investment program, and design public sector properly.

3.4 Indicative Economic Planning

Coined by the term "visionary national economic planning," Molitor (2008, p. 105) refers to the indicative economic planning experiences of France and Germany following the WWII. These European powers were in the "reconstruction period." Tinbergen (1980) provides a handy survey of the early experiments of indicative planning. Being one of the two major planning movements, indicative macro-planning in the Western countries had shared elements while on the policy grounds there were differences in implementation.

As Estrin and Holmes (1990) underline the differences between indicative economic plans effective in major European countries, they also provide the understanding that formation and management of expectations as a policy coordination tool was common in many countries. Indicative planning in general could be regarded as an effort to sustain a smooth, stable though rapid economic growth in line with the growth of natural resources, technological progress and accumulated savings in an economy (Black, 1968).

3.5 Central Planning

Beginning with the description of central planning process, Tinbergen's (1964) framework continued on the analysis of its effects in the general economic process and search for the optimal extent or level of central planning techniques. As a mathematician and quantitative economist, Jan Tinbergen based his theory on a homogenously linear Cobb–Douglas macroeconomic production function (De Wolff and Linden 1988, p. 320). The model was fixed by several relationships such as growth rate of capital being proportional to total production, and the wage rate equaled the marginal labor productivity where the most important notion was an exponentially increasing technology over time. That assumption on technology led increasing productivity in total output. Tinbergen has dealt with distinct economic policy issues, including monetary and trade (Arrow, 1958). His main contribution to economic planning literature however is the central planning theory and practice during his directorate years at Dutch Central Planning Office.

Central planning had traditionally two main sources in the history of planning: Russian communist (or socialist) planning and Western macro planning. Tinbergen (1964, pp. 4–5) defined the first as a designed economic structure to guide all economic processes in detail while the latter being a result of efforts to understand the operation of the economy as a whole. There has always been a strong flow of information in terms of methodology and the use of models as Westerners adapted much of the input–output analysis while became increasingly more interested in the development of low-income countries. Meantime (up until the 1970s), Russian and Eastern European planners have adapted some of the market fundamentals in their models which implied decentralization in planning up to a certain extent.

Before constructing a central plan, Tinbergen (1964, p. 8) argued that the most characteristic features of the task of planning were three: (1) a plan refers to the future, (2) the plan is based on a number of aims or targets which should be specified in order to carry out the planning process, and (c) requires a coordination of the means of economic policy. Another crucial element was predictions and forecasts, he also underlined. On the policy front, a central planning agency should be involved in such activities: (1) a *forecast* about the economic situation should be made, (2) second phase of activities should include a comparison between the forecast and the *aims* of economic policy, and (3) third phase must provide the estimation of changes in the *means of policy* needed to meet the aims as Tinbergen (1964, p. 10) referred as the most important phase of planning. Right away start up with the construction of the plan before engaging in a forecast activity is also possible.

The next phase in central planning is often referred as "procedure" at which the approach makes dramatic difference depending upon whether it is "starting from below" or "above." In practice however, it is usually "starting from above." A second element with that regard is the extent of democracy in preparing and carrying out the plan. Procedural differences among and within countries are also evident.

On the methodology of central planning, it is the scientific technique employed in preparation of the sets of figures constituting a forecast or a plan, even more specifically figure that fulfill a number of conditions (Tinbergen 1964, p. 22). The

so-called "model" of the economy or society is that set of relations existing among several variables describing the economy, or society. Given variables are data in a forecast and in a plan they become partly the values of the target variables and partly the data not controlled by government. Among many, Tinbergen (1964, p. 22) cites some well-known data not under government control are population growth, the situation of the world market, and crop figures. Instruments of economic policy that are controlled by government are taxes, public expenditures, interest rates, and import restrictions.

Yet another contribution to the theory of central planning, still in line with Tinbergen's quantitative analysis, is from Frisch's model of dynamic input–output matrix. Some key features of his model are (Tinbergen 1964, p. 26) that "(i) investment expenditures in a single channel may extend over several years and show a certain time pattern, (ii) a difference is made between capacity available and capacity used in any sector, (iii) an investment may change the input-output coefficients of some sectors, and (iv) effects beyond the planning period of investments made are not neglected." As an alternative however, Tinbergen (1964, p. 26) cites a method of planning with stages where the process is dismantled into pieces. A simple distinction between the following stages is made: "(i) in a *macroeconomic* stage, the rate of investment is chosen, implying a choice of the rate of development, (ii) in a *sector* stage, the development of a number of sectors is estimated, (iii) in a *project* stage, a choice between a number of projects is made, (iv) there may also be a *regional* stage, either preceding (ii) or following it or even following stage (iii), depending on the nature of planning." The critical ratio of benefits to costs constitutes a major role in analyzing the optimality of a plan.

4 Decline of National Planning and the Rise of Regional Development

With the new tide of deregulation and decentralization of industrial policy in the Western world (led by the USA and Britain) in the early 1980s, economic planning was degraded in the development literature. However, theoretically solid arguments put forward by neoclassical economics were not enough to bridge the gap between the real world and markets. Numerous divergences between the two justified the role of governments in intervening occasionally. Likewise, indicative planning efforts in France, Italy or the Netherlands[3] were also justified in order to provide a basis of required information for rational market choices, as stated by Klosterman (1985, p. 7). Justified in many fronts, a sense of economic planning in practice could first produce the necessary information via indicative planning which in turn leads rational choices in the markets. As a secondary role, planning might help development of regional and urban information systems in order to make long-

3 See Wellisz (1960), Kindleberger (1967) and Du Boff (1968) for detailed discussions on the rise and fall of different forms of indicative economic planning in Europe

term projections over population, economic, and land use (Klosterman 1985, p. 9). Designing a new industrial context leading to economic development should therefore include public sector planning to perform four vital social tasks: promoting the community's common interests, considering the externalities stemming from individual or group actions, improving the information base both for the public and private decision-making, and considering the distributional effects of private and public actions (Klosterman 1985, p. 15).

In an effort to find a way between Soviet-type commanded and centrally planned economy and American-type centralized corporate control for instance, a new idea of "economic democracy" emerged by early 1980s. Increasing economic participation was the main driving force as workers' control over the workplace and means of production would in turn increase efficiency. This idea of workers' control was also consistent with national economic planning while differing much from traditional socialistic view on economic structure. Despite its emphasis on the role of labor-managed market economy, "economic democracy" has never been successful in terms of creating a new vein for economic planning theory. On practical fronts, however, their suggestions were contradicting the very idea of planning from bottom-up since the crucial role attributed to "central (policy) coordinator for otherwise decentralized policies" (Lavoie 1985, p. 161). Similarly, the proponents of "reindustrialization" in the USA were calling upon central bodies to formulate new policies via new institutions to revive country's industrial base as was the case in Reconstruction Finance Corporation (RFC) during the "New Deal" or the Japanese Ministry of International Trade and Industry (MITI). Bailing out traditional or old industries as well as cities, for instance, was long discussed among the proponents of "reindustrialization" in order to reverse the economy's growing tendency towards services sector(s). This call for partial planning or policy coordination inclined to re-industrialization of the country with "a second industrial revolution" however did also fail.

Although not much dominant either in European or world economy in terms of their share, smaller states (i.e., Switzerland, Netherlands, Denmark, Norway, Austria, Belgium, and Sweden) in Europe displayed a more cautious and moderate way between an unbalanced liberalization and a solid autarky considering the relationship between state and economy. Shifting away from a rigid central (and often comprehensive) planning-based industrialization towards an unregulated market economy in most of the developing world, many states faced difficulties in reconciliation of market and social forces. *Democratic corporatism* of small European states however could be said to tolerate the contradictions in economic and political domination (Katzenstein 1985, p. 192) since it has enabled such states adapt market competition as well as include "all significant actors in decision-making process." (Katzenstein 1985, p. 192) For the most of 1970s, small European states following such an approach seem to outperform the large industrial economies in Europe.

A major difference between those small European states and much of the developing countries in the world however lies in their relationship with the world. While the first group of countries largely depends upon exports as open markets located nearby major industrial European economies, the latter could be said to

largely depend upon import of goods, capital, and technology although consisting of different types of countries (Katzenstein 1985, p. 202). Therefore, the relationship between social, political, and economic forces in both examples exhibits dramatically different forms even though there is a general convergence towards building up a "flexible adjustment strategy" (i.e., to change as stated by Katzenstein) and more democratic and participatory economic policy-making around the world.

On the other hand, whether based on neoclassical assumptions of competitive markets or Dixit–Stiglitz type imperfect markets with monopolistic competition, theories of international trade and spatial economics that envision industrial clustering should include a guiding principle or at least a strategic industrial policy-making component in it. Since Porter's (1990) competitive advantage notion depicted by a diamond system, a highly localized process which creates such an advantage yield sectoral specialization of countries as Porter (1990) stated. No single country could specialize in all industries and ultimately each country would become natural home for a specific industry or particular industries at most, accordingly. In terms of methodology, Rosenfeld (1997, p. 10) implies that clustering reaches far beyond the scope of input–output tables, although they can detect the interindustry transactions incorporated within production channels, in characterizing the relationship among firms and (endogenously) creating mutual benefits. Government's role in both models of clustering is to facilitate agglomeration of productive inputs, including labor, foster research and development activities via incentives, and provide a suitable and foreseeable economic environment for specialized production with high value added. This chain could only be achieved by backward and forward linkages suggested by spatial economics or theory of agglomeration. The theory of competitive advantage for clustering seems to work fine with relatively developed nations since markets are more institutionalized compared to the rest of the world. Thus, still being involved in designing the industrial policy and economic activity indirectly, governments are playing a crucial role in strategic positioning of countries.

Making a clear distinction between the major "mature economies" and developing ones, Ranis (1972, p. 289) referred to market imperfections in the case of the latter. Accordingly; lack of enough number of entrepreneurs sensitive to market dynamics such as price signals, ideological reasons for resisting to market-oriented systems as a result of imperial past for many countries which emerged from colonialism, lack of labor or resource mobility and information flows, and existence of major institutional constraints were among the special patterns describing the developing world. Primary question in economic planning was efficient resource allocation and in the case of import-substitution model of industrialization for instance, quantitative restrictions were often preferred over tariffs. Therefore, more centrally planned an economy was, usually less room was left for international trade. Therefore, Ranis (1972, p. 291) concluded that the policy choice under such a scheme could be "characterized as one of trying to displace (i.e., international) markets rather than attempting to work through them."

5 Convergence or Divergence: From Economic Planning to Industrial Policy

Introduction of trade theory in understanding the evolution in economic planning (of sectors) has constituted as significant threshold. Likewise, location theory together with trade theory opened up new space for regional development and industrial agglomeration analysis. Isard (1954) stressed the importance of distance from major industrial nations for a developing nation within its spatial spectrum. He also referred to the possible contribution of a location theorist to trade theorist by suggesting breaking up imports or exports into sectors and emphasizing the importance of distance substitution. Both contributions would serve best to international trade theory under an interregional input–output model, provided by Metzler, Isard (1954) asserted. Following Viner, Chenery (1961) underlined the importance of dynamic comparative advantage theory in order to fulfill long-run economic achievements. Bruno (1970) only seconded Chenery (1961) with a formal model of dynamic comparative advantage with the implication of intertemporal optimal allocation of inputs which grants long-run growth.

Fujita et al. (2001, p. 18) clearly identify von Thünen's model for economic space, which is a benchmark in theory of spatial economics, as taking the emergence of cities or business districts as given. A theory of agglomeration based on external economies should therefore accompany von Thünen model in order to understand endogenous location of town(s). Introduced by Alfred Marshall, the concept of external economies provided a reasonable explanation for the formation of "industrial districts" and cities. Specialization in production of inputs, labor market pooling, and spread of information were three basic trivets of geographically concentrated production bases. Along with von Thünen's analysis, another approach in location theory which has long been "a German intellectual product was central-place theory by Christaller (1933) and Lösch (1940) which explained the emergence of 'central places' by the trade-off between scale economies and transportation costs." (Fujita et al. 2001, p. 26).

A significant extension to the neoclassical competitive market hypothesis and standard trade theory came from Dixit–Stiglitz model of monopolistic competition, which enabled an imperfect market structure that in turn yielded increasing returns. Spatial models with imperfect markets therefore paved the way for explaining new industrial clusters motivated by increasing returns to scale while advancements in international trade practices reduced transportation costs. The monopolistic competition model should also be regarded as a new gate to understand both internal and external economies of scale. The role of location theory on the other hand is crucial since the introduction of *Interregional and International Trade* by Ohlin. Forward and backward linkages[4] within and among regions are expected to lead a process of

[4] The first is a resulting effect of a relatively large manufacturing sector which implies lower cost of producing final goods, while the latter is an outcome of large local market for intermediaries provided by a large final goods sector, as stated by Fujita et al. (2001, p. 240). A very useful assumption made by Fujita et al. (2001, p. 241) in this regard is treating the manufacturing industry as a single-sector for many goods. Therefore they manage to provide a input–output linkages without adding any new industries.

specialization that concentrates manufacturing or particular industries in a limited number of countries (Fujita et al. 2001, p. 240).

The rapid increase in demand for manufactured goods enforced a fast forward industrial agglomeration in many developing nations during the last three decades. Much of the development experience around the world suggest that countries industrialize first do so by developing labor-intensive industries first while in some cases such as Japan or China, they do this not only for home but also the world as a whole (Fujita et al. 2001, p. 264). For the purpose of our discussion however, key elements in defining the extent of forward and backward linkages in an industrial base are whether the industries are "consumption-oriented" or otherwise, whether these linkages are providing a suitable environment for diversity of intermediate goods.

Empirical evidence suggests that income differential between some nations and others are widening over time despite the dominating growth theories with assumptions of economic convergence. Industrial agglomeration across regional or national entities therefore provides a neat explanation for such a divergence. Along with the interindustry trade, the intra-industry level of trade is another determining factor in regional concentration of certain industries. Increasing emphasis on industrial clustering with the important implications of level changes in input–output tables does also indicate that spatial economics based on location theory offers our minds that there is just something more than chance when nations engage in certain industrial activities that either grant them economic development or decline. Standard theories of comparative advantage seem not to be good predictors for industrial clustering since in many cases such as Silicon Valley or Hollywood, industries are observed to be more highly clustered (Fujita et al. 2001, p. 284). Empirical studies relating economic integration with the level of industrial clustering tend to find that there is a positive correlation between the two.

Despite the ongoing discussion on the reasons for regional industrial concentration and divergence of countries' industrial structures, one should state that on the methodological front there is a convergence towards the role of strategic industrial policy that somehow incorporates elements that once were useful in input–output models of socialist economic planning. Even though the notion of economic planning has disappeared over the last three decades, one should clearly identify the role of strategic industrial policies that design concentration of industries as well as dispersion of population across cities at national level, urban economics and planning that provide the most efficient allocation of land and use of geography at regional level, and the proximity of firms that are similar to each other in industrial terms at sectoral level.

6 Conclusion

Through the life of national economic planning, it has evolved into numerous types given different time and geographical zones. Despite the apparent dismissal of planning from the macroeconomic literature, its ghost is still on developmental policies.

Following the same logic of Chakravarty, Malinvaud (1992, p. 24) for instance adds to the discussion that planning could already exist where there is no formal national plan made. As Lavoie (1985, p. 237) puts it rightly, not even one society solely relied upon tradition, market or planning. The truth in search of national economic development lies somewhere in between and becomes a result of that mutual correlation. Stiglitz (1989) on the other hand distinguishes between developed nations with a significant share of imperfect markets, which sometimes could find government intervention useful, and less developed ones where the scope of government intervention is usually higher. In both cases, he states, one should be careful to identify specific market failures to be corrected as well as limiting government intervention.

Whether it takes the form of comprehensive (as seen in socialist), quantitative (as seen in Tinbergen's models) or central economic planning with 1 or 5 years' periods, one should not exclude the market forces and dynamics such as information, pricing, and other decision-making processes. In that regard, Coase (1937) refers to society as an organization rather than a pure organism which is effectively managed by price mechanism to provide market efficiency. His envisioning of the firm yields to the conclusion that in fact an owner when organizing departments at his firm replaces for what is called the price mechanism. Therefore, he states that the model he thinks of is rather close to the economic planning than it is to individual planning. Similar arguments on Coase's position claim that transactions cost argument was made on purpose with a specific thought in his mind which was rooted in the exchange of ideas in the socialist calculation debate (Bylund 2013). The whole literature in New Institutional Economics could therefore be interpreted as an attempt to provide further answers to problems not addressed by standard (neoclassical) theory.

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Part II
Economic Planning: Selected Experience

Japan's Economic Growth and the Role of Government

Takeshi Niizeki

1 Introduction

Japan experienced remarkable economic growth over the period 1955–1973. Figure 1 depicts the natural logarithm[1] of real gross domestic product (GDP) per capita in Japan from 1955 to 2009.[2] The average annual growth rate of real GDP per capita over the period 1955–1973 was around 8.1 %, an accomplishment known as the growth miracle. In 1973, when the first oil crisis occurred, the Japanese growth miracle ended, but the economy still showed steady growth until 1990. At the beginning of the 1990s, the bubble economy collapsed and the average annual growth rate of real GDP per capita over the period 1990–2009 was only 0.8 %, resulting in this period widely being referred to as the "Two Lost Decades."

This chapter examines some of the possible driving forces of the growth miracle and potential reasons for the "Lost Two Decade" and discusses the role of government in these two periods. To get a sense of the pattern of growth of the Japanese economy, it is useful to conduct a growth accounting exercise. Growth accounting allows us to determine how much a specific factor contributed to the growth rate of output in a specific time period. It is assumed that the production function is Cobb–Douglas and capital and labor are the only inputs for production. That is,

$$Y_t = A_t K_t^{\theta} H_t^{1-\theta}, \tag{4.1}$$

[1] Note that the natural logarithm of a variable can be interpreted as the growth rate of that variable.

[2] Data based on the 1993 System of National Accounts are available only for years after 1979. Data for earlier years are based on the 1968 SNA, which have been integrated with the 1993 SNA data by extending back the latter by the annual change in the corresponding 1968 SNA series.

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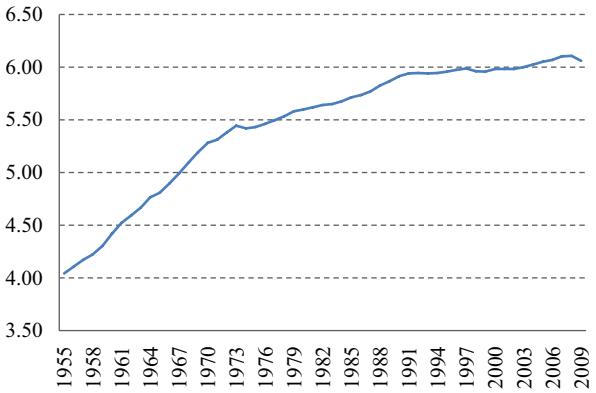

Fig. 1 Natural logarithm of real GDP per capita. (Note: Data up to 1979 are based on the 1968 System of National Accounts, while data after 1979 are based on the 1993 System of National Accounts. Source: Author's calculation based on the National Accounts of Japan, Economic and Social Research Institute, Cabinet Office)

where Y_t is real GDP, A_t is total factor productivity (TFP), K_t is real capital stock, H_t is aggregate hours worked, and θ is the capital share of output. Dividing both sides of Eq. (4.1) by total population yields the per capita production function,

$$y_t = A_t k_t^{\theta} h_t^{1-\theta}, \tag{4.2}$$

where lower-case letters represent per capita variables. If we take the natural logarithm and then take the derivative of both sides of Eq. (4.2) with respect to time, the growth rate of output can be decomposed into the growth contribution of TFP, capital input, and labor input:

$$\%\Delta y_t = \%\Delta A_t + \theta \%\Delta k_t + (1-\theta)\%\Delta h_t, \tag{4.3}$$

where %Δ represents the percentage change of a variable. Table 1 shows the average growth rates of output and the contribution of each of the three components over different time periods.[3] The table shows that the high economic growth in the 1950s and the 1960s owed to the rapid accumulation of capital stock and rapid TFP growth. Through the lens of the neoclassical growth model, the rapid accumulation of capital in the early periods is no surprise. The capital destruction during World War II raised the marginal product of capital, leading to vigorous investment during these periods. TFP was also an important factor for rapid economic growth, especially in the 1960s. TFP growth is generally considered to represent the growth contribution of technological progress in the broadest sense. Against this background, the next section takes a brief look at the role of technology imports in TFP growth.

Output growth decelerated substantially during the 1970s and 1980s as both capital accumulation and TFP growth slowed, and then slipped further during the 1990s and 2000s, falling to less than 1 %, with TFP barely registering any growth at all during the 1990s, although it accelerated somewhat during the 2000.

[3] The capital stock series are obtained using the perpetual inventory method, assuming that the initial capital-output ratio is 0.77 (the value is taken from Hayashi and Prescott 2002) and the depreciation rate is 0.1. The capital share of output is set to the conventional value of 1/3.

Table 1 Growth accounting (%)

Period	Output growth rate	Contribution of		
		TFP	Capital	Labor
		Growth	Input growth	Input growth
1955–1959	7.8	2.2	4.5	1.0
1960–1969	9.0	5.4	3.8	−0.3
1970–1979	3.2	2.2	1.7	−0.6
1980–1989	3.2	1.5	1.5	0.2
1990–1999	0.7	0.1	1.2	−0.6
2000–2009	0.9	0.9	0.5	−0.6

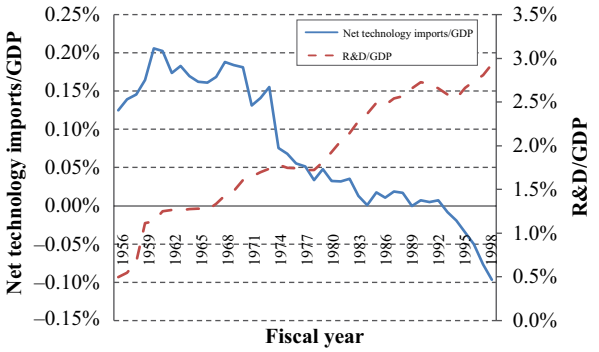

Fig. 2 Net technology imports and research and development (*R&D*) relative to gross domestic product (*GDP*). (Source: Statistical Survey Department, Statistics Bureau, Ministry of Internal Affairs and Communications)

The remainder of this chapter looks at Japan's growth experience during the postwar period in greater detail. Specifically, Sect. 4.2 examines some possible explanations for the growth miracle during the immediate postwar period as well as the recent "Two Lost Decades." Section 4.3 then discusses the role of government in these two periods, while Sect. 4.4 concludes the chapter.

2 Possible Explanations for the Growth Miracle and the "Two Lost Decades"

2.1 The Growth Miracle, 1955–1973

The growth accounting exercise in Sect. 4.1 showed that TFP growth played an important role in the growth miracle, especially in the 1960s. The rapid TFP growth in this period undoubtedly was the result of a variety of forces, but an important one likely was technology imports from advanced countries.[4]

[4] Also see Aoki et al. (2009) for a discussion of the driving forces of TFP growth in this period.

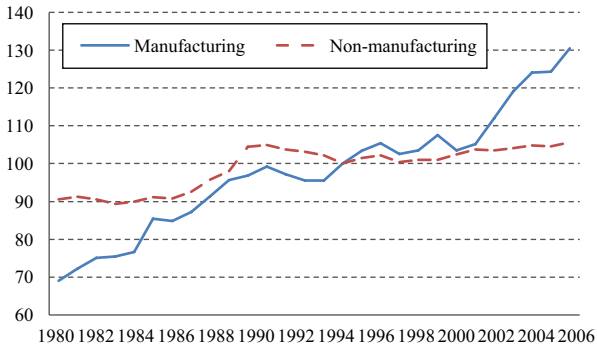

Fig. 3 TFP by industry (1980–2007, 1995 = 100). (Source: Japan Industry Productivity Database 2012)

Table 2 Average TFP growth rate by industry (%). (Source: Japan Industry Productivity Database 2012)

	Manufacturing	Nonmanufacturing
1980–1989	3.7	0.9
1990–1999	0.7	−0.4
2000–2007	2.8	0.7

Figure 2 displays Japan's net technology imports and expenditure on research and development (R&D) relative to GDP. As can be seen, in the late 1950s and the 1960s, the net technology imports-GDP ratio was around 0.15%. It then started to decline at the beginning of 1970s and Japan became a net technology exporter in 1993. On the other hand, the R&D expenditure-GDP ratio follows an upward trend. Before 1970, the ratio was around 1%, but it steadily increased afterward. Taken together, these trends imply that Japan relied on technology imports in the earlier period and gradually substituted such imports with the development of technology of its own by increasing the R&D expenditure-GDP ratio.

2.2 The "Two Lost Decades," 1990–2009

As mentioned, Japan's economy has suffered from very sluggish growth since 1990. The growth accounting exercise showed that the slowdown in TFP growth was a major cause of this sluggish growth. To investigate the sources of the slowdown of TFP growth further, trends in TFP by sector over the period 1980–2007 are presented in Fig. 3 and Table 2. Specifically, Table 2 indicates that the TFP growth rate in the manufacturing sector fell from 3.7% in the 1980s to 0.7% in the 1990s, a drop of 3 percentage points, while that in the nonmanufacturing sector actually turned negative, declining from 0.9% to −0.4%, a deterioration of 1.3 percentage points. Since the value-added share of the manufacturing sector in the economy is about one quarter, the decline in the TFP growth rate in both sectors played an important role in the slowdown in the growth rate of aggregate TFP in the 1990s.

2.2.1 The Slowdown of TFP Growth in the Manufacturing Sector

Kim et al. (2007) investigate the possible causes of the slowdown in TFP growth by decomposing it into several effects. Using plant-level data from the *Census of Manufactures* provided by the Ministry of Economy, Trade and Industry, they first calculate the natural logarithm of the TFP level of plant *f* in year *t* in a certain industry by using the following equation:

$$\ln TFP_{f,t} = \left(\ln Q_{f,t} - \overline{\ln Q_t}\right) - \sum_{i=1}^{n} \frac{1}{2}\left(S_{i,f,t} + \overline{S_{i,t}}\right)\left(\ln X_{i,f,t} - \overline{\ln X_{i,t}}\right) + \sum_{s=1}^{t}\left(\overline{\ln Q_s} - \overline{\ln Q_{s-1}}\right) - \sum_{s=1}^{t}\sum_{i=1}^{n} \frac{1}{2}\left(\overline{\ln S_{i,s}} + \overline{\ln S_{i,s-1}}\right)\left(\overline{\ln X_{i,s}} - \overline{\ln X_{i,s-1}}\right), \tag{4.4}$$

where $Q_{f,t}$, $S_{i,f,t}$, $X_{i,f,t}$, and n are the gross output of plant *f* in year *t*, the cost share of factor *i* for plant *f* in year *t*, plant *f*'s input of factor *i* in year *t*, and the number of inputs, respectively. Variables with an upper bar denote the industry-average level. Equation (4.4) consists of two parts. The first and second terms denote the percentage deviation between the TFP of firm *f* and the industry-average in year *t*. The third and fourth terms denote the growth rate of industry-average TFP from year 0 to year *t*.

As an alternative productivity measurement, they also decompose the natural logarithm of labor productivity as follows:

$$\ln LP_{f,t} = \left(\ln Y_{f,t} - \overline{\ln Y_t}\right) - \left(\ln L_{f,t} - \overline{\ln L_t}\right) + \sum_{s=1}^{t}\left(\overline{\ln Y_s} - \overline{\ln Y_{s-1}}\right) - \sum_{s=1}^{t}\left(\overline{\ln L_s} - \overline{\ln L_{s-1}}\right), \tag{4.5}$$

where $Y_{f,t}$ and $L_{f,t}$ are the real value added and labor input at plant *f* in year *t*, respectively. Once the productivity measure (TFP or labor productivity) for each plant is calculated, the industry-level productivity of a certain industry in year *t* is obtained by

$$\ln P_t = \sum_{f=1}^{m} \theta_{f,t} \ln P_{f,t}, \tag{4.6}$$

where $P_{f,t}$, $\theta_{f,t}$, and m denote the productivity measure and sales share (labor input share if the productivity measure is labor productivity) of plant *f* in year *t*, and the number of plants in an industry, respectively. They then decompose the industry-level productivity measure into the following five effects:

Within effect: $\sum_{f \in s} \theta_{f,t-\tau} \Delta \ln P_{f,t}$,

Table 3 Decomposition of productivity growth in the manufacturing sector. (Source: Kim et al. 2007; Table 2.1)

	Contribution of each effect							
Period	Productivity growth total	Within effect	Reallocation effect subtotal	Between effect	Covariance effect	Net entry effect	Entry effect	Exit effect
	a=b+c+f	b	c=d+e	d	e	f=g+h	g	h
A. Growth rate of TFP								
1981–1990	*1.81*	*1.18*	*0.13*	−0.14	0.28	*0.49*	0.73	−0.24
		(65.5)	*(7.3)*	(−8.0)	(15.3)	*(27.2)*	(40.2)	(−13.1)
1990–2000	*1.21*	*0.55*	*0.31*	−0.04	0.35	*0.27*	0.6	−0.33
		(48.8)	*(27.3)*	(−3.4)	(30.7)	*(23.9)*	(53.1)	(−29.3)
B. Growth rate of labor productivity								
1981–1990	*4.44*	*3.34*	*−0.46*	−0.01	−0.45	*1.56*	1.97	−0.41
		(75.2)	*(−10.4)*	(−0.2)	(−10.2)	*(35.2)*	(44.4)	(−9.2)
1990–2003	*2.41*	*1.15*	*0.28*	0.3	−0.02	*0.98*	1.54	−0.56
		(47.7)	*(11.5)*	(12.4)	(-0.9)	*(40.9)*	(64.1)	(−23.3)

TFP total factor productivity
Note: Values in parentheses denote the share of each effect in total productivity growth

Between effect: $\sum_{f\in s}\Delta\theta_{f,t}\left(\ln P_{f,t}-\overline{\ln P_{t-\tau}}\right)$,

Covariance effect: $\sum_{f\in s}\Delta\theta_{f,t}\Delta\ln P_{f,t}$,

Entry effect: $\sum_{f\in N}\theta_{f,t}\left(\ln P_{f,t}-\overline{\ln P_{t-\tau}}\right)$

Exit effect: $\sum_{f\in X}\theta_{f,t-\tau}\left(\overline{\ln P_{t-\tau}}-\ln P_{f,t-\tau}\right)$,

where S denotes the set of firms that survived from year t–τ to t, N denotes the set of firms that newly entered, X denotes the set of firms that exited, and denotes the difference between year t–τ and t.

Table 3, taken from Kim et al. (2007), displays the decomposition result for the period 1981–2003. As argued by Kim et al. (2007), the results in Table 3 highlight two notable features. First, regardless of which productivity measure is employed, the within effect (the effect of productivity growth in staying firms) is the major driving force of productivity growth overall and this effect shrinks substantially in the 1990s. That is, the reduction in the within effect is the main cause of the slowdown in productivity growth in the manufacturing sector in the 1990s. Second, the exit effect is negative in all observation periods and its negative contribution to productivity growth substantially increases from −13.1 to −29.3 % when using TFP growth and from −9.2 to −23.3 % when using labor productivity growth. A negative exit effect implies that the average productivity of exiting firms is higher than that that of staying firms.

Next, for comparison, Table 4, also taken from Kim et al. (2007), shows the decomposition results for other countries using the same methodology. The table allows two key observations. First, the results for the USA and UK indicate that in these countries the contribution of the within effect is very small, while the reallocation and net exit effects play an important role in periods of relatively slow growth such as 1977–1982 and 1987–1992 for the USA and 1980–1992 for the UK.[5] In contrast, in Japan, the contribution of the reallocation and net entry effects is small, even in the 1990s, suggesting that Japan's economy had a low "metabolism" during this period. Second, the exit effect is positive in all countries and all periods. This differs from the case of Japan, where the exit effect is negative in all periods and its negative contribution to productivity growth rises over time.

Kim et al. (2007) argue that the growing negative exit effect in the 1990s may be the result of the relocation of production overseas by large productive firms. They plot the exit effect in the period 1990–2003 against the change in overseas production by Japanese firms located in Asia over the same period divided by domestic production in 1990 by industry and show a negative relationship between them. They report that the coefficient of correlation is −0.42 and that it is statistically significant at the 5% level.

In sum, these findings suggest that the main reason for the slowdown in TFP growth in the manufacturing sector is a decline in the within effect (the effect of falling productivity growth at staying firms), but the negative exit effect also plays an important role.[6]

2.2.2 The Slowdown of TFP Growth Rate in the Nonmanufacturing Sector

As shown in Table 2, TFP growth in the nonmanufacturing sector also declined in the wake of the collapse of bubble economy in 1990 and actually turned negative, although it recovered somewhat in the 2000s. Given that the non-manufacturing sector makes up around three quarters of total value-added share in the economy, the sluggish TFP growth in this sector is particularly serious and warrants careful investigation. As argued by Caballero et al. (2008), one possible cause of the poor TFP performance of the nonmanufacturing sector is the so-called "zombie lending" problem. Zombie firms are unproductive firm which should exit the market but survive thanks to support from banks or the government. Caballero et al. (2008) show that the number of zombie firms rose sharply in the 1990s and that zombies impeded the economic activities of healthy and productive firms, leading to the decline in TFP growth.

[5] For instance, the average annual growth rate of real GDP in the USA was only 1.8 and 2.5% during 1977–1982 and 1987–1992 compared to 4.5% during 1982–1987. Similarly, the average annual growth rate of real GDP in the UK was only 2.2% during 1980–1992 compared to 3.6% during 1982–1987.

[6] The causes of the drop in the within effect in the manufacturing sector in the 1990s remain unclear and warrant further research.

Table 4 Decomposition of productivity growth in the manufacturing sector (international comparison). (Source: Kim et al. 2007; Table 2.2.)

				Contribution of each effect						
Source	Country	Period	Productivity growth total	Within effect	Realloca-tion effect subtotal	Between effect	Covariance effect	Net entry effect	Entry effect	Exit effect
			a=b+c+f	b	c=d+e	d	e	f=g+h	g	h
A. Growth rate of TFP										
Ahn et al. (2004)	Korea	1990−1998	3.51	1.42	0.08	−0.28	0.36	2.01	1.95	0.06
				(40.4)	(2.2)	(−8.1)	(10.3)	(57.4)	(55.6)	(1.8)
Foster et al. (2001)	USA	1977−1987	1.02	0.49	0.27	−0.08	0.35	0.27		
				(48.0)	(26.0)	(−8.0)	(34.0)	(26.0)		
		1977−1982	0.54	−0.05	0.45	−0.18	0.63	0.14		
				(−9.0)	(83.0)	(−33.0)	(116.0)	(25.0)		
		1982−1987	1.46	0.76	0.48	−0.26	0.75	0.2		
				(52.0)	(33.0)	(−18.0)	(51.0)	(14.0)		
		1987−1992	0.66	−0.04	0.47	−0.26	0.73	0.23		
				(−6.0)	(71.0)	(−39.0)	(110.0)	(35.0)		
Disney et al. (2003)	UK	1980−1992	1.06	0.05	0.43	0.16	0.28	0.57		
				(5.0)	(41.0)	(15.0)	(26.0)	(54.0)		
		1982−1987	3.08	1.26	1.48	−0.09	1.57	0.37		
				(41.0)	(48.0)	(−3.0)	(51.0)	(12.0)		

Table 4 (continued)

				Contribution of each effect						
Source	Country	Period	Productivity growth total	Within effect	Realloca-tion effect subtotal	Between effect	Covariance effect	Net entry effect	Entry effect	Exit effect
			a=b+c+f	b	c=d+e	d	e	f=g+h	g	h
B. Growth rate of labor productivity										
Foster et al. (2001)	USA	1977−1987	2.13	1.64	−0.13	0.17	−0.3	0.62		
				(77.0)	(−6.0)	(8.0)	(-14.0)	(29.0)		
		1977−1982	0.51	0.62	−0.22	0.43	−0.65	0.1		
				(122.0)	(−42.5)	(85.0)	(−127.5)	(20.0)		
		1982−1987	3.73	3.1	−0.07	0.49	−0.56	0.71		
				(83.0)	(−2.0)	(13.0)	(−15.0)	(19.0)		
		1987−1992	1.43	1.34	−0.23	0.47	−0.7	0.3		
				(93.7)	(−16.0)	(33.0)	(−49.0)	(21.0)		
Baldwin and Gu (2006)	Canada	1973−1979	2.15	1.66	−0.05	1.47	−1.52	0.54	0.24	0.3
				(77.4)	(−2.4)	(68.3)	(−70.7)	(25.0)	(10.9)	(14.1)
		1979−1988	1.41	1.44	−0.3	0.27	−0.53	0.28	0.15	0.13
				(101.8)	(−21.6)	(16.0)	(−37.6)	(19.8)	(10.7)	(9.1)
		1988−1997	2.91	2.85	−0.37	0.27	−0.64	0.42	0.26	0.17
				(98.1)	(−12.6)	(9.4)	(−22.0)	(14.6)	(8.9)	(5.7)

TFP total factor productivity

Note: Values in parentheses denote the share of each effect in total productivity growth.

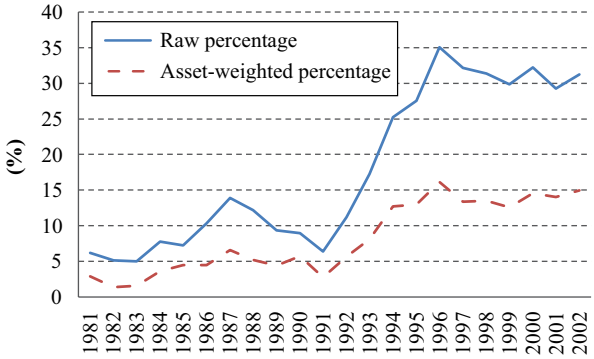

Fig. 4 Prevalence of firms receiving subsidized loans. (Source: Caballero et al. 2008; Fig. 1)

They identify zombies based on whether firms were receiving subsidized bank credit. More precisely, they define zombies as firms whose credit costs were lower than what would be expected and identify such firms using data from the Nikkei Needs Financial dataset for the period 1981 to 2002.[7] Figure 4, taken from Caballero et al. (2008), shows the prevalence of firms receiving subsidized loans. The solid line in the figure represents the share of the number of firms identified as zombies, while the dashed line shows their asset-weighted share in all firms. Using these definitions, the share of the number of zombie firms rose to roughly 30% in the 1990s, while their asset-weighted share increased to around 15%.

Figure 5 shows the asset-weighted share of zombies by industry. One salient feature is that the proportion of zombie firms is relatively high in nonmanufacturing industries such as real estate and services. This finding suggests that zombie firms are a potential candidate to account for the slowdown in TFP growth in the nonmanufacturing sector after 1990.

To investigate this hypothesis, Caballero et al. (2008) estimate the following regression equation:

$$\text{Activity}_{ijt} = \delta_1' D_t + \delta_2' D_j + \beta nonz_{ijt} + \chi Z_{jt} + \varphi nonz_{ijt} * Z_{jt} + \varepsilon_{ijt}, \qquad (4.7)$$

where "Activity" is either investment in fixed assets, employment growth, or TFP growth. Subscripts *i, j,* and *t* denote the firm, industry, and year, respectively. In Eq. (4.7), year and industry dummies (D_t and D_j) are included to allow for aggregate and industry-specific shocks. $nonz_{ijt}$ is a dummy for non-zombie firm (taking 1 if a firm is a non-zombie) *i* in industry *j* in year *t*, and Z_{jt} denotes the proportion of assets in industry *j* in year *t* held by zombie firms. The interaction term ($nonz_{ijt} \times Z_{jt}$) captures the possibility that non-zombies behave differently when there are more zombie firms in an industry.

[7] See Caballero et al. (2008) for details of how zombie firms are identified.

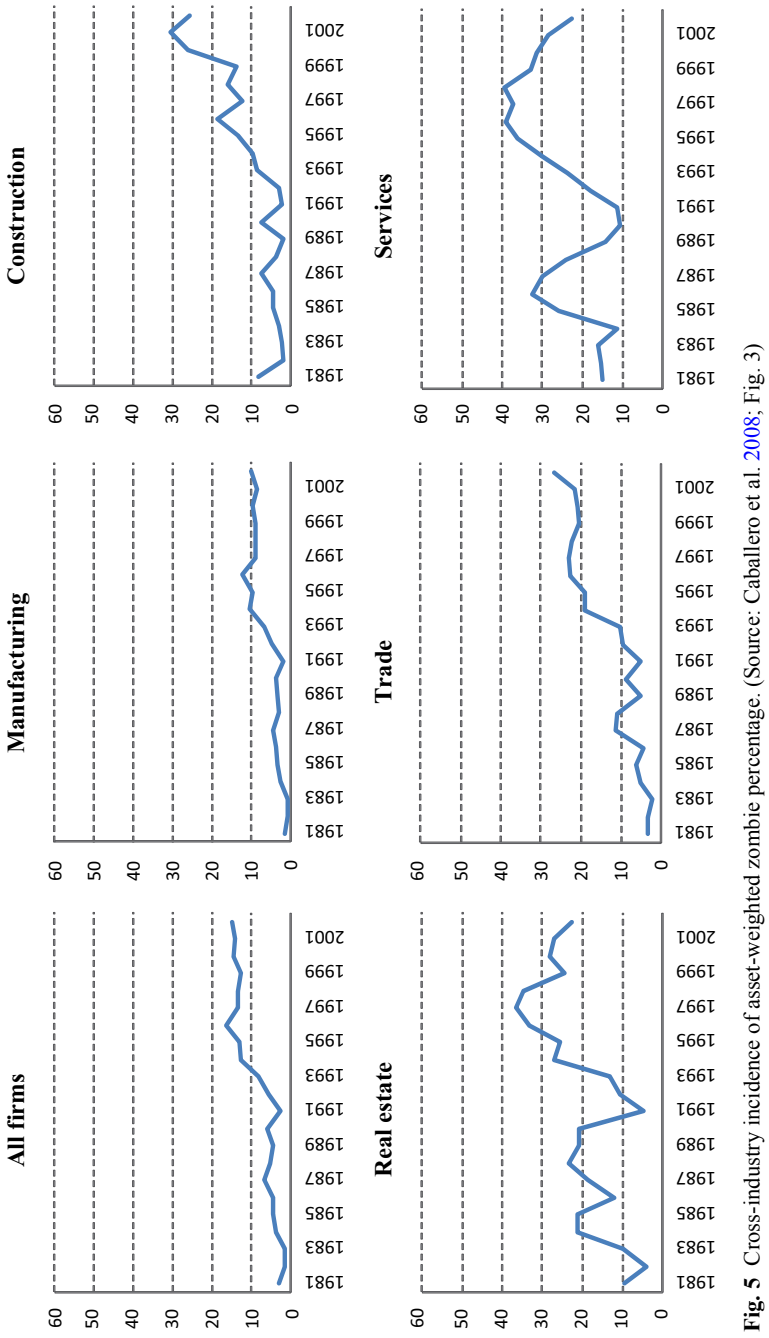

Fig. 5 Cross-industry incidence of asset-weighted zombie percentage. (Source: Caballero et al. 2008; Fig. 3)

Table 5 Impact of zombies on the investment, employment, and productivity of non-zombies. (Source: Caballero et al. 2008, Table 3)

Dependent variable	*I*/*K*	Δlog E	Productivity
Non-zombie dummy	0.0256	0.00109	0.0139
	(0.0056)	(0.001751)	(0.0135)
Industry zombie percentage	−0.137	−0.00454	−0.3418
	(0.0376)	(0.0116)	(0.0922)
Non-zombie ×	−0.0885	−0.0232	0.2183
industry zombie percentage	(0.0330)	(0.0102)	(0.0756)
Sample size	22,396	22,429	23,090
Adjusted *R*-squared	0.0537	0.0895	0.3599

Note: Standard errors are reported in parentheses

Table 5, taken from Caballero et al. (2008), presents the estimation results. The coefficients on the non-zombie interaction term ($nonz_{ijt} \times Z_{jt}$) have the predicted signs and are statistically significant for all three independent variables. That is, a higher asset-weighted share of zombies in an industry impeded investment by and employment at non-zombie firms. On the other hand, for productivity growth, the coefficient is positive, indicating that non-zombies need to have higher productivity to be able to compete with zombies.

Caballero et al. (2008) also plot the average growth rate of TFP from 1990 to 2000 against the change in the zombie index by industry[8] and show that there is a clear negative relationship between them. That is, industries with a higher zombie index tended to have a lower average TFP growth rate.

In sum, the analysis by Caballero et al. (2008) suggests that the number of zombie firms rose substantially in the 1990s and that this impeded the economic activities of non-zombies and lowered the TFP growth rate.

3 The Role of Government

The discussion so far has considered some of the possible factors underlying the growth miracle of the 1950s and 1960s and the "Two Lost Decades" following the collapse of the bubble economy. This section considers the role that government has played during these periods in terms of enhancing TFP growth. Standard economic theory suggests that there are at least two policies governments can pursue to stimulate TFP growth: boosting R&D investment and reducing government regulation. In what follows, each policy is briefly examined. Figure 2 in Sect. 4.1 above indicated that the rapid TFP growth observed in the 1950s and 1960s probably to a large extent owed to technology imports from abroad and not the development of technologies in Japan. In this phase of technology imports, government aided firm in import-

[8] The zombie index for an industry is constructed by calculating the share of total assets held by zombie firms.

ing leading-edge technologies from abroad. According to Lynn (1994), intervention by the Ministry of International Trade and Industry made it possible for firms that did not have an international reputation to import cutting-edge technologies at low prices. However, the role of government seems to have changed around the 1970s as the source of technological improvements shifted from the import of technologies to the development of original technologies. In terms of encouraging firms to develop their own technologies, standard endogenous growth models such as that by Romer (1990) suggest that in a laissez-fair economy R&D investment would be below the socially optimal level, providing justification for subsidies and tax benefits for investment in R&D. Thus, a possible reason for the slowdown in the TFP growth rate in the 1990s and 2000s might be insufficient support for R&D investment. However, Fig. 2 indicates that the R&D expenditure-GDP ratio continued to be around 2.5% in the 1990s and Fukao (2012) shows that this ratio is relatively high in comparison with other developed countries.[9] Thus, it seems that, at least in terms of stimulating R&D investment, there was little scope for the government to enhance TFP growth.

In Sect. 4.2 it was suggested that the rise in the number of zombie firms impeded the economic activities of non-zombies and that non-zombies needed to have higher productivity to successfully compete with zombies. This increase in the number of zombies at least in part was probably due to government policies. During this period, the Japanese government attempted to protect small businesses to mitigate the effects of the economic downturn by asking banks to continue lending to such small businesses, even though some of them were unproductive and should have exited the market.[10] From a short-term perspective, this policy may have prevented a severe economic recession, but from a longer-run perspective it is likely to have generated adverse effects by creating zombie firms and impeding the economic activities of healthy firms.

If the generation and protection of zombie firms are the main causes of the slowdown in TFP growth, then the appropriate policy response would be the dismantling of government protection or, more generally, deregulation. Nakanishi and Inui (2007) construct a regulation index based on official statistics on regulation provided by the Ministry of Internal Affairs and Communications and examine the effect of deregulation on TFP growth. In the official statistics on regulation, 519 industries are divided into 13 groups and the proportion of regulated industries in a group is reported. Since the official statistics on regulation are only available for 1985, 1990, and 1995, Nakanishi and Inui (2007) extend the period covered by combining these statistics with other data sources. The estimated regulation indexes by sector are displayed in Fig. 6. As the estimated regulation index reflects the value-added share of each sector, the index for the nonmanufacturing sector is substantially higher than that for the manufacturing sector. The figure indicates

[9] One possibility is that the rate of return on R&D investment declined in the 1990s and that this may be partly responsible for the slowdown in TFP growth. Kim et al. (2008), however, show that although the rate of return rate does decrease, the extent of this decrease is limited.

[10] See Tett (2003) for the case of Shinsei Bank.

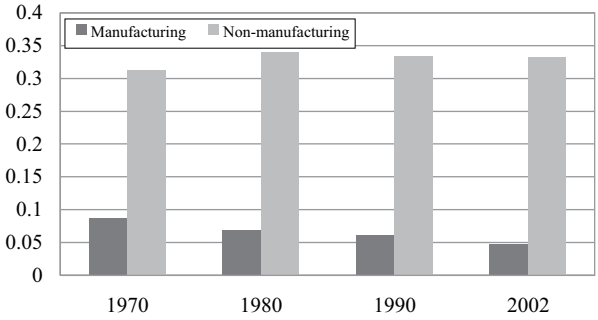

Fig. 6 Regulation index

that whereas regulation in the manufacturing sector decreased over time, regulation in the nonmanufacturing sector increased between 1970 and 1980 and slightly declined thereafter. This result implies that excessive regulation may be responsible for the slowdown in TFP growth in the nonmanufacturing sector.

To investigate the impact of deregulation on productivity and production, Nakanishi and Inui (2007) estimate the following two regression equations:

$$TFP_j(t) = a_0 + a_1 REGULATION_j(t) + a_2 RD_j(t-3) + a_3 IT_j(t) + \varepsilon_j(t), \quad (4.8)$$

$$Y_j(t) = b_0 + b_1 REGULATION_j(t) + b_2 RD_j(t-3) + b_3 IT_j(t) + \varepsilon_j(t), \quad (4.9)$$

where $\mathrm{TFP}_j(t)$, $Y_j(t)\mathrm{REGULATION}_j(t)\mathrm{RD}_j(t)$, and $\mathrm{IT}_j(t)$ denote the TFP growth rate, the growth rate of production, the degree of regulation, the R&D investment-production ratio, and the IT investment-production ratio in industry j in year t, respectively. As shown in Eqs. (4.8) and (4.9), the R&D investment-production ratio and IT investment-production ratio are included as additional independent variables. It is assumed that the effect of R&D investment on productivity and production has a lag of 3 years. Tables 6 and 7 report the regression results for R&D-conducting industries, all industries, and industries not conducting R&D. In the regressions for all industries and industries not conducting R&D, the coefficients on the regulation variable have a negative sign and are statistically significant, indicating that regulation lowers TFP growth. On the other hand, in the regression for R&D-conducting industries, the coefficient is not significant, implying that regulation does not have an impact on the TFP growth rate. A similar pattern is observed in the regression results for the growth rate of output. As pointed out by Nakanishi and Inui (2007), since most of the R&D-conducting industries belong to the manufacturing sector, the regression results imply that deregulation clearly has a positive impact on productivity and output in the non-manufacturing sector, but not in the manufacturing sector.

Table 6 Regression results for TFP growth rate. (Source: Nakanishi and Inui 2007; Table 5)

Variables	R&D-conducting industries		All industries		No R&D industries	
Growth rate of IT investment/output	0.0177	**	−0.0003		−0.002	
	(3.17)		(−0.16)		(−0.81)	
Growth rate of R&D/output (−3 years)	0.0018					
	(1.33)					
Regulation	−0.0027		−0.0082	**	−0.0096	*
	(-0.76)		(−2.66)		(−1.93)	
Constant	0.0045	**	0.0081	**	0.009	**
	(2.50)		(4.63)		(2.86)	
Sample size	1,018		2,592		1,323	
Adjusted *R*-squared	0.01		0.002		0.002	

Note: *t* values are reported in parentheses under each coefficient estimate. ** and * denote significance at the 5% and 10% level, respectively

Table 7 Regression results for output growth rate. (Source: Nakanishi and Inui 2007; Table 7)

Variables	R&D-conducting industries		Total industries		No R&D industries	
Growth rate of IT investment/output	0.0882	**	0.0126	**	0.0035	
	(10.53)		(4.84)		(1.17)	
Growth rate of R&D/output (−3 years)	0.0056	**				
	(2.83)					
Regulation	0		−0.0145	**	−0.0266	**
	(0.01)		(−3.53)		(−4.45)	
Constant	0.0058	**	0.0341	**	0.0529	**
	(2.15)		(14.61)		(14.10)	
Sample size	1,018		2,592		13,23	
Adjusted *R*-squared	0.105		0.0131		0.0144	

Note: *t* values are reported in parentheses under each coefficient estimate. ** and * denote significance at the 5% and 10% level, respectively

4 Conclusion

This chapter examined the possible causes of the growth miracle observed in the period 1955–1973 and the "Two Lost Decades" following the collapse of bubble economy in 1990. Section 4.2 showed that high net technology imports are likely to have played an important role in the rapid TFP growth during this period. On the other hand, for the "Two Lost Decades," Kim et al. (2007) showed that the within effect was a major cause of the slowdown in TFP growth in the manufacturing sector in the 1990s, but the exit effect also had a nonnegligible effect. Further, the study by Caballero et al. (2008) indicated that there was a substantial increase in the

number of zombie firms and that the presence of such zombie firms impeded the economic activities of non-zombie firms.

Next, Sect. 4.3 discussed the role of government policies to improve TFP growth. First, standard endogenous growth theories suggest that promoting R&D investment through subsides or tax benefits could improve social welfare and TFP growth. However, in Japan the R&D expenditure-GDP ratio is already relatively high in comparison with other countries, so that such policies are likely to have only a limited effect. Second, the role of deregulation was discussed. Nishimura and Inui (2007) have shown that deregulation has been conducive to TFP growth in total industries and non-R&D conducting industries. Since TFP growth and deregulation in the nonmanufacturing sector have almost come to a halt since the beginning of the 1990s, further deregulation is one of the most promising policies the government could pursue to enhance TFP growth.

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Development Planning in Turkey: An Assessment

Ahmet Kesik

1 Introduction

We can summarize the planning experience of Turkey within the scope of industrial plans of 1930s, development plans within a period of 1960s–1980s, national development plans starting from 1980s, and a transition period to strategic plans of today. Those years were the breaking points of transition in the concept of planning. This study evaluates these breaking points and aims to shed a light upon the transformation and development of planning in Turkey.

One needs to adopt both a historical perspective specific to Turkey and a wider perspective at an international level when the planning experience of Turkey is to be evaluated. And it is easy to see the direct relation of this process with the modernity developed around the globe. When the planning history of Turkey is taken into consideration, democratic changes at a global scale, globalization itself, and rationality are all linked together in this process. This indicates that the effects of Turkey's interaction with the external world should be also considered while its planning experiences are being examined.

The concept of planning can be observed to be one of the concepts that started to be discussed particularly after the World War II. The industrial revolution starting from the UK and spreading through the Western Europe and reaching Northern America and Japan brought along a capital accumulation to these societies, and hence resulted in an increasing level of material welfare. Concepts such as industrialization and modernization started to be integrated with development. The attraction that developed countries gained also affected developing countries and forced them to make a critique of their past and future. What the "advanced" countries which

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are taken as role-models made it right in this process and which methods they used became a matter of investigation for the other countries. Programmed interventions were required for both social and economic transformations and plans assumed an instrumental role. This also revealed the role of plan for eliminating the obstacles that might occur in the development process as well as in the design of future.

The crisis of 1929 that spread to the world started following the "great depression." Turkey's efforts to alleviate the effects of that crisis and state-led industrialization policy were the main reasons behind the preparation and implementation of the First Five Year Industrial Plan in 1934. The second plan put into effect in 1938 lost its appeal due to the outbreak of the World War II. However, before the war had come to an end, preparations for another plan covering the postwar period were launched. And we can define 1950s as the unplanned years. While the effects of severe crises were felt at that time, efforts were also made to establish a Ministry of Coordination; and finally Prof. Tinbergen was invited to Turkey for preparing new plans.

From an overall perspective to the planned development process in Turkey, one can conclude that 1960 created a milestone. With the Law No. 91 adopted in September 1960, the State Planning Organization (SPO) was established. One can infer the establishment of the SPO as the state's intervention policy to the planned development process started at the time. In 1961, it was stipulated in the Constitution that development would be realized through planning.

During the period between 1960 and 1980, four Five-Year Development Plans were made. After 1960, the rate of economic growth increased, but in 1970s, the foreign exchange problems resulting from import substituting industrialization policies followed by the oil crisis and the economic crisis it caused as well as the global developments at the time had a critical impact on planning.

Following the fourth Five-Year Development Plan put into effect in 1979, the decisions made for ensuring stability in January, 1980 hindered the planned process. With the decisions made, economic policies were changed and import substituting industrialization model which meant bankruptcy was abolished and substituted by export substituting industrialization model. What is more, the fifth Five-Year Development Plan put into force in 1985 was important because it was the same government that both prepared and applied it. Despite the advantages of the plan, it could not reach the desired level of attainment. The sixth Five-Year Development Plan was put into effect in 1990 and put an emphasis on a balanced and sustainable growth. While the first year of the sixth plan was about to finish, great changes happened in the Eastern Bloc countries brought along certain opportunities for Turkey.

The seventh Five-Year Plan put into effect in 1996 stressed the regulatory role of the state. Yet, due to the political crisis in 1998 and the economic crisis in 1999, the average pace of growth could not be achieved and the economy contracted at the end of the planning period.

The eighth Five-Year Plan prepared by a coalition government was put into force in 2001. The eighth plan aimed to achieve a sustainable growth and rate of inflation in accordance with the EU criteria. The ninth and tenth plans, in addition, were the plans in which the regulatory and supervisory roles of the state came to the fore and the need for a structural transformation became more apparent both in the economy

and the public sector. Particularly the tenth plan gave priority to the transformation programs and made room for the plan and budget connection.

This study aims to examine the planning experiences of Turkey, make assessment of planned period with specific emphasis on recent development plans, and come to conclusions in that regard.

2 Rationale for Planning in National Development

Planning is a crucial aspect of every social decision. Each societal unit should be indulged in planning when it develops policies to change something (Alexander 1990, p. 93). The implementation of planning in the world began in the early decades of twentieth century in terms of modern view. But its ideological roots go back to the early nineteenth century (Friedman 1987, p. 21). National development planning became crucial and perceived as a prerequisite for economic development particularly after the World War II.

Following the war years, national economies tended to resort to planned economy so that all human activity could gradually become more discerning. However, particularly before the Great Depression, they used to act in conformity with the principles of laissez-faire. After the economic crisis and war occurred, the idea of thinking ahead of the situation which was likely to inevitably happen in the course of time came into form (Tinbergen 1967b, p. 43).

In this respect, formulation of the New Deal in the USA and similar policies in some European countries in a Keynesian perspective at a large scale led to a new era in which the modern welfare state evolved. 1950s and 1960s were the pinnacle of the welfare state, both in terms of economic growth rates and distribution of wealth in society. Those were also the postwar years in which both regulating macro-economic environment and repairing the economic infrastructure adversely affected by war gained prominence. Keynesian policies gained almost a status of dogma even in the USA, yet some European countries started to prepare five-year development plans with the aim of coordinating government intervention into the economy (Yılmaz 2003, p. 39).

National development planning is defined as “the process concerned with guiding social change, with generating a sequence of desirable events and with making anticipatory decisions with reference to the future evolution of a country and with deriving present-day decisions from them” (Sagasti 1988, p. 432). National development planning was believed as an efficient tool to eliminate major problems that developing countries may encounter. So it was believed that it covered necessary mechanisms to achieve determined development objectives. Accordingly national development planning has been the agenda of almost all countries across the world whether they are socialist or capitalist; whether they are developed or less developed. The rationale of planning in national development is to intervene in social and economic deficiencies in a way to correct these failures to transform society towards desired future situation.

Looking back to historical practices, particularly in developing economies, the reasons for introduction of planning were related to some basic arguments; these are for correcting market failures, achieving efficient resource allocation, psychological impact on population and decision-makers, and receiving foreign aid (Todaro and Smith 2011, pp. 514–516). For instance, in case of market failures, the market may be working as an efficient mechanism for addressing individual needs and expectations. However, if public is not satisfied with the existing level of welfare, redistribution of income and participation, then the market should be supported by planning that covers society's expectations (Alexander 1990, pp. 97–98). In case of national development planning experiences so far, planning has been used to correct market imperfections for developed economies, while it has been used for accomplishing some quantitative and qualitative targets in economic development for developing countries.

Furthermore, planning may be an important tool for reducing instability, protecting environment, and satisfying democratic demands of people with nonmarket mechanisms alongside market (Heilbroner 1998, pp. 6–7) for betterment of the society (Yılmaz 2003, p. 45).

Traditional planning is deemed as a technical process. Most perceive it to be disassociated with politics and the traditional concept of national planning is relative to technical rationality. Therefore, planning is usually defined as the allocation of resources in a reasonable manner to attain certain national goals and objectives that were previously determined. Yet both politics and planning have crucially overlapping agendas.

For instance, strategic leaders in public services may not be politicians, but these leaders (i.e., civil servants) may be directed by politicians; so in any case, politicians should be responsive to the wishes of the public (Joyce 2012, p. 76). Thus politicians incorporate the wishes of the public into plans. They require civil servants to implement such plans.

In the liberal definition of politics, reallocation of resources is the fundamental subject of politics. Within that context, planning, which is defined as rational resource utilization, is directly related to the political process. Planning practice includes setting priorities and making choices among alternative uses of resources (Fischer 1993, p. 34). So politicians should be responsive to the wishes of public to be able to enhance public satisfaction through rational planning process. In this sense, civil servants are nothing to do except for executing plans in line with the goals and objectives set forth by the politicians.

The concept of decision-making is based on the pure-rationality model (pure rationality is used as a technical term for a specific model of decision-making, and not in the usual rather undefined meaning of "rational"), which is presented as the ideal means for decision-making (Dror 1968, p. 132). So planning is considered as a factor of rationality in society. Rationality is a way of choosing the best alternative to achieve its future state in a desired direction. This type of rationality, called instrumental rationality, enables the choice of optimal means to achieve given goals (Alexander 1990, pp. 11–12; Faludi 1973, p. 36). In other words, instrumental rationality requires the systematic assessment of alternatives in line with the predetermined goals and objectives to be accomplished by the society.

In discussing development planning, comprehensive or partial plans may be worth to consider. Mostly in developing economies, comprehensive planning earned special interest after the World War II. Comprehensive planning recognizes the interdependence of multiple functions in developing strategies (Alexander 1990, p. 9). So it does not deal with one single factor. In other words, comprehensive plans cover all sectors of national economy and set forth national economic objectives to be achieved.

Considering the results of development planning, some experts have believed that development planning has failed to meet expectations; the gap between theory and practice (in other words, the difference between theoretical economic benefits and the practical results of development planning), and administrative incapability, political unwillingness, and deficiencies in plan implementation have been major reasons why disappointment have occurred in development planning (Todaro and Smith 2011, p. 524). It is believed that these obstacles are the case for most developing countries as well (Sagasti 1988, p. 433). Also Zuzunaga (quoted in Sagasti 1988, p. 433) dismissed all development planning efforts, stating that "planning is not useful for change and that social advance never takes place as a result of previous planning."

Although planning approach, planning tools and the degree of planning might change, there will always be a need for development planning, especially for the countries with emerging markets confronting serious economic and social problems after more than 30 years of neoliberal market-friendly policies (Yılmaz 2003, p. 75). Becoming strategic for emerging market economies such as Turkey is important more than ever to adjust themselves to new world order particularly the following decades of the 2008 world economic crisis. Strategic foresight and thinking is a necessity to become a strategic state to improve state of economy in the future. Strategic states in the world might be successful in being more prosper in coming decades. So in the course of economic development endeavor, in the global competitive environment, effective governance has also become essential for success. Within this scope, a planning process open to organized labor, private sector, and civil society has perhaps become significant than ever.

3 Historical Framework of Turkish Development Planning: Before 1960s

In order to evaluate national development planning initiatives in countries which fall outside the scope of Western public management tradition, such as Turkey, one needs to emphasize the differentiation of the role of bureaucratic elites that control the modernization and state building processes in those countries from the role of the bureaucrats in the Western world. The fundamental dynamic of the Western type modernization is the emerging of an entrepreneurial class independent from the state—a class imposing its own values to the political life, thus to bureaucracy as well. As a result, legal-rational bureaucratic culture and tradition that function according to the Weberian approach have emerged. Following the adoption of such tradition, development planning approach aims to increase rationality and eventually transform the country to desired end.

The fundamental dynamic of the modernization process in Turkey has been a military-civil management class, which is resolute about implementing "modernization" programs in order to transform the society. In this respect, when development planning introduced during the modernization process of Turkey are evaluated, it can easily be observed that plans are restricted to particular areas, i.e., economy, finance, and some specific sectors in economy—yet certainly not questioning the central and idiosyncratic role of the managing class. Therefore, transformation of such positioning of a bureaucratic tool assuming an idiosyncratic role has certain difficulties. Thus, in countries that fall within the scope of the above-mentioned category, if the impacts of development planning are analyzed without taking special conditions and difficulties of the systems into account, but rather the analyses are conducted only at a "technical level" as stipulated in the literature as in the Western world, then misleading results may emerge.

In other words, the state elite in Turkey did not actually create an alternative power to the bureaucracy but rather they preferred a dependent business class. Therefore, the new businessmen in the early decades following the foundation of Turkish Republic were selected from among small number of tradesmen and public servants (Buğra 2013, pp. 70–74). In this sense, etatist period of 1930s was based on coalition between the bureaucracy and industrial bourgeoisie to execute policies to establish national economy (Keyder 1993, p. 31).

With the foundation of the Turkish Republic in 1923, political decision-makers had always an idea of planning and kept it on their agenda. That is because the primary issue for these decision-makers was to rebuild the state from scratch. Thus, the concepts of infrastructure and industry came to the fore (Kuruç 2000, p. 4). There was only one objective of young Republic, which was economic development after the foundation of it. Then the authorities wanted to establish a sugar factory, however, then the Minister of Finance opposed this new policy due to the fact that he had a concern regarding of the risk of losing of proceedings to be collected from customs duty (Türkcan 2010, p. 106). It seems there were contradictory challenges of the Republic such as financing public expenditures and economic development.

Although the new Turkish Republic tried to achieve the country's industrialization and development by carrying out a liberal economic policy (Uysal 1986, p. 3), this policy changed after the Great Depression of 1929 due to a lack of initiative (Tinbergen 1967b, p. 34) and weak reaction to the state incentives in the private sector of industry. Thus, socialism was not the driver for the creation of industry by the state in Turkey. Consequently mixed economic model was adopted to be able to carry out investments to provide a basis for national industry between 1932 and 1960.

Turkey had experienced some sort of planned development before the World War II (Sönmez 1967, p. 29). In particular, in order to eliminate the adverse effects of the 1929 economic crisis and to accelerate industrialization, intervention of the state was approved, and the First Five-Year Industrial Plan was for the State to invest in the sectors of various industries that were capable of producing their raw materials within the country (Uysal 1986, p. 3). Thus Turkey's planning experience in 1930s is a result of both internal and external factors. A state-led industrialization was already decided and started to implement along with adverse effects of

the Great Depression. The plan was formulated from above in an elitist way and strengthened the position of the state bureaucracy vis-à-vis the society.

This plan marked the beginning of a large-scale direct state involvement into the economy and reached its objectives 1 year before the end of the plan period. Economic growth was achieved quite soon and the share of industry in GDP increased as well (Yılmaz 2003, p. 181). Although İnan (1972, p. 17) points out many of the projects in the industry plans in 1930s had an aim for generation of private industry, however, it seems these plans were not complementary to etatist economy. As a result, Turkey underwent important developments in the food, shoe, textile, and mining sectors by the help of state economic enterprises.

This plan was aimed to be used as an import substitution (Mıhçı 2001, p. 165). In fact, using this plan as an import substitution was not specific to Turkey. Due to the insufficiencies caused by the World War I tendency for domestic production started at that time. We should mention a time called "import substitution age"; the implementation of this new era started in 1930s. In sum, 1930s were the time when the "import substitution age" started both in Turkey and around the world (Kuruç 2000, p. 4). After the successful implementation of the First Five-Year Industrial Plan, the Second Five-Year Industrial Plan was accepted in 1938. However, because of the outbreak of the World War II, the plan could not be put into action completely. Nevertheless, certain projects (such as the iron and steel industry) incorporated within this plan were able to be carried out (Uysal 1986, p. 3). So the state elite through intervening state economic enterprises or subsidizing businessmen contributed to the economic decisions and the allocation of national resources throughout the country.

The industrial plans prepared in the pre-1960 period did not cover Turkish economy in a holistic way; in other words, they were not comprehensive ones. They were actually state's own investment plan to be able to manage it in a rational way. These plans were not prepared in the context of a system or by an organization responsible for preparing such plan. All of the preparations were made by ad hoc committees in various ministries.

While the First and Second Industrialization Plans may not conform to the present day concept and technical characteristics of development planning, the fact remains that for their time they constituted quite serious efforts. Another plan prepared in 1947, called the 1947 draft plan, was not even submitted to the approval of the authorities and remained, in draft form. Both the first and second Five-Year Industrialization Plans and the 1947 draft plan were fundamentally sectoral programs (Torun 1967, pp. 45–46). Turkey had to abandon the draft plan prepared by more radical intellectuals and prepare a new plan that confirmed the overall economic advice of the US experts (Mortan and Çakmaklı 1987, pp. 28–29). So a distinctively new plan prepared again in 1947, called 1947 Turkish Economic Development Plan, prioritized agricultural sector and infrastructure.

The plan of 1947 was prepared according to the expectations of aid and it was the "intention letter" of Turkey which was opening towards the USA through the Truman Doctrine (Küçük 1981, p. 83). 1947 Turkish Economic Development Plan marks the official end of etatism (Mortan and Çakmaklı 1987, pp. 28–29). This plan was the root of a new development ideology as well as one of the

fundamental determinants of the economic inclinations of the 1948–1960 period (Tekeli and İlkin 1981, p. 26).

Following the above-mentioned initial attempts of planning in Turkey and the development planning experiences in the world, planning developed and new models and techniques evolved. While emerging economies adopted a planned development, Turkey also made strides towards a planned economy. However, 1950s were the years with no planning taking place in Turkey but public awareness in planning development was tried to be raised particularly after the second half of the 1950s.

Starting after 1945 and continuing in the 1950s, Turkish economy had to face the problem of recurrent trade imbalance. The solution found in 1930s, i.e., the import substitution, reduced the need for importing consumer goods yet increased the need for importing intermediate and investment goods. In other words, import substitution policies did not actually provide real alternatives for imported materials, instead simply changed their composition. It becomes harder and harder to find the necessary foreign exchange to make imports when more effort is made to enhance the import substitution. Due to the limited capacity of exports, which was dominated by agricultural production, foreign credits and funds were required to finance increasing imports and the trade deficit (Yılmaz 2003, p. 187).

In 1958, after the famous negotiations in Paris with the International Monetary Fund (IMF), the OECD, and the US authorities—which led to the devaluation of the Turkish lira and to the program of stabilization, the related document gave, under the heading of "Recommendations," the following advice: "It is of great importance that this Ministry (of Co-ordination to be established) should exercise the necessary powers to ensure that, henceforth, there should be the necessary co-ordination of investment, within the framework of a development program" (Sönmez 1967, p. 32). Not only international institutions but also some observers were recommending development planning to be able to provide prosperity for young generations stemming from the population explosion in national economies (Chenery et al. 1967, p. 7).

Finally, a Ministerial Co-ordination Board was set up to assist the government in deciding on the investment projects to be carried out in the public sector.

The work of the Board and of the Investment Committee working for it was handicapped "by the absence of a development program" (Sönmez 1967, p. 32). Thus, a very strong pressure began to be exercised from abroad to involve the government in development planning.

It would not be too far-fetched to say that by the late 1950s, among these categories of the population, economic planning had come to be regarded as the magic solution to all evils. The fact is important for the understanding of the emergence of an almost emotional commitment to the idea of planning, following the 1960 Revolution (Sönmez 1967, p. 32).

At any rate, the substance of the claims for a planned effort for development in the late 1950s, at least as far as its foreign supporters are concerned, could be reduced to the idea that the main points were to "coordinate" investment projects, to assure a proper use of foreign assistance, and finally to avoid the occurrence of serious financial imbalances (Karaosmanoğlu 2000, p. 6; Sönmez 1967, p. 33).

Difficulties raised by an unplanned administration were mentioned in different arenas. Political decision-makers started to adopt the idea of founding a planning organization for a planned development (SPO 1964, p. 16)[1]. Furthermore, after 1954, opposition parties made a great number of criticisms since the government policy acted in conformity with neither a plan nor a program whatsoever. Meanwhile, countries and international organizations that provided aid started to highlight the importance of planned control on economic issues at a certain extent (Torun 1967, p. 46; Aslan 1998, p. 104).

Finally, an economic advisory body attached to the Prime Minister's Office was decided to be founded, and an agreement was reached with Prof. Jan Tinbergen[2] so that the "Development Plan" for Turkey could be prepared. Prof. Tinbergen and the (then) Minister of Foreign Affairs, F.R. Zorlu met in Paris in 1959 and discussed the projected plan. In April, 1959, Prof. Tinbergen visited Turkey accompanied by Mr. J. Koopman, and during his five visits to the country, preliminary studies were launched for the Development Plan. On May 27, 1960, the Army seized power and the agreement was still in force; and Mr. J. Koopman was working on the preparation of the plan in the assistance of the Turkish experts who had been designated to this end (Torun 1967, p. 46). The army supported modernization, which was identified with industrialization at a great extent. Modern planning in Turkey was primarily influenced by the state-led economic nationalism.

Economic nationalism was deemed as a way to protect unitary state structure and independence. It was further considered as a source of providing financial inputs so that the large bureaucratic organization could be sustained. In other words, "the implementation of nationalist economic policies and the creation of a national bourgeoisie had to benefit the state in the long run" (Aktar 1996, p. 283). With this paradigm in place, Turkey was able to manage smooth transition to a planned economy right after the military coup of 1960.

4 "Planned Period" of the Turkish Economy

4.1 1960–1980 Period

This part is for the planning experience of Turkey during the 1960–1980 period, focusing particularly on the overall characteristics of planning approach.

In 1950s and 1960s, planning was considered as a means that would facilitate the external financing of projects. In the countries such as India, Egypt, Pakistan, Turkey, South Korea, etc., development plans were more comprehensive and based

[1] 1950s were named unplanned years in Turkey. Then the Prime Minister thought that there was no need for development plan because the government was preparing national budget each year and this was going to be enough (Türkcan 2010, p. 107).

[2] Prof. Tinbergen stated that planner was not illusionist; the planner was the one who worked systematically and made use of technical and statistical data (Türkcan 2010, p. 154).

on balancing of sectors and goods basis. Import substitution was a major development policy. In such planning processes, the production and investment objectives were determined through cross-sectoral input–output analyses. These approaches improved domestic savings and the growth rate. However, it was understood in the early 1970s that employment, income distribution, and rationalization of import were not succeeded (Celasun 1984, p. 334). Unlike planning experiences of Turkey before 1960s, the development plans starting from 1960s had prepared holistic features that covered all aspects of economic and societal development of the country and included suggestions related to the long-term tendencies of this development (Mıhçı 2001, p. 174; Mortan and Çakmaklı 1987, pp. 78–80).

Planned development was the basic paradigm of capitalism in that period within the context of developing countries (Erder et al. 2003, p. 1). Planning period of 1960–1980 in Turkey was called planned years, which fell in national developmentalism years.

At the beginning of the planning period, the most important development was the establishment of the SPO responsible for the preparation, implementation, and monitoring of national development plans and annual programs; the coordination of activities of various ministries regarding of economic, social, and cultural policies; and advising government on development objectives. To this end, the SPO was established on September 30, 1960.

In this sense, the High Planning Council (HPC) and the Central Planning Organization are two main bodies of newly established planning organization. The HPC is the highest body in the general organization, with equal members from bureaucrats and ministers. It is designed as a platform for technicians and politicians to discuss and agree the most relevant and right policies for the country.[3]

The Council is to advise the Council of Ministers in the formulation of the objectives of economic and social policy, and to analyze the plans to be prepared in accordance with predetermined objectives (Torun 1967, p. 60).

The SPO would (Sönmez 1967, p. 34; SPO 1964, p. 17):

a. Evaluate thoroughly the natural, human, and economic resources and potentialities of the country and…advise the government in setting the targets and defining the economic and social policy to be followed,
b. Advise the government on the coordination of the activities of various Ministries involved in economic policy,
c. Prepare the short- and long-term plans for the realization of the targets set by the government,

[3] There is no bureaucrat in the High Planning Council at the moment. Representation of bureaucrats was reduced in time. There was a single bureaucrat, the undersecretary of the SPO, as a permanent member of this board until 2011. However, all members of the highest body for planning are politicians now. The former practice was criticized that bringing politicians and bureaucrats as equal members in the HPC politicized bureaucrats (Aslan 1998, p. 106). Those advocating the former practice were stating that not only the number but also the voting rights were equal for the political and bureaucratic members of the HPC; looking from Habermasian perspective, that was basically an arrangement for achieving "scientization of politics," elevating technical knowledge of experts over the political will (Yılmaz 2003, p. 196).

d. Advise the government on the improvements to be introduced in the establishment and functioning of all the government agencies, local administrations, necessary for a successful implementation of the plans,
e. Follow-up and evaluate the implementation, and propose amendments to the plan, and
f. Encourage and regulate the activities of the private sector according to the targets and intentions of the plan.

From the beginning until today, the planning in Turkey has gone along with the market economy and has generally conducted with an approach that complements the market economy (SPO 1991, p. 3). Kılıçbay (1972, p. 89) states that the rationale behind the economic planning in Turkey is based on complementarity principle rather than competition. In 1960, "period of import substitution" still continued, and even accelerated and moved up a gear. The driving force for planning had been industry in 1960s (Kuruç 2000, p. 5).

Turkish Plans which are legally based on the Constitution generally have coordinating and imperative features for the public sector, and they are instructive and promotive for the private sector. In Turkey, plans and their implementation segments, which are annual programs, unify the public investments steadily within the context of growth objective and in accordance with the priorities of society, and form a basis that ensures the final decision-maker to establish a balance between the executive ministers and financial providers within the government. Turkey has adopted democratic planning mechanism. Government and parliament determine the main objectives and strategies (SPO 1991, p. 13).

It can be summarized that Turkish national development plans prior to the 1960s were of statist and partial nature; 1960–1980 plans, mixed economy and holistic; and 1980 onwards plans, liberal and strategic. Before the 1980s, industrialization was guided by import substitution policies and after the 1980s transition to an open economy.

The first Five-Year Development Plan (1963–1967) indicates the beginning of the planned era for Turkey. When Turkey was also entering the planned period phase, a 15-year perspective plan which determined the priorities of the aims and targets was prepared. The purpose of this plan was to make use of the country's socioeconomic potential and to be able to direct this potential towards medium-terms' plans in the best possible way.

The first plan had distinctive features during the preparation process in terms of the management followed, the strategy determined, and the planning approach adopted. One of these features is the fact that a method of preparing plan, which was widespread then and aimed at attracting "foreign aid" was not adopted (Erder et al. 2003, p. 1).

Another feature of the first plan is that it was not designated to stipulate particularly economic growth. Planning strategy and plan were constructed with a comprehensive approach aiming at development of the country from economic, social, and cultural aspects.

The first and second development plans were prepared according to the 1963–1977 perspective plan. The first plan placed an emphasis on main infrastructure investments, employment problem, and new reorganization areas, whereas the second plan was adopted in a way manufacturing sector becoming a leading sector in the economy.

Common thought was that planning during first two plans paved the way for stable growth, discipline in public finance and balance of payments, and rational allocation of resources. These plans also helped to attract external funds as well (Türkcan 2010, p. 111).

A new perspective plan covering the 1973–1995 period was prepared, which took into account the changing global conditions and Turkey's relations with the European Economic Community. The new perspective plan aimed to achieve the targeted income level in 1995. Furthermore, it aimed to utilize then the potential at the highest level. The objectives of the third plan (1973–1977), which was prepared in line with the new perspective, were to increase the income levels, accelerate industrialization, especially, in sectors producing intermediate and investment goods, and decrease dependence on foreign sources. The fourth plan's targets (1979–1983) included adoption of the industrialization strategy relying heavily on public sector, improvement of balance of payments and enabling the economy to become self-sufficient.

The internal and external political and economic problems during the 1970s created a political and economic turmoil and required to take austerity measures to overcome the negative effects upon the economy. However, Turkish Governments could not respond to this on a timely basis; however, they were up to short-term remedies (Buğra 2013, pp. 226–227). Clearly such reaction by the governments towards social and economic turmoil led to weakening position of planning.

So it seemed import substitution development strategy could not be sustained during the 1970s. After the first and second plans Turkey increasingly faced a balance of payment problem due to low exports and increasing import of investment and intermediary goods (Mıhçı 2001, pp. 178–179). Towards the end of the 1970s, under a very heavy external debt burden Turkish Governments lost their stability along with economic, social, and political problems. In that period of economic and political instability, planning could not function as an effective means for becoming strategic state and bringing stability to government policies. During these turmoil years, the gap between the plan targets and outturns widened.

In theory, plans were to be imperative for the public sector but only indicative for the private sector. Indeed, planning in Turkey could not be imperative even for the public sector (Sezen 1999, pp. 33–34) due to the fact that then the governments could not set policies consistently in longer run, did not commit to planning philosophy, and preferred to deal with daily crisis. Planners due to such behavior towards themselves could not perform their fundamental missions, namely planning and programming.

The 1970s ended with the January 24, 1980 decisions envisaging a new development strategy based on outward-oriented development strategy and liberalization in order to integrate the Turkish economy to the global markets (Yılmaz 2003, p. 221).

September 12, 1980 coup, which brought a military rule until 1983, implemented the January 24, 1980 decisions with great vigor and prepared a new political environment for the later democratic era. Planning was to continue within this new context with rather different characteristic and functions.

4.2 From the 1980s Onwards

With a radical departure from the previous import substitution development strategy, which was characterized by far-reaching protectionism, Turkey adopted an outward-oriented and market-based development strategy after 1980 (Öniş 1997, p. 34).

The global liberalization, which appeared in certain Western countries in the second half of 1970s and which was expected to inevitably affect all the countries around the globe, was adopted in Turkey in 1980s. Thus, industrialization through the import substitution was abolished which had been implemented to strengthen the industrial base of only a certain segment yet which had had a high cost in terms of the use of resources until then; and the process of economic liberalization as well as forming the free market system were tried to be established with all its tools and institutions (SPO 1991, p. 2). As a result of this after 1980s, the most powerful countries have lost economic control due to internationalization of production and finance.

In this new environment, traditional comprehensive development planning covering the sectoral supply and demand balance, and managing money and fiscal policies was replaced by a new understanding of planning, including prioritizing policies and sectors, turning plans into a strategic document. This new sort of planning approach gives a perspective to the society and focuses concrete areas. However this new planning approach was criticized by the left wing, observes that planning and planning organizations lost momentum and weakened their positions in national economic policy management and making. Rather, international institutions had more voice on contemporary economic, financial, and social issues although the legal and institutional aspects of planning did not change but reduced.

Revival of neoliberalism during the 1980s, after a period of economic problems in 1970s, targeted the powerful aspects of the state in developing economies; namely the welfare and protective aspects in addition to direct state interference into the markets by means of central planning and others. As part of this process, the area of development economics as a clean-cut discipline did not attract as much attention as in the past (Leys 1996, p. 26). It is alleged that countries following market-friendly policies would gain, while those insisting on state control would lose, and this time not because they would be exploited but because they would be excluded from production and exchange relations (Keyder 1993, pp. 24–25). In a new environment like this, traditional form of planning could not be utilized for development. And globalization could not be isolated from worldwide power relations shaped around the concept of Western modernity (Keyman 1995, p. 54).

Consequently, progress in Turkey was made in trade liberalizations in early 1980s towards the liberalization of capital accounts by the end of 1980s. Thanks to all these developments, Turkey gradually became more open to the world markets. And trade, capital movements and tourism played a significant role in diversifying its interactions with the external world.

With the private sector and outward-oriented development strategy coming along, the share of the public sector in total fixed investments decreased. More significantly, the composition of the public fixed capital formation transformed. The share of infrastructure increased while that of industry rapidly decreased in the total public fixed capital formation (Kesik 2006, pp. 199–202).

Starting from the early 1980s, the goal behind the public investment strategy of Turkey has been the improvement of social and economic infrastructure, while encompassing private sector investments in the manufacturing industry. And since then, the public sector has had the development of energy, transport and communications, and agricultural infrastructure on its focus.

Furthermore, starting from 1990s, it was particularly emphasized that investments in health and education sectors were to be increased with the aim of improving basic health conditions and raising the number of well-educated and skilled people within a rapidly growing population.

International agencies had a visible impact in those years especially because of their demand for structural adjustment in the Turkish economy. Turkish planning determined their priorities taking conditionality of international organizations into account. Planning documents have been in conformance with the policies of transforming Turkish economy along with neoliberal principles starting from 1980s. During this process, the SPO had steering role through development plans, annual programs, medium-term programs, regional development programs, and finally institutional strategic plans.

Particularly in late 1990s, strategic planning started to become more popular instead of the rational comprehensive planning in Turkey after idea of strategic thinking and becoming more strategic had fostered in the US federal agencies by the Government Performance and Results Act (GPRA) of 1993. Public Expenditures and Institutional Review (PEIR) report prepared by the World Bank experts in collaboration with Turkish experts paved the way for a new era in Turkish financial management system and provided a basis for new Turkish public financial management law. It helped to spread strategic planning idea across the politics and bureaucracy. This new planning approach has been extensively implemented in the public sector as part of emerging managerial understanding (Bryson and Roering 1987, p. 16). What Turkey has experienced as strategic planning so far has proved that there is still some further way to go as far as designing, implementing, and monitoring are concerned. Referring to this new planning approach some observers (Soyak 2005, p. 4; Sezen 1999, pp. 269–270) argued that economic sectors were going to be disappeared when structural adjustment projects placed in development plans in 1990s. According that view, it would be end of developmentalist social state.

Furthermore, in line with the growing attention on strategic planning, plans and annual programs started to emphasize qualitative results rather than quantitative

results. Especially the seventh Five-Year Development Plan was prepared in that spirit, envisaging institutional and legal reforms rather than quantitative targets in critical areas. Even for the production, demand, and trade figures, terminology of the plan documents changed. For instance, in sector-wise tables, the term "target" in order to signal that the numbers are not imperative but rather indicative was replaced by the term "estimation" (Yılmaz 2003, p. 249).

Another dimension of planning, worth to mention is regional planning. Establishment of regional development agencies, allocation of resources for regional projects through these agencies, and challenging of harmonization of regional development strategies and plans with development plans have brought a new dimension in planning experience of Turkey (Soyak 2005, p. 3). Regional planning was perceived as reconstruction pre-planned period, however, it has been viewed as improving quality of residents and reducing regional income disparities in planned period.

Planning in Turkey remained largely a technical issue whose ground was laid by instrumental rationality of planners working under parameters set by political environment and international financial institutions. With no clear political commitment, budgeting, and social ownership, plans have been doomed to fail as they could easily be neglected in cases of political difficulties (Yılmaz 2003, p. 262).

The highlight of the fifth Five-Year Development Plan (1985–1989) was to open to external markets and implement development plans, which should be prioritized exports. It aimed at reducing government intervention in the economy to a minimalist level, implementing liberal global trade and global investment policies, increasing infrastructure and housing, and decreasing disparities in regional development.

The main priorities of the sixth Five-Year Development Plan (1990–1994) are gradual reduction of the inflation rate, shifting the excess resources to the manufacturing industry, and to place more emphasis on social policies.

The seventh Five-Year Development Plan (1996–2000) proposed to set up the needed institutional infrastructure to prepare Turkey for the 2000s. The perspective of the approach of the Plan in terms of its priorities and policies is to take into consideration the changing economic and social developments of the world.

To foresee and eliminate the bottlenecks, which may arise, and to take structural and institutional measures to alleviate the problems associated with adjustment during the integration process, integration with the European Union or, in general, world integration, which is a requirement of changing global conditions, gained importance. The seventh plan was prepared with this understanding in mind. The plan was prepared relatively in participatory manner. It also prioritized the legal and institutional change and aimed for a sound and legitimate environment for private sector. So oversight and supervisory role of the state will come to fore to improve competitiveness of the economy.

The eighth Five-Year Development Plan (2001–2005), in addition to ensuring economic stability and structural and institutional arrangements, was prepared to improve competitive structure, provide harmonization with the EU rules, initiate transition to the information age, produce technology, and to place priority on regional and municipal planning within an interactive approach so as to reduce disparities in income distribution along with improving quality of life. The eighth

plan aimed dynamic and continually renewing structure and covered global and national level medium- and long-term strategies.

The Long-Term Development Strategy covering the 2001–2023 period aimed to prepare Turkey for the twenty-first century by setting up the required infrastructure. The perspective set forth in terms of priorities and policies is to take into account the shifting economic and social developments.

In 2005, when the term of the eighth Five-Year Development Plan covering 2001–2005 period came to an end, preparation of a new plan and its submission to the Parliament was postponed another year considering the new fiscal calendar of the EU within the framework of the EU-Accession process. In that case, it was decided that 2006 would be a transition year between the two plans and the ninth Five-Year Development Plan (2007–2013) would start in 2007. In the process of integration with the global economy, the need for planning changes and transformations reappeared. Within this framework, the concept of preparing a plan with a strategic approach came to prominence in a number of emerging markets. This plan was also prepared with a vision of the plans being more flexible with a more guiding role.

As for planning over the recent period, a whole new approach was adopted in the plan to strengthen the relationship between plans and the budget which became prominent around the world. These methods were multiyear budgeting and strategic planning at an institutional level. In Turkey, a 3-year Medium-Term Programme and Medium-Term Fiscal Plan have been prepared being renewed every year during the budget process since 2005 as stipulated in Public Financial Management and Control Law, No. 5018. In other words, this plan provided a view in accordance with the format and contents of institutional strategic plans. In this context, the objective was to harmonize the plan and annual budgets, and to calculate the cost of the plan. As a result of redefining the role of public sector within the economy due to changes both in Turkey and in the world, a new approach of planning was adopted with the ninth Five-Year Development Plan. This plan was not as comprehensive and detailed as the previous ones and less interfering than them. Yet it focused on fundamental goals and priorities by taking macro balances into account; and thus, in a sense, it was like a strategic plan of the state.

Another characteristic of this plan is that it was prepared to cover a period of 7 years instead of 5 and it paid attention to Turkey's EU membership. The ninth Five-Year Development Plan also formed the basis for especially the Medium-Term Programme, other national and regional plans and programs as well as sectoral and institutional strategy documents in addition to the ones that were stipulated by the EU Accession process such as Pre-Accession Economic Programme and Strategic Framework for Harmonisation. It was envisaged that the plan had a steering role for all planning efforts by harmonizing all documents with different functions and hence it was prepared with a cascading approach. Thereby, the plan which ensured a common understanding and unity of common goals between institutions was aimed to ensure legal and institutional changes and strengthen plan-program and budget connection. Within the framework of the vision of the plan, five development areas focusing on basic problems were determined with the aim of realizing and sustaining economic growth and social development. These focus areas were increasing

competitiveness and employment; ensuring human development; and strengthening social solidarity, ensuring regional development, and raising quality and efficiency of public services.

The ninth Five-Year Development Plan envisaged a Turkey, which grew in a sustainable manner, distributed the income fairly, was competitive at a global scale, transformed into an information society, and completed the harmonization process in its effort to access the EU. However, the plan adopted a super structure-oriented approach based on an axis. And the axes had a wide scope—creating a structure impossible to monitor. Accordingly, it was thought that top-down development planning approach has been left with the ninth Five-Year Development Plan.

Another significant development during the implementation of the plan was the transformation of the SPO, which was established in 1960 into the Ministry of Development in 2011. The responsibilities of the new institution are the implementation, including the coordination, monitoring, and evaluation, of development plans, medium-term programs, annual programs as well as other sectoral, thematic, and regional policy documents. As a matter of fact, the new Ministry has taken over all the responsibilities of the former SPO.

The tenth Five-Year Development Plan, on the other hand, covers the 2014–2018 period. A five-year planning approach has been once again adopted. In line with the objectives of 2023 vision in Turkey, the tenth plan is aimed to be a significant milestone in upholding Turkish nation to a high level of welfare. The tenth plan was designed in a manner to cover issues such as a high, sustainable, and comprehensive economic growth as well as the rule of law, information society, international competitiveness, human development, environmental protection, and sustainable use of resources. The fundamental approach to planning has been determining and implementing the policies with a participatory approach by taking economic and social development process of Turkey with a holistic and multidimensional perspective within the framework of human-oriented development understanding. The main objective is to accelerate the development process in a planned approach by mobilizing the potential, regional dynamics and human capacity of Turkey and to implement policies which will uphold the Country in rankings of international division of labor and value chain. The tenth Five-Year Development Plan is built on four feet. These are: a society with skilled labor force, innovative production, sustainable growth, livable places, sustainable environment, and international cooperation for development.

The tenth plan has significant differences from the ninth plan in terms of both concept and format. New features of the plan can be listed as follows:

- Plan is comprehensive and displays an approach that dwells on each issue from fundamental rights and freedoms to civil society.
- It focuses on human and the society.
- Implementation tools have been strengthened.
- It includes prioritized transformation programs of high priority that have been designed to find solutions to the fundamental structural issues that are of great importance for achieving the objectives of 2023 vision and the plan itself,

contributing the solution process, making activities in the critical reform areas that fall within the scope of responsibility of more than one ministry, and thus that require effective coordination among the ministries. These programs are measurable since they cover a limited number of priorities.
- It focuses on structural problems.
- It is largely a reformist plan.
- It mainly focuses on cross-sectoral areas that include a number of sectors at the same time rather than one sole sector alone. It focuses on thematic areas such as competitiveness, environment, natural disasters, human resources, logistics, R&D, and innovation.
- It takes the 2023 vision into account.
- This plan will act as a stepping stone in terms of the objectives of 2023 vision.
- It covers international cooperation and dynamics in development.
- It has clearer objectives and priorities.
- It has horizontal areas such as management of natural disaster, water, and natural resources.
- It is a strong plan with great communication and participation covering all actors throughout Turkey.

The main aims of the Long-Term Development Strategy of Turkey covering till 2023 is to attain the highest cultural and civilization level and to produce goods at the world standards, to share income equitably, to guarantee human rights and responsibilities, supremacy of the law, participatory democracy, to be secular, provide utmost freedom of religion and liberty of conscience, and to be an influential country at the global level. The objective aims of the long-term development strategy include transformation to the knowledge society, attaining the highest share of the global output, improving the quality of life of the society, by contributing to science and civilization, and to have an effective voice in the regional and global decisions. It is projected that Turkey's economy will be one of the top ten amongst the global economies by the 2020s.

The Long-Term Development Strategy will take into consideration the comprehensive and rapid changes currently experienced in the world and, thereby, have an important function in guiding the economic and societal transformations. The Plans will have an essential contribution to having the targeted transformation be more harmonious and, through efficient use of resources, meet Turkey's needs.

In conclusion, development plans aim to help institutions and economic actors in their decision-making process in an environment where crises cause uncertainties. They provide a long-term perspective instead of a short-term one. In a process which began with the new public management approach in the global arena in 1980s, a new organization has come to the fore where the private sector has a more powerful impact on economy whereas public sector assumes the role of regulating, auditing, and coordinating, and hence the concept of planning has changed as well. Since free market economies have become more widespread, public sector is required to have a strategic perspective in the policies to be followed, and even more, it needs to act more strategic, hence become a strategic state. It is possible to see the traces of such understanding in the development plans prepared after 1980s.

Planning organizations are always needed since markets are not enough to correct market imperfections. These organizations should develop alternative policies to improve prosperity of citizens and continue to advise governments for this end. These organizations should steer development process, develop fruitful strategies about economic and social issues and allocate public resources rationally.

5 Turkish National Development Planning Model

National development planning model needs to be examined in two separate sections. First of all, we need to look at the functions of development planning put forward by Tinbergen (1967b, pp. 51–54) and divide them into three, which are perspective plans, medium-terms plans, and 1-year plans. In case unpredictable events may occur, perspective plan is to provide a background to the shorter-term plans so that the problems that have to be solved over a very long period can be taken into account in planning over a shorter term. The significance of a perspective plan is directly proportionate to the radical nature of the aims that the government of the country is striving to achieve. Medium-terms plans usually cover a term four, five, or six years. It focuses attention on possibilities that do not come within the scope of a one-year plan. One-year plans have the task of setting out how the government's policy should be carried into effect. One-year plans may thus be regarded as an extension of the budget to the whole national economy.

The second dimension of development planning is the quantitative aspect of a development plan. Tinbergen describes this as "the Macrophase" (Tinbergen 1967a, p. 76). In this regard, planning is explained as stages. Subdivision of the country into sectors, or industries in the widest sense, and into geographical regions is introduced in the middle phase of planning. The macrophase has to show the most desirable development in macro-economic terms, without subdivision into regions or industries. In this phase, then, only such overall figures are used as the national product and capital, the total investments, imports and exports, and state expenditure. In the middle phase, the picture resulting from the macrophase is made clearer by distinguishing a number of sectors of industries and a number of regions. Finally, in the microphase, an even clearer and more detailed picture is obtained by dealing with separate projects and even smaller geographical regions, perhaps even separate projects and even smaller geographical regions, perhaps even separate rural and urban districts.

Turkish plans are prepared in accordance to the three-staged planning approach recommended by Tinbergen. The macrostage proper of the planning operation starts with an attempt at choosing some key figures for national income investments, consumption, and the balance of payments for the period to be covered by the Five-Year Plan. The second stage, which is sector stage, is essentially based on a simplified input–output model. For this purpose, the economy is subdivided into sectors. In this sense, much information is obtained from some committees, composed of civil servants and representatives of business and academicians. Finally, at the third stage, projects are identified and evaluated for each sector.

This is basically a top-down planning approach. However, in practice the concrete content of the investment programs, which are the crucial part of the implementation of development plans, were determined through a process in which some bargaining took place between investment agencies, the SPO, and the government (Yılmaz 2003, p. 202).

In terms of characteristics of Turkish development plans, Turkish development Plans can be divided into three in terms of the periods they cover, namely perspective plans, five-year plans, and annual programs. Perspective plans are based on a comprehensive solution method that makes it possible for dealing with the economy with a long-term perspective and with a holistic approach. Therefore, they enable us to collect a great deal of information as well as realities about the economy itself. This ensures the measures to be taken are in harmony with each other. Turkish development plans are prepared to cover a five-year period based, except for the ninth Five-Year Development Plan which was for 7 years, on a 10–20 year perspective. In this respect, the first and the second Five-Year Development Plans were prepared with a 15-year perspective whereas the third Five-Year Development Plan was prepared with a 22-year perspective due to the adoption of European Economic Community membership as a principle and becoming a member in 1972.

Annual programs are another type of Turkish development plans. These programs determine the implementation instruments that help the plans to be implemented and strike a balance between the objectives and resources. As an appendix to the annual programs the SPO also prepares the annual investment program by collecting project proposals from various public agencies through a circular of the prime ministry. Both annual programs and annual investment programs are discussed in the Higher Planning Council and submitted to the cabinet. The final say on these programs belongs to the cabinet. Officially these programs are required to reflect plan priorities.

Turkish development plans can be called macrolevel and national plans as in terms of the sectors they include and of their width. These plans include all the goals and resources of the economy required to attain those goals. They aim not only the economic development but also social and cultural development of the country. These plans cover the pace of development, full employment, production volume, price stability, balance of payments, distribution of the national income, social security and justice, and cultural development as well as instruments to attain these goals with a perspective of whole economy.

Considering their characteristics, Turkish plans can be said to have a guiding spirit but can be encouraging and imperative at the same time, as in all plans. For instance, plans could be guiding for the agricultural sector regarding which the state does not have basic data and effective tools; and they can be encouraging for some entrepreneurs since certain benefits and conveniences provide incentives for them; but they can have an imperative role for the public sector.

In addition, the Turkish understanding of planning is quite different from physical planning concepts of socialist countries in terms of the understanding and the techniques used or the ones based on detailed econometric models as in some capitalist countries. The fundamental idea behind the plans is nothing more than to

determine the necessary investment and saving objectives by using a capital-output ratio calculated approximately as well as the economic policy measures that are envisaged to attain the objectives only after a reasonable pace of growth is determined suitable with the targets and the conditions that prevail in the country. Furthermore, efforts are made to prevent hindrances before the production in the future years and to attain coherent production objectives by partially using income and output tables. Projects are selected at a different phase from the selection of macro-objectives, yet it is still related to it.

Five-year development plans are prepared following the stages below:

- Determining the strategies for the plan: A proposed strategy document covering economic, social, and political objectives to be followed prepared by the cabinet is submitted to the HPC. After providing the technical information on the development strategy and conducting analyses including growth rate to the politicians, a political decision is made in this regard. The HPC discusses the document and takes it to the cabinet for approval.
- Creating ad hoc committees and collecting relative information and preparing the draft of the plan in the SPO: The SPO also establishes sector- and issue-based Ad Hoc Committees along with organizing various workshops with the academicians, experts, and regional meetings. The SPO gets inputs from these various parties and combine them with long-term strategy approved by the cabinet in order to prepare a draft five-year development plan.
- Carrying on debates on the plan draft in the High Planning Board and submitting it with a report to the cabinet: After a long preparation process in the SPO a new draft plan is prepared and submitted to the HPC. The plan is discussed in the HPC and later in the cabinet.
- Submitting the draft plan to the parliament: The plan goes to the Plan and Budgeting Committee of the parliament. After the commission adopts the plan with some adjustments, it is sent to the floor of the parliament for the final ratification.

Following some new features for public financial management in Turkey, harmonization is aimed to establish between high-level policies, strategic plans, and budgets. However, stronger link between these documents has not been established yet. So in Turkey integration of strategic plans in the budget is a problem area that ministries should address; it is not only due to the technical reasons but also it is probably due to the intention of ministries to integrate strategic plans in the budget.

For the institutional level, the main instrument for the participatory mechanisms at ministerial level would be a strategic planning initiative. However, stronger link between these documents also requires the ministries to have enough capacity even though they have a required management infrastructure. So ministries need to develop the capabilities of civil servants and public policy managers for rigorous planning of the delivery of policy.

Consequently, strategic state requires capability of ministries in strategic management across the government and effective political and top civil service leadership based on alignment and integration (Joyce 2012, p. 264).

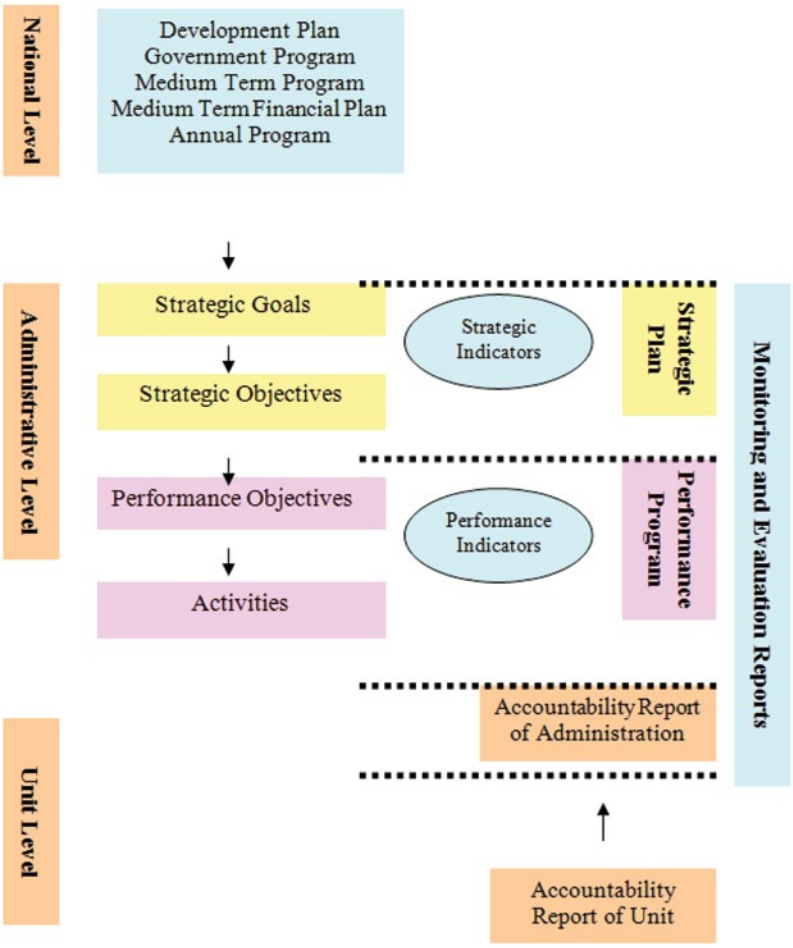

Fig. 1 Turkish strategic management framework. (Source: Ministry of Finance)

The strategic management framework including development plan in Turkey is shown in Fig. 1 Accordingly, ministries prepare strategic plan considering the priorities in development plans, which are prepared at national level. Strategic plans are prepared once in every 5 years and cover the goals of the ministry and the objectives for achieving these goals. Strategic indicators that ministries commit to follow are also included in these plans. Ministries prepare performance programs that constitute the annual segments of strategic plans. Annual performance objectives and the indicators of these objectives as well as activities that show how performance objectives are achieved and provide the correlation with the budget are involved in performance programs. Ministries decide which activities they will determine in order to achieve their annual objectives and these activities are calculated and the

current year budget is obtained. Performance evaluation is made at the end of the year and these performance evaluations are shared with public and competent authorities in the following year by means of accountability reports. This is a very important instrument of accountability for the ministry and the unit; because it enables that the activities performed and the realizations of the indicators are reviewed; and thanks to the assurance declaration, the public responsibility on the managers will increase.

In addition to above-mentioned new features, tenth Five-Year Development Plan (2014–2018) paves the way for program budgeting for efficient public service delivery as well. The plan covers prioritized transformation programs for the first time in a development plan that Turkey has prepared since 1960s. 25 programs (increasing productivity in manufacturing, rationalization of public expenditures, improving quality of public revenues, increasing organizational capacity in local governments, strengthening data infrastructure in government, and so on) are determined to achieve tenth plan goals and transformation of the economy. The programs are selected on the basis of measurability of their results. These programs are also determined sectorwide. Each program in the plan has the following components:

- Objective of program
- Coverage of program
- Targets of program
- Performance indicators for program
- Responsible Ministry(ies) for each program based on program components

Action plan for each program is prepared by responsible ministries coherently after the plan approved by the parliament. Each action plan covers activities/projects and their costs. These programs are compulsory for ministries in terms of implementation, costing, and reflection in ministerial budgets.

These programs are attached to importance as far as public budgeting is concerned; it may pave the way for program budgeting in Turkey. It is believed that these programs may turn budgets into business plans. It is expected that harmonization between strategy documents (development plans, medium-term programs, and so on), ministerial strategic plans, performance programs (budgets) and accountability reports are to be realized and holistic approach in strategic management is to be achieved.

In the current budget system, harmonization between objectives and budgets; planning and realization of the budgets; and also monitoring have lost. There are two separated structures namely performance programs and budgets. Ministries should send their budget proposals and draft performance programs to the Ministry of Finance and the SPO. So budget negotiation process is being conducted in a parallel way. Mostly performance programs are ignored in negotiation process in budget making. So, budgetary process continues to be operated in a traditional way. It causes weakening relationship between performance program and budget. More importantly, there are activities, performance objectives, and performance indicators available in performance program but their costs are placed in budget. Because budget classification does not allow to monitor budget realizations, budgeting system cannot provide tools for monitoring and evaluation for measuring public value.

In current budgetary system there is a budget classification problem as well. Current budget classification system just captures budget codes; however, having such budget codes in ministerial budgets does not prove that it is a budgeting technique. Current budget classification system produces budget data in line with international standards. This classification system does not cover activities. Because it does not cover activities, budget does not give enough information about nature of public services produced. It just provides information about how much is spent and who spent.

Current budget classification system does not focus on services produced, it is not possible to measure the cost of services produced fully. So it is not possible to make cost benefit analysis. Functional classification available in current budget classification is not enough to measure the cost of activities. Functions are defined in a broad base so it is not a program. Additionally, the same function may be related to more than one ministry, and then measuring of activity may not be possible. However in program budgeting, accounts are used for full costing and auditing. While current system is just providing tools for compliance audit, program budgeting may pave the way for measuring public value and result-oriented budgeting.

So ministries may be able to ask at the beginning (Guclu 2013, p. 2):

- What are my objectives?
- What should I do to achieve these objectives?
- Which resources should I use for my objectives?
- Ministries may evaluate end-year performance through asking these questions:
- Which objectives were realized?
- What were the realized activities and projects?
- How much spent for objectives?

Program budgets may cover policies which correspond to ones in strategic plans such as improving health care system and so on. So harmonization between nationwide strategy documents, strategic plans, budgets are to be achieved through program budgeting. So the tenth plan may foster for measuring public value in public management through prioritized transformation programs.

6 Turkish Development Planning: Assessment

Market-oriented economic policy emerged in the USA and the UK in 1980s. It diminished the weight of the state on economy gradually. Turkey also changed its traditional economic policies, namely import substitution development strategy. Such changes in the philosophy have caused development plans to be questioned. This resulted in a change in the expectations from development plans as well. In some countries, development plans have been considered as a means for structural reforms as it is the case for Turkey which had used comprehensive development planning during the 1960–1980 period. In this process, started in 1980s and accelerated in 1990s, understanding of a holistic and central national planning was tended

to be abandoned both in Turkey and around the world; and rather this understanding started to be localized.

Transformation in Turkish economy has been inspired from the New Public Management approach, which was accepted worldwide in 1980s. Due to the conditions pertaining to Turkey, reforms were not based on an approach that directly gets to the bottom of problems and produces permanent structural solutions, but an approach based on a more effective public management and on economic liberalization. Within the framework of this approach, the reforms to economic management significantly accelerated and realization of "minimal state" approach by reducing intervention of the state in the economy became one of the most basic economic policies within the reform period of the last 30 years.

Economic development was the crucial reason for the planning efforts as it was the case for most of the developing countries before 1980s. Although Turkish national comprehensive planning brings some participatory mechanisms (for instance, during the preparation of tenth Five-Year Development plan, almost 10,000 people including think tanks, academicians, representatives from all regions participated in workshops to share their views about the future expectations and their foresight), the main characteristic of planning in Turkey is still top-down and expert based.

The first Five-Year Development Plan (1963–1967) is the beginning of the planned era for Turkey. This plan is different from the rest of the plans in terms of support and commitments of political authorities. So the plan covered both political and technical wishes that both parties got together around the table for policy formation.

The first plan was the one during which the pioneering role assumed by the public sector in the development process could be felt the most. Subsequent development plans put more emphasis on incentives and subsidies provided to the private sector whereas the public sector largely assumed a role of supporting the private sector (Mıhçı 2001, p. 176).

One of the mistakes made in the first plan was that wrong decisions were made resulting in obstacles before the development of other industrial sectors although the main idea had been to protect the industry. Incentives did not provide a strong economy which competed in the external world, but rather resulted in the emergence of some sectors and institutions that did not have a competitive power, energy, and dynamism (Karaosmanoğlu 2000, pp. 15–16).

The first plan did not make any recommendations to change the system radically. However, the draft of the first plan revealed the weaknesses of the system clearly. A land reform, tax reform, and a public management reform had all been included in that draft. However, then the government was not keen to this first draft. Thus, the recommendations for reform regarding the economic structure in the preparatory process of the plan could not be put into implementation (Küçük 1978, pp. 295–296; Tekeli and İlkin 1984, p. 1606). The subsequent plans could not be embraced by the society, politics, or the bureaucracy and gradually became merely ritual texts. If the opportunity for political and bureaucratic ownership could have been achieved in the first plan, planning in Turkey could have been more functional.

The second plan covered only the calculations regarding the macro-objectives while significant alterations were made in the sector-wise balances. Since it did not make any sort of institutional reform recommendations such as the first development plan, the second plan was named as the "status quo plan" (Mortan and Çakmaklı 1987, p. 297; Küçük 1978, p. 296).

After the first planning, the planning authority lost its appeal in Turkey. In this respect, more importance was attached to the inclusion of investment projects to the government program and the budget. Therefore, sector-wise balance and right projects would undoubtedly lose its importance in a plan prepared in such a context (Mortan and Çakmaklı 1987, p. 297).

It can be argued that the first and the second plans were generally competent in terms of policy formation and guidance. In this sense, 1960s could be regarded as a relatively favorable environment for the planning to manage political decision making on the basis of technical knowledge (Yılmaz 2003, p. 217). However, subsequent plans were affected by political and economic problems at both national and foreign levels, particularly during 1970s.

The concept of planning of 1960s has undergone significant changes after 1980s. In the changing conditions of 1980s, preparing comprehensive development plans covering detailed sectoral balance projections for each sector lost its appeal. Contents of national planning were shifted towards policy planning, development of energy, transportation, and water sources, and development programs for strategic sectors in which external economic effects are excessive such as education (Celasun 1984, p. 342).

Countries managed according to a market order aim to increase macro performance through a guiding planning, and public institutions are aimed to act in harmony with the market conditions and as effectively as private enterprises. This approach enables planning to assume a more active role in cooperating financial issues and infrastructure investments in the public sector (Celasun 1984, p. 343). Thus the planning has covered structural adjustment policies and strategic structural policies to be adopted instead of comprehensive planning focused on optimum allocation of resources in 1980s.

In sum, we can take the following lessons from Turkey's development planning experience (Mortan and Çakmaklı 1987, pp. 315–342; Küçük 1978, p. 296; Bulutay 2001, p. 39; Mıhçı 2001, pp. 177–179; SPO 1963, pp. 33, 39, 47, 67, 1968, pp. 3, 263, 1973, p. 137, 1978, p. 255; Sezen 1999, pp. 198–199):

1. Economic development is largely identified with industrialization. The sector-wise development perspective used to be based on "striking a balance between agriculture and industry" in the first plan, but this perspective was abandoned in the second plan and the industrial sector was deemed as the "driving force" of the economy in the subsequent plans. Particularly intermediary and investment goods were attached priority.
2. Import substitution was major policy for economic development before 1980s. So it was experienced that import substitution could not actually substitute imports. The inclination towards imports could not be reduced. On the contrary, imports have been on an upward trend.

3. All plans are prioritized to support private sector initiatives and entrepreneurships.
4. A high pace of growth is the goal in all plans.
5. Although the Turkish planning desired to use the "Staged Planning" approach of Harrod–Domar Model, the decisions made on macro sizes and objectives of the economy without making any sector-wise technical studies according to the "Macro Plan–Sector Plan–Project," and without determining priorities and preferences in the rational use of production factors have had an adverse effect on the coherence and implementation of the plan.
6. The SPO responsible for preparing development plans deviated from preparing plans and providing consultancy for the government after 1980; instead, assumed an executive function.
7. Plans are prepared with a similar technique and based on finding the optimum solution with minimum resources.
8. Increasing investments is always the ultimate goal in planning—which is deemed sufficient.
9. Until 1980s, not setting an export target for industrial products raised a production structure that encouraged domestic production instead of exports. Capacities gained only with foreign exchange surplus rather than exports resulted in a structure that made production with an inactive capacity despite high profits; but this structure was far from being feasible and efficient.[4]

[4] It might be useful to mention an anecdote from one of the former experts of the SPO, Mr. Vehbi Dinçerler. He states "While we were working at the SPO offices in 1964, Prof. Tinbergen came to the sectors branch. We weren't able to determine which sectors would be given priority of investments, and which would receive incentives first according to scientific rules. After we had explained this to Prof. Tinbergen, we asked him whether he could show us the right way to do this and said 'which sector are we supposed to give priority?' He answered our question with a question back: 'Which sectors are you good at?' We had only a 30 or 40 sectorwise 'input and output' study which did not rely on reliable data. As a matter of fact, scientific data was really weak in 1960s. In other words we used to make planning 'without any data'. And we had no choice but to base our decisions and provisions on these. Nevertheless, he still wanted to hear our evaluations which had already based on our instincts. I remember some of us listing sectors such as cement, cotton wool, cotton textile products, various construction materials, and some food. And he asked again 'what are you good at?' insistently and we replied 'cement and cotton based textile'. His answer surprised us all as the apprentices of planning. He said 'keep doing this'. One of the most serious understandings of the early planned years was 'creating excessive capacity'. We said the opposite: but that would mean excessive capacity. And he answered: That is what I say, there should be excessive capacity and you can make exports; keep doing what you are best at, overproduce it and that is the golden rule. That means keep doing what you are successful in (his words were the repetition of success). There were still some oppositions: 'our resources are really insufficient; if we continue to allocate our resources this way, our development would not be balanced'. But Prof. Tinbergen 'understanding of balance is quite different, we should prioritize long term objectives; if you abide by my recommendation; you will have competitive sectors in the international arena. If you open to your economy to the external world, you will also not stay closed'. I applied this theory while doing the incentives: we applied serious tax exemptions in the customs and provided other incentives for excessive capacities in cotton wool and synthetic fibres, etc. in 1974. Businessmen doing investments at the time used to complain about excessive capacity. They might be looking for monopoly partially. But they kept what they were doing. If we make studies about the comparative competitiveness and efficiency analysis of the sectors in which high amount of

10. Living with subsidies is preferred to living with efficiency.
11. Public sector reforms are on the agenda in all plans but it is done little.
12. Plans make an effort to consider the qualitative aspect of development as well. However, priorities in that area change from one plan to another trying to cover a wide scope from ensuring social justice to fair distribution of income, from supporting urbanization to improving family planning, or from raising a skilled labor force to attaching importance to democratic cooperatives.
13. With the aim of determining the long-term development of economic and social structures and ensuring the coherence between all plans, the plans prepared with a long-term perspective are a significant step in the development of planning itself. However, perspective plans lost their appeal in time despite their attraction in the first periods.
14. All development plans except for the first plan have been regarded less important by the society. Most of the development plans were focused on the quantitative dimension of planning; however, recent development plans have tended to rather focused qualitative dimension. So quality is taking precedence over quantity in recent development plans. For instance at the last development plan, tenth plan, prioritized transformation programs are designed to make the economy transform towards 2023 goal.
15. One should bear in mind development plans in Turkey have never paid attention to the fundamental challenges facing Turkish society.
16. Plans had not focused on spatial dimension until the last plan. However, the last plan is more focused on spatial dimension compared to previous plans; plan emphasizes improving the quality of life in urban areas which is good to develop policies to eliminate regional disparities.
17. Monitoring and evaluating impacts of the plans are weak. Impact assessment in Turkish development plans is neglected. It is needed to establish a monitoring and evaluation (M&E) system to monitor and assess plans. In this plan, the SPO is eager to establish well-working M&E system for the plan.

Finally in this part, it might be useful to briefly mention the tenth Five-Year Development Plan covering 2014–2018 period. Tenth plan is based on an extensive consultation process with all the stakeholders compared to previous plans (Fig. 2).

Identification of 25 priority transformation programs is cross-sectoral nature that supports four pillars and is one of the key features of this Plan. These programs could serve the purpose of strengthening the link between Plan/programs/policies and budgets. For each spending program, there is a coordinating institution and one responsible agency for every subcomponent. Close coordination among the relevant institutions is needed for successful implementation and monitoring and evaluation of these programs. This requires a major mentality change in doing business in Turkish public sector. The government finalized preparation of action plans for each program in consultations with relevant responsible agencies. In the plan, agriculture

exports is made by looking at the previous 10 years, would Tinbergen be false? If he is right, then we have an enlightened road: keep repeating the success."

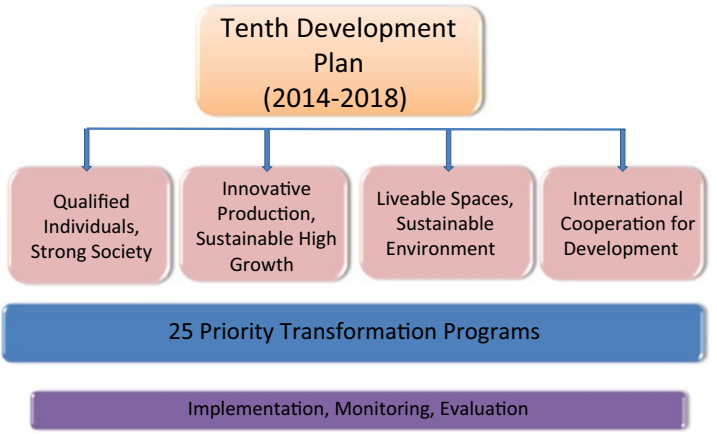

Fig. 2 Structure of the development plan. (Source: World Bank)

is projected to continue to lose share in GDP but industry is expected to gain the share in nonagricultural activities, not services.

Consequently, as long as plans turn into actions and they are owned by politically and bureaucratically at a greater extent, then they can be successful. So there should be an aim to create a public value by turning the strategies into actions and this process should be measured via certain methods. Otherwise, if you are pedaling constantly while the gear is in neutral, you will go nowhere.

Political choices should definitely be made by the politicians themselves, but while doing this, well-prepared and well-defined studies should be the reference point (Karaosmanoğlu 2000, p. 27). Elected politicians expect that development plans should be in line with the common vision that the government articulated through consulting with stakeholders. So policy comes first and is formulated by the government; civil servants are the ones who should embed these policies in development plans. In practice, this simple division of labor may barely be working. Top civil servants may not embed some of the policies formulated by the politicians in development plans. In some cases, civil servants fail to identify and select strategies in line with policies, or although some of the policies may embed in development plans, civil servants may not be successful in delivering of strategies. In Turkey politicians have managed policy making, deciding priorities, and policy outcomes successfully in last decade, alas top civil servants keep low profile to turn these policies into strategies and deliver strategies which are to produce a set of outputs. What should have been done by politicians in this case is to monitor civil servants' performance rigorously. However, politicians have failed to monitor the performance of top civil servants so far.

Looking at the figures of planned periods, Table 1 shows the pace of growth in agricultural, industrial and services sectors. Looking at the sector-wise growth rates, one can observe that the average pace of growth of agricultural sector has been

Table 1 Sectoral growth rates. (Source: Ministry of Development)

	I. plan	II. plan	III. plan	IV. plan	V. plan	VI. plan	VII. plan	VIII. plan	IX. plan
(At fixed prices, by percentage)									
Agriculture	3.0	3.4	3.2	2.1	1.9	1.6	1.8	1.1	2.3
Industry	10.9	8.7	9.7	1.6	6.1	3.9	3.9	5.1	5.3
Services	7.2	7.9	7.9	2.6	5.0	4.3	4.3	4.9	4.9
GDP	6.4	6.7	7.1	2.3	5.1	3.7	4.0	4.5	4.1
GNP	6.6	7.1	6.5	2.1	5.2	3.5	3.8	4.4	4.0

GDP gross domestic product, *GNP* gross national product

2.2% in the plan periods. The average pace of growth of industrial sector has been 6.1% in the plan periods. We can also observe that it displayed a high growth rate particularly in the first three plan periods. This might be explained by the priority given to the industry-based growth. Turkey followed the import substituting policy for 57 years until 1980. Due to this policy, industrial sectors produced only for the domestic market, thus became monopolized in a sense. With the decisions made after 1980, industrialization based on public institutions was abandoned, foreign capital inflows were allowed. Furthermore, the monopoly of the state was abolished and privatization activities were started. Strengthening industrial sectors was aimed with policies providing incentives for exports in the subsequent years. However, the industrial sector could not achieve a peak as expected from it. In the last three plan periods, a growth rate of 3.9, 5.1, and 5.3% was achieved in the sector, respectively.

Average growth rate of the services sector has been 5.4% in the plan periods. The sector grew by 7.6% on average until the fourth plan period. The fourth plan period was the time when the smallest growth rate was achieved in this sector. The sector displayed a 4.6% growth rate on average in following 5-year plan periods.

The agricultural sector represented 35.5% of the GDP in the first plan period. However, looking at the development of the agricultural sector in the period of nine plans, one can easily observe that the agricultural sector had a diminishing share within the GDP. Its share which had been 21.5% in the fourth plan period fell to 8.3% in the ninth plan period. On the other hand, the share of the industrial sector within the GDP had been 17.9% in the first plan period. And its share increased to 31.8% in the fifth plan period by increasing steadily owing to the objective of industry-based growth in the subsequent years. Nevertheless, the share of the industrial sector within the GDP diminished later and fell to 20.4% in the ninth plan period.

Interestingly the services sector formed 46.6% of the GDP during the first plan period. We can state that the services have undergone a number of changes since the first plan period. The services sector received a commercial identity owing to communications getting easier, faster with less costs. Thus, the services sector made a great stride after 2000s, particularly in the second half of 2000s. And the share of services sector within the GDP reached 71.3% eventually in the ninth period (Table 2).

Table 2 Composition of gross domestic product. (Source: Ministry of Development)

	I. plan	II. plan	III. plan	IV. plan	V. plan	VI. plan	VII. plan	VIII. plan	IX. plan
(At current factor prices, by percentage)									
Agriculture	35.5	29.6	28.5	21.5	17.8	15.7	14.2	12.4	8.3
Industry	17.9	19.8	20	26.1	31.8	25.6	28.2	29.1	20.4
Services	46.6	50.6	51.5	52.4	50.4	58.7	57.6	58.5	71.3
GDP	100	100	100	100	100	100	100	100	100

GDP gross domestic product

Table 3 illustrates the ratio of imports and exports to GDP in Turkey. The share of Turkey's exports to GDP was 5.97 % in 1962 when the concept of planned development was adopted whereas its imports were 9.75 %. Significant steps were taken to increase imports after the concept of planned development had been adopted. However, excessive appreciation of Turkish Lira, increases in the oil prices, incentives being insufficient for exports, and frequent changes in legislations caused exports to fail to achieve the desired level in the subsequent years.

During the second plan period (1968–1972), import substitution and export-oriented policies were adopted. Policies applied in that period were insufficient to improve exports; and the share of exports in the GDP was only around 5 %. And in the third period, with the purpose of diversifying and increasing exports, decisions were made to ensure industrial products to gain foreign competitiveness, to give priority to projects for exports in foreign capital investments, to continue tax return in exports, to make the necessary regulations for incentivizing export-oriented industries, and to provide easy access from the customs unless such industries were absent so that imports can be made without any restrictions.

The years 1973 and 1974 covered by the third period were marked by excessive increases in oil prices leading to a period of recession in advanced economies and embargo put by the USA on Turkey after the Cyprus Peace Operation in 1974. These all had a negative impact on exports. The share of exports within GDP was 5 % on average and had a downward trend continuously during the above-mentioned period (Pıçak 2010, p. 4).

Institutional regulations were made to provide resources for a rapid industrialization and significant steps were taken regarding the exports during the fourth plan period. Turkey was aimed to be self-sufficient of most of its needs and be able to make exports to other countries at the end of the plan period. A comprehensive economic package put into implementation on January 24, 1980 made the year become a significant turning point for foreign trade policies (SPO 1985, pp. 183–186). The share of exports within GDP increased to 11.8 % in the plan period.

Since the development potential of agricultural exports was limited in the fifth plan, industrial sector was determined as the main resource of the increase in exports (SPO 1985, p. 186). Thanks to the policies to open to foreign markets in the fourth plan period, exports of industrial products were increased at a considerable degree. However, the same policy caused problems of cost, quality, and standards

Table 3 Developments in foreign trade. (Source: Ministry of Development)

	1962	1967	1972	1979	1984	1989	1995	2000	2006	2013[a]
Million dollar (at current prices)										
Export (FOB)	381	522	885	2.261	7.133	11.625	21.636	27.775	85.534	153.500
Import (CIF)	622	684	1.562	5.069	10.756	15.792	35.709	54.503	139.577	251.500
Balance of foreign trade	−241	−162	−677	−2.808	−3.623	−4.167	−14.073	−26.728	−54.043	−98.000
GDP	6.381	11.225	17.184	58.575	59.989	107.143	169.486	266.568	530.566	822.776
Ratios to GDP (%)										
Export (FOB)	5.97	4.65	5.15	3.86	11.89	10.85	12.77	10.42	16.12	18.66
Import (CIF)	9.75	6.09	9.09	8.65	17.93	14.74	21.07	20.45	26.31	30.57
Balance of foreign trade	−3.78	−1.44	−3.94	−4.79	−6.04	−3.89	−8.30	−10.03	−10.19	−11.91
Rate of export to import	61.25	76.32	56.66	44.60	66.32	73.61	60.59	50.96	61.28	61.03

GDP gross domestic product, *FOB* free on board, *CIF* cost, insurance, and freight
[a]Estimates of realizations

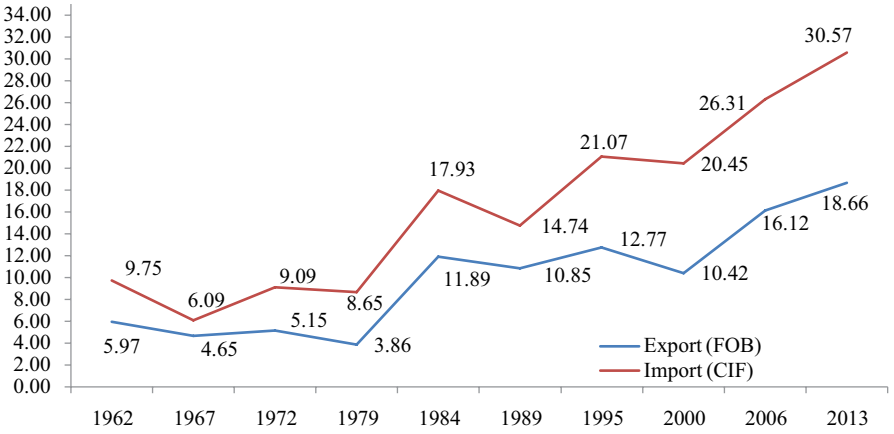

Fig. 3 Ratios of export and import to GDP. *FOB* free on board, *CIF* cost, insurance, and freight. (Source: Ministry of Development)

becoming more apparent in a significant number of domestic market-oriented industrial organizations. The fifth plan is based on opening to foreign markets and sustaining policies to raise exports and envisaged a competitive industrial structure, hence the adjustment periods of these industries were stated to continue in the plan period (SPO 1985, p. 66). The share of exports in GDP did not undergo a remarkable change in the plan period, and came in at 10.8% (Fig. 3).

The fundamental goals of the sixth plan period were achieving a healthy and sustainable surplus in the current account balance, accelerating industrialization with a competitive structure, and increasing the role of private sector in development. The continuous increase in the public deficits in the fifth and sixth plan periods limited the benefits that could be gained from the economy being open to foreign markets and its liberalization. Particularly, the finance policies had a trend just the opposite of what was actually planned; and this led to an unsustainable growth based on domestic demand and high price hikes to become chronic (SPO 1996, p. 5). With the aim of ensuring Turkish economy to become sustainable at a rapid pace, narrowing public deficits, forming a growth based on foreign demand, and initiating structural reforms to make economic stability continuous, the "Economic Measures Action Plan" was put into force in 1994. Following the Decisions of 5 April, significant steps were taken to re-establish the external balance. A period of rapid increase in exports was entered due to implementations to address the real depreciation of turkish lira and short-term financing needs of exports as well as the revival in the world economy (SPO 1996, p. 8). At the end of the plan period, the share of exports in GDP reached to 12.7%—displaying a significant increase thanks to the above-mentioned effects.

The seventh plan aimed to create an industrial structure in which the private sector has more weight by taking advantages such as Turkey's integration into the world economies, its economy open to the external world with high competitiveness, raw materials, and human resource for exports within the framework of the

EU harmonization (SPO 1996, p. 67). The plan stated that increasing competitiveness in international markets by taking other element except for the price would be important for a high exports' performance. With this in mind, the quality of products could be raised by eliminating the gap between Turkey and developed countries, thus developing brands that are more preferable in international markets as well as an environmental friendly product and market diversification (SPO 1996, p. 66). As a result, the share of exports in GDP came in at 10.4 % at the end of the plan period.

The eighth plan envisaged a production structure that is export-oriented, dense with technology, with high added value, in compliance with international standards, and that can mobilize local resources. In this respect, emphasis was put on increasing competitiveness in economy, as well as increasing employment, efficiency, and exports, making investments aiming to produce or transfer suitable technologies (SPO 2001, p. 33). However, the global economic crisis had an adverse effect on Turkish economy, particularly on exports.

The ninth plan aimed to increase the export subsidies and guidance to brands with the aim of increasing competitiveness in the exports of agricultural products (SPO 2007, p. 85). International trade becoming freer, increasing world trade in the products with information and technology intensity, and transition of competitiveness in labor-oriented products to certain countries forced Turkey to have a place in higher areas with high added value in the value chain of world industrial products. In this respect, a radical change was aimed to increase exports in the industrial sector as well as competitiveness and products with high added value (SPO 2007, pp. 87–115). The share of exports in GDP was 15.5 % in the plan period. Global economic crisis had an adverse effect on Turkey's exports in this period. However, despite the economic crisis, exports coming in at higher than the targeted figure made expectations become more positive.

7 Conclusion

This study has discussed the development planning experience of Turkey starting from the past till today. How the concepts of planning, development, and planned development evolved and changed both in Turkey and in the world have been evaluated from a historical perspective. Starting from the historical development of industrial plans which were the first plans ever written in Turkey, 1960s—the milestones of planned development—and the establishment of the SPO (The Ministry of Development starting from 2011) has formed the basis of the study.

Industrial plans prepared after the Great Depression of 1929 laid the groundwork for the planned development process started to be applied in 1960s. Putting planned development and pioneering planning experiences aside, comprehensive economic and social models were aimed to be developed. One can consider the planning studies in that period as an effort to catch up with the countries that already reached an advanced level or that rapidly overcome the problems to develop even if they started the process later. One of the triggers of Turkey's move towards industrialization

was the adoption of planned development approach. Having displayed a continuous existence in the planned development process, development plans have become an indispensable part of Turkey's process towards change and improvement. What is envisaged during the transition to the planned development process is that ensure various institutions cooperate and share a common ground. With the unity of objectives, unity of power will also be ensured against all kinds of changes.

One of the issues of debate regarding the development plans so far has been the targeted pace of growth. An average of 7 % growth race has been targeted since the first Five-Year Development Plan. Most experts consider this target as pretty high and unrealistic, and claim that resources fall short to reach even a gross growth rate of 5 %. Continuous discussions until today has also showed us that plans could deviate from their original objectives due to the prevailing conditions as well as political and global changes. The development plans of today aim to assist institutions and economic actors in their decision-making processes in the environments of uncertainty caused by crises. Plans bring a long-term perspective instead of adopting a short-term approach.

The fundamental aim of development plans until today has always been to ensure that economic growth and social development continue in a sustainable manner. In this respect, increasing competitiveness and employment, ensuring human and regional development, strengthening social solidarity, and increasing quality and efficiency of public services have always been foci of development plans. Nevertheless, all these focus areas require new perspectives due to current developments. In addition, the new public management approach has brought along a new order in which the private sector has had a more effective role in the economy since 1980s. This approach caused a change in the role of the public sector. With this new approach at hand, the public sector has focused on its regulatory, supervisory, and coordination functions. And the concept of planning has changed in this regard. In this new order, public sector is expected to develop guiding strategies for the policies to be followed. One can clearly observe this new approach particularly in the last 5-year plans after 1980s.

In conclusion, Turkey needs to face its development experience, take lessons from it, and deem it as a resource to refer in the future.

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The Failure of Land-Use Planning in Japan

Yoshihisa Godo

1 Introduction

In March 2010, it was revealed that Mr. Azuma Koshi-ishi, one of Japan's most influential lawmakers, built a house illegally on agricultural land (see Mainichi Shimbun, 31 March 2010). More precisely, Mr. Koshi-ishi borrowed a parcel of agricultural land from his brother-in-law and built a house on the property. By doing this, Mr. Koshi-ishi violated the Agricultural Land Act (ALA) in two ways. First, the ALA requires that contracts involving the lease of agricultural land shall be approved by the municipal government. Second, the ALA requires the prefectural governor's permission before a person may convert agricultural land to nonagricultural use. Mr. Koshi-ishi ignored both the requirements and his illegal conversion of agricultural land was reported extensively in major Japanese newspapers and magazines.

When the landowner (the brother-in-law of Mr. Koshi-ishi) was interviewed by newspaper reporters, he commented that "Everybody is doing this kind of thing." However, Mr. Koshi-ishi responded differently. Mr. Koshi-ishi said, "This is my careless mistake. I will remove constructed things and make this land usable for farming sometime." Mr. Koshi-ishi did not explain what he meant by "sometime." Physically, it is difficult to return his housing site to agricultural land. However, in implementing Japanese land-use policy, the intention declared by a landowner is highly respected. Thus, while this land is still used for housing, the government has not taken any substantial actions against the lawmaker. It is quite likely that Mr. Koshi-ishi will keep this house for his life without receiving any practical punishment from the authorities.

Mr. Koshi-ishi's case is not exceptional. Violations and manipulation of land-use laws are rampant in Japan. It is reported that nearly 10,000 cases of illegal conversion

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of agricultural land, such as Mr. Koshi-ishi's, are revealed every year (see Report of Ministry of Internal Affairs and Communications, 2013). In most of the illegal conversion cases, situations such as Mr. Koshi-ishi's will be confirmed only if the landowners submit written apologies to the authorities. Of course, it is believed there are numerous cases of illegal conversion that have not been revealed. However, it is not possible to identify the number of cases.

Japanese citizens pay little attention to the ALA or other land-use planning laws. Although, for example, the Building Standard Act stipulates, as minimum requirements, that buildings must harmonize with their surroundings, a majority of Japanese citizens is violating the law (Kobayashi 2005).

Japan is a densely populated country. Thus, Japanese citizens should agree with the general remark that they had better have well-planned land use. However, people do not agree on how to structure land use. Japanese citizens strongly resist any restrictions placed on their own land use. As a result, land use in Japan has become inconsistently legislated and enforced. The misuse of land is rampant. Many owners of agricultural land build houses without considering the negative impact to neighboring farmers. For example, artificial lights from houses will impede the growth of vegetables. In many cities, apartments are constructed in factory areas and the new residents complain to factory owners and management that noises from the factories violate the residents' living rights. Sometimes, new residents try to sue factories to protect, what they believe to be, their rights (Arita 2011). In Kyoto, one of the most famous sightseeing cities in Japan, there are many ugly high-rise apartments that neighbor historical temples.

The Japanese government continues to enact various land-use planning tools. The plans appear to be excellent but they are merely "pictures of rice cakes" (i.e., something of little value) and will not be realized forever. For example, in 2008, the Cabinet promised that all the idle agricultural land would be turned into appropriate uses within 3 years. While the amount of idle agricultural land increased during the 3-year period, Japanese citizens did not complain to the government. This means that Japanese citizens do not consider the government's land-use plans seriously.

The Japanese government does not appear to be interested in restoring order in land use. Instead of making more efforts to apply land-use planning more strictly, the government is simply abolishing important parts of land-use planning under the name of "deregulation." For example, the City Planning Act (CPA) has obligated all the cities to have zoning for the Area Designated for Urbanization (ADU) to prevent unplanned development in urban areas (Godo 2013). However, the zoning for ADU became voluntary when the CPA was revised in 2000.

Japanese society is often described as being highly law-abiding and disciplined. These characteristics of Japanese society may be almost correct for many aspects of Japanese life. Japanese customers make long queues to maintain order in shops. The public transportation system in Japan is well planned. Social order is so highly respected in Japan that thieves and riots are rare, even in the areas chaotically damaged by natural disasters. Why does Japan then fail to keep land use in order?

This paper explains the reasons for the failure of Japan's land-use planning. The author hopes that today's developing countries will draw an important lesson from Japan's experience.

2 Democracy and Land-Use Planning

Before discussing Japan's land-use problem, it will be useful to have a quick review of the system of land-use planning in Western European and North American countries, countries that have been recognized as the most advanced societies in the world. The political and economic systems in Western European and North American countries have presented the models of development for many of today's developing countries.

A private land ownership system has been developed in Western European and North American countries. Private land ownership is one of the most important aspects of private rights. However, private ownership does not mean that the owners can use their properties unconditionally. Owners' rights are subject to restrictions if there is a conflict with public interest.

Land use is a typical case where private rights should be restricted for the purpose of protecting the public interest. For example, any building with high traffic flow that is built next to a school could distract students. If all the houses in a community are built in a way to preserve the landscape, all the residents and visitors will be benefitted. As such, land-use planning is necessary for citizens to have a comfortable life.

The problem is how to design and enforce land-use plans. Because land conditions differ widely according to area, uniform regulations by the government will not work well. In Western European and North American countries, governments at the local level bear the responsibility of designing and enforcing land-use plans. However, Western European and North American countries have invented various systems for citizens' participation in land-use planning such as *Initiatives* and *Referendum* in the USA and *Enquete Public* in France. The coordination between the private ownership system and the restriction of private rights of land use through land-use planning is the key to maintaining comfortable lives for the citizens.

Land-use problems are closely related to development of democracy. Democracy consists of two factors: assertion of private rights and the participation of citizens in local government, and citizens are obliged to participate in designing and enforcing land-use plans. In the same manner, citizens are allowed to assert their rights and trade and use land freely as long as they observe the land-use plans.

3 Japan's Geography and Land-Use Planning

Japan's land-use problem is closely related to its geography. In Japan, there is huge rainfall in the mountainous areas. Annual precipitation in Japan is 1,728 mm. That is more than twice the precipitation of France (750 mm), which is one of the largest agricultural countries of the European Union. Only one-third of the total land acreage in Japan is flat, which is much smaller than that of other major developed countries (e.g., 70 % in the USA, 90 % in the UK, 77 % in Italy, 73 % in France, and 69 % in Germany).

Rivers in Japan are steep and short. Water from rainfall quickly runs into the ocean. The water levels of rivers change widely and continuously, depending upon the weather. Moreover, all of the farmers in a community use the same irrigation channels. Owners of agricultural land cooperate closely with each other. The farmers must collaborate in the irrigation of lands and in the extermination of insect pests, and collaboration among farmers is particularly important in rice farming. When rice paddy fields are flooded for irrigation purposes, water moves from the upper parcels to the lower ones. Inappropriate use of water on agricultural land in one paddy field can adversely affect all farmers in the community.

In order to prohibit inappropriate use of water on agricultural land, land-use planning at the community level is necessary. Details of land use, such as the rotation of water intake and drainage and the timing of planting and harvesting must be carefully planned. Land-use planning had been one of the most important tasks for the rulers of Japanese society because, until the Pacific War period, the agricultural sector consisted of the largest portion of economic activity in the country.

4 Land-Use Planning Before the Pacific War

Although modern-day Japan fails to have effective land-use planning, Japan has a long history of land-use planning. Therefore, it is useful to have a short review on how Japan managed land-use problems before the Pacific War.

During Japan's feudal period, the Tokugawa Shogunate (1603–1868) had a remarkably stable system for land use that resulted in the Tokugawa Shogunates retaining power more than two and a half centuries. The Shogunate possessed all the land. Transactions of land among farmers (such as buying/selling and lending/borrowing) were prohibited. Only the eldest son of a farm household could be the successor to his father's right of farming. The Shogunate allocated land managerial rights among feudal lords, called *daimyo*. The *daimyo* were responsible for constructing common agricultural assets such as irrigation facilities, choosing crops, and designing and enforcing land-use planning. In return, the *daimyo* were authorized to collect the land tax from farmers.

Since the *daimyo* lived in cities, it was difficult for them to watch the farmers' behavior. So, the *daimyo* appointed village headmen to take care of land-use planning and land tax collection at the local level. In addition, farmers were organized into five-household neighborhood units which owed collective responsibilities for farming according to the *daimyo*'s land-use planning, and they were required to pay land tax to the *daimyo*.

Researchers have concluded the system of the Tokugawa Shogunate had various disadvantages. Some of the disadvantages were the inhumane restrictions placed on the fundamental human rights such as freedoms of choice of occupation and mobility. However, it has been recognized that land was used in a well-planned way under the system.

The ending of the Tokugawa Shogunate and the inauguration of the Meiji government (in 1868) had a great impact on land-use system. In order to counter the pressure of colonization by the Western countries, the Meiji government needed to enrich the Japanese economy and modernize Japanese society. To do so, the government introduced the free market system. As part of that system, the government launched the Land Tax Reform (in 1873), and introduced the private ownership system of land. In the Land Tax Reform, the government established a taxable value for each parcel of land and issued a land certificate to the parcel's owner. The holder of the land certificate was obligated to pay an annual asset tax of three percent of the assessed taxable value. Land became tradable by the selling and purchasing the land certificates.

After the Land Tax Reform was instituted, local wealthy families became large landholders and landlords by purchasing agricultural land in their villages. Before the 1920s, the Japanese financial market was still underdeveloped and regionalized, and local wealthy families preferred to stay in their villages in order to retain their wealth in the form of ownership of agricultural land.

Because the use of laborsaving agricultural technologies such as harvesters and pesticides was still scarce at that time, the optimal farm size was as small as one hectare. Thus, local wealthy families farmed only a limited proportion of their agricultural land by themselves. Most agricultural land owned by these families was rented to a large number of small tenant farmers in the village. Because the families were engaged in daily farming activities themselves, they, as "self-farming landlords," had abundant information about local agriculture. They were also held in high esteem in their hometowns because of their political and economic leadership. Accordingly, the families were actively involved in the formation of common agricultural capital such as joint irrigation facilities. As leaders of local agriculture, they were also engaged in designing and enforcing land-use planning in the communities.

As a result, land-use planning was carried out relatively smoothly under the leadership of the local wealthy families.[1] However, their leadership was not organized under any written law. As long as the families kept strong ties with their tenant farmers, they maintained community order under their leadership. However, the relationship between the families and tenant farmers was subject to change, depending upon economic and political conditions. In that sense, the leadership of the local wealthy families in land-use planning was delicate and could not be expected to last over a long period of time.

As Japan shifted its development stage from light to heavy industrialization around 1920, the economic concerns of wealthy local families changed. They began to invest in new factories in urban areas in order to generate greater financial returns and they became involved in the management of heavy industry businesses. Even after these families moved to urban areas, they usually kept their agricultural lands as a part of their portfolios. In contrast to self-farming landlords, the so-called

[1] Local wealthy families in this period served three functions: maintaining rural order, participating in political parties, and advising and managing local industrial activity (see Teranishi 2005).

"absent landlords" neither had good information about local agriculture nor took leadership in forming common agricultural capital. As the heavy industry sector grew in urban areas, the proportion of self-farming landlords decreased and the proportion of absent landlords increased.

Conflicting interests existed between absent landlords and tenant farmers. For example, absent landlords often demanded increased rents from tenant farmers, leading to strong resistance and often fierce village-wide disputes that were referred to as "peasant disputes." Peasant disputes began in the second half of the 1910s in Western Japan where heavy industrialization had its start in Japan, and the disputes spread nationwide during the 1920s. At their peak, the number of peasant disputes reached 7,000, meaning that farmers could not concentrate on farming (Hayami 1991).

As a result, the absence of land-use planning became a serious problem in Japan in the late 1920s. Ironically, however, militarism provided a solution for this problem. Japan shifted to a war footing in the 1930s. Private rights were severely restricted. Land trade (buying and selling as well as renting and borrowing) was controlled by the government. The government appointed village leaders who were responsible for keeping their communities disciplined for the war economy, and land-use planning was designed and enforced under the leadership of the appointed village leaders.

5 Land-Use Planning After the Pacific War

During the Pacific War, Japan kept its distance from international society and conducted its affairs as a military state. After the war, Japan returned to the international society as a member of the capitalist bloc. In order to catch up with Western European and North American countries, Japan introduced advanced technologies it had obtained from them. Simultaneously, Japan made great efforts in imitating political and economic systems of Western European and North American countries. Democracy was one of the critical systems that Japan tried to introduce after the Pacific War.

As the initial step of democratization, Japan introduced the agricultural land reform in 1947 that transferred agricultural land ownership to tenant farmers. As a result, income and asset allocation was equalized among the citizens. Japan also introduced a democratic constitution, universal suffrage, and the right to labor.

Although democracy consists of two factors, the private right of assertion and the citizen's duty to participate in local administration, Japan mistakenly only incorporated the former. As a result, citizens began to strongly resist any restrictions placed on their land use, assuming that such restrictions violated their property rights. People, such as wealthy families who had been influential earlier and enforced land-use planning based on their economic power, lost economic power after the agricultural land reform.

Because every citizen was vested with an equal political right and because income and asset distribution was equalized after the Pacific War, Japanese society was theoretically ready for introducing citizen participation in land-use planning. However, the Japanese government preferred not to do it. This can be seen as an example of a fallacy with mimicking the style of developed actions by the late-starter countries such as Japan. In imitating systems from advanced countries, late-starter countries tend to copy only parts of the systems that appear to be easy to put into action. The private right of assertion is easy to imitate but citizens' participation in local administration is difficult to imitate and implement.

Democracy originated in European and North American countries. With democracy came many trials and errors. Thus, the private right of assertion and the citizens' duty of participation in local administration developed in tandem in European and North American countries. However, the democratization of late-starter countries, including Japan, tended to be directed to the introduction of private right of assertion only.

6 The Gap Between the Actual Land Use and Written in Laws

Japan has enacted many laws that have the goal of well-planned land use. The following articles are parts of those laws and provide an image that Japanese land use is well-planned. For example, the following listing is of major articles of the Basic Act for Land (BAL).

Article 2 Considering that land has the characteristics of being related to public interest, such as the fact that it is a finite, precious resource for citizens both at present and in the future, that it is an indispensable basis for citizens' activities, that the use of a certain piece of land is closely linked with the use of other pieces of land, and that the value of land fluctuates mainly based on the trends of population and industry, trends of land use, the state of development of social infrastructure, and other social and economic conditions, public welfare shall take precedence with regard to land.

Article 3 (1) Land shall be properly used according to the natural, social, economic, and cultural conditions of its area.

(2) Land shall be used in accordance with the plan on land use, which has been formulated to achieve proper and reasonable land use.

Article 8 (1) Citizens shall respect the Basic Principles on Land when using and transacting in land.

(2) Citizens shall endeavor to cooperate with the measures on land implemented by the State and local public entities.

Article 9 The government shall take necessary legislative, fiscal, and financial arrangements for implementing measures on land.

As discussed in the introduction, the reality of land-use planning is different from what the law anticipates. Not only in the BAL, but also in various laws related

to land use, there are big gaps between the law as written and what is done in practice. Another example is the ALA. Article 2 of the ALA stipulates that owners of agricultural land are obligated to use the land efficiently for agricultural purposes. However, this obligation is often ignored as can be seen from Mr. Koshi-ishi's case.

Although written laws attempt to "paint an ideal situation," the lack of implementation of the laws has a poor result in Japan's actual land-use planning. Mass media and researchers in Japan seldom raise questions about the gap between the official statements and actual situations. This means that Japanese society has little respect for land-use planning.

There are many laws enacted that permit local administrations to take strong measures to use land planning to correspond to public interest. However, these are only "pictures of a rice cake." If local administrations try to apply those laws, landowners strongly resist. Thus, local officials tend to be reluctant to take strong measures for fear that they might get into trouble. For example, if a parcel of agricultural land is not efficiently used, the Act on Promotion of Improvement of Agricultural Management Foundation permits the municipal government to transfer the land from the current owner to an appropriate farmer. However, there have been almost no cases involving this type of land transfer.

What is needed in today's Japan is citizens' participation in land-use planning. Every citizen has his own opinion on land-use planning. Thus, fierce discussions among citizens should be inevitable. Through fierce discussions, citizens' respect for land-use planning should be improved. Once citizens arrive at an agreement about land-use planning after the fierce discussions, they will be less likely to violate the laws.

The absence of citizens' participation in land-use planning hindered, and continues to hinder, reconstruction after the 2011 tsunami disaster of the Great East Japan Earthquakes. The areas stricken by the tsunami need new land-use plans. However, because of the citizens' reluctance to participation in land-use planning, it is difficult for the local governments to prepare new land-use plans.

7 Conclusion

Japan is the first non-Western nation to "catch up" with policies instituted by advanced nations. Before Japan completed the catching-up process, Japan had been devoted to imitating political and economic systems of Western society. Largely, Japan succeeded in imitation; however, where democracy is concerned, Japan made a mistake. While democracy consists of two factors, i.e., the private right of assertion and the citizen's participation in local administration, Japan imitated the private right of assertion, only. As a result, land-use planning became "a picture of a rice cake" and actual land use was not implemented. Once land use was not effectively implemented, land-use planning has been difficult to restore and will result in negativity for future generations.

Many of today's developing countries are attempting the same "catching-up" process that Japan did. Those countries should learn from Japan's mistakes and make efforts to introduce citizens' participation into local administration. To accomplish this, it may be necessary to disclose public information and provide social education to the citizenry.

In particular, Japan's experiences may be informative for China. Currently, all the land ownership in China belongs to the state. However, with the spread of the market economy, privatization of land ownership may be inevitable. If so, China needs to be prepared to introduce its citizens to participation in local administration. Otherwise, land use in China, which is already heading to a chaotic situation, may be irrecoverably destroyed.

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Singapore's Economic Development in the Light of Modern Development Concepts

Toh Mun Heng

1 Overview

We begin with an overview of the economic development performance of the Singapore's economy since the 1960. In subsequent sections, we consider in greater detail the slew of public policies and measures implemented in each phase of the chronological development. We attempt to view each of six broad development phases through the lens of development advantage introduced in an earlier Chapter (Chapter 2). Specifically, we can identify how modern concepts of regional development applied assiduously in development planning of the Singapore's economy.

The development history for the Singapore's economy is not a long one. Before 1960, Singapore was simply a trading post in Southeast Asia for the British Colonial Administration. With the eclipse of the British Empire, and rising fervour for self-government and independence by inhabitants of the island, Singapore was granted self-government in 1959. Following a brief period of amalgamation with Malaysia in 1963, Singapore became an independent sovereign on 9 August 1965. Its earlier hope of economic emancipation lies in the adoption of an import substitution strategy supported by a Pan-Malayan market. When separated from Malaysia, the development strategy had to switch over to one that is export-oriented industrialization dependent on foreign investments and the world as the hinterland for market, management expertize and technological know-how. Capitalizing on its strategic geographical location linking major markets of the Eastern and Western hemispheres, transportation infrastructure as in sea port and airport were built and continuously upgraded to attract shipping lines and air lines, generating excellent connectivity that facilitates trade and investments.

Singapore's economy has evolved from an *entrepot* economy in the early 1960s to one that is powered by modern industries such as electronics, chemicals and pharmaceuticals, and sophisticated service industries in the area of finance, business

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consultancies, medical and education services. It is now a hub for many types of economic activities: financial services, IT services, medical services, electronics, aviation and education services. Over the period of four decades, from 1970 to 2010, the gross domestic product (GDP) at constant prices has increased by 17 times, from S$ 16,567 million to S$ 284,561 million. Its per capita GDP on the purchasing power parity (PPP) basis stands at $ 56.7 thousand in 2010, ranked third in the International Monetary Fund's (IMF) lists of countries.

2 Phases of Economic Development of Singapore Since 1959

2.1 Phase 1: 1959–1967

As summarized in Table 1, the development experience of the Singapore's economy in the last 58 years can be divided into six phases. During the first phase, economic issues and social unrest were daily headlines in the media. Unemployment was rising as more school leavers poured into the labour market amidst shrinking global commodity demand and threats of more direct trade among countries that will diminish the role of Singapore as an *entrepot* port. The political environment is less than settled as political parties and factions fought for supremacy by means that might not be conventional: worker unions were called upon to go on strikes and students were mobilized for demonstrations fuelling civil disorderliness.

Import-substituting industrialization was opted as a solution to the economic woes. Technical assistance to plan, finance and implement was obtained from the United Nations (UN) and the International Labour Organization (ILO). Right from the start of the industrialization programme to restructure the economy from *entrepot* to manufacturing activities, the government favoured foreign direct investments (FDI) and transnational corporations (TNCs) as the conduit or package for capital, managerial expertize, technology, markets and other link-ups. Both local capital and entrepreneurship were lacking. However, the inflow of foreign capital was unimpressive. Economic growth is at best stuttering and modest. This was due to the unsettled domestic political situation and less-than-cordial industrial relations.

Beginning in 1960, tariffs and quotas on manufactured goods were introduced for the first time. The objective was to encourage the setting up of import substituting firms. The import substitution policy was intensified when Singapore joined Malaysia in 1963. By the end of 1965, import duties had been imposed on 157 items including steel bars, sugar, cement, chocolates and a range of plastic and chemical products; and 230 commodities were subjected to import quotas. It was believed that a Pan-Malaysia market would ensure success of the policy. However, the policy of import substitution was ineffective because it tended to develop inefficient domestic manufacturing industries especially when the domestic market was limited and lacked sophistication. The inflow of foreign capital was unimpressive

Table 1 Phases of Singapore's economic development

(I) 1959–1967 *Inward-looking development policy*	**(II) 1968–1978** *Outward-oriented development policy*
Import substitution	Employment Act, 1968
EDB set up in 1961	Industrial Relation Act, 1968
Independence: sovereign state in 1965	Transition to more capital-intensive activities
Basic tax incentives for investments	Export promotion
Economic Expansion Incentives Act	
Labour-intensive activities preferred	
(III) 1979–1985 *Restructuring policy*	**(IV) 1986–1997** *post recession development policy*
Intensification of export promotion	Cluster Approach in Industrial Development
Corrective Wage Policy	Service sector promotion
Skill Development Policy	Wage Reform: variable bonus component
Priority list of industries for foreign investments: capital-technology- intensive	Development of local SMEs as supporting industries: the LIUP programme
	National Technology Plan
(V) 1998–2008 *Post-Asian financial crisis policy*	**(VI) 2009—***Postglobal great recession policy*
Knowledge-based economy	Productivity improvement
New growth engine: biomedical science sector	Reducing dependency on foreign workers
Environment, water technology	Nano technology
Manpower: tertiary education export	Internationalization of tertiary education services
Free trade agreements proliferation	Regional medical hub
Social capital and social cohesion	
Entrepreneurship promotion	

EDB economic development board, *LIUP* local industry upgrading programme

despite the various fiscal incentives and concessions provided by the government through the investment promotion agency, Economic Development Board (EDB) established in 1961. The separation of Singapore from Malaysia in 1965 spelt the end of the import substitution phase.

The policy which gave Singapore a head start in attracting foreign capital was the government's highly liberal stance on ownership, at a time when foreign investment was viewed with suspicion by other developing countries following the experiences in the Latin American economies. TNCs were footloose and exploitative. Since 1965, the government has consistently maintained an open policy towards foreign ownership and operations. There are no restrictions on equity ownership, no foreign exchange controls and no limits on the repatriation of capital, dividends, interest and royalties. There are no restrictions on foreign borrowings from domestic capital market and no regulations governing the transfer of technology. Furthermore, the government is willing to coinvest with foreign companies if there is a need for risk sharing and nurturing of business confidence.

The transition from an import substitution mindset to export promotion strategy is not easy. Several structural adjustments have to be made. New institutions and

code of practice have to be put in place. There is no place for being xenophobic. Once the course of action is decided, there is no turning back. The environment had to be conducive for investment and growth. Resources have to be mobilized and used effectively. The welfare of the workers and citizens has to be given concerted attention. Low investments means less job created. Increasing unemployment leads to desperation which in turn leads to social unrest and increasing crime. In the manner of the vicious circle, the latter contributes adversely to the investment climate.

If we were to assess the situation in the first phase using the Porter's diamond, the Singapore's economy was in quite a state of despair; all the four drivers of competitiveness were weak or nonexistent. The act of inviting FDI can be viewed as a means of improving the resource condition in the nation's diamond, using foreign capital to supplement the lack of domestic capital resource. Meanwhile, lots of work needed to be done to improve all other drivers.

2.2 Phase II: 1968–1978

The second phase of development beginning in 1968 marked the switch from an import substitution strategy to an outward looking export-oriented development strategy. The Economic Expansion Incentive Act introduced in 1967 offered new incentives to foster export activities, facilitate foreign borrowing and encourage inflow of foreign technology. These include reduction of tax rates on export profits from 40% to 4% exemption of taxes on interest earnings on approved foreign loans, and reduction of tax rates on royalties and fees paid to foreigners. To improve industrial relations, the following pieces of legislation in 1968 gave the ascendancy of power to employers:

- Employment Act
- Industrial Relations (Amendment) Act

The Employment Act basically stipulates the rights of the workers (such as number of working hours per week, number of public holidays per year, retirement age), while the Industrial Relations Act stipulates that industrial disputes if not resolved within the companies, had to be handled by the Industrial Arbitration Court. The decision by the Industrial Arbitration Court is final and all involved parties will have to comply. It must also be noted the a symbiotic relation exists between the government and the National Trades Union Congress (NTUC) dating back to the colonial struggle which helped to hem in workers' demand at a time when belt-tightening was called for to induce FDI flows. In return for this support, when the economy began to perform, the National Wages Council (NWC) was formed in 1972 to ensure an orderly wage increase in tandem with Singapore's international competitiveness. Furthermore the Secretary General of NTUC is also a cabinet Minister, enabling direct feedback of the labour concerns to the ruling echelon and a reflection of the importance of harmonious employee–employer relationship in fostering wealth creation. By and large, healthy industrial relations and favourable labour market conditions formed a virtuous circle and created a conducive environment for FDI.

Complementing these fiscal incentives are industrial sites with prefabricated factory buildings and physical infrastructure as in communication, telecommunication and transportation, which contributed directly to efficiency and competitiveness. Human resource development in both education and skills training is vital for Singapore as its labour force is its only renewable resource. As the locational factor is attenuated by information technology and telecommunication, which broke the tyranny of time and space, the human factor as a competitive strategy becomes more important.

We note that in the second phase, efforts had still to be expended on improving the resource or factor conditions as described in Porter's diamond framework. Meanwhile, looking through the lens of development advantages, the inflows of FDI strengthen international linkages and help in improving the demand condition. The domestic market is small, but the FDI had brought along international market channels and export orders. The state of firm rivalry is not much among local enterprises, but more so among international competitors who had sited their production bases in Singapore. A diversified portfolio of FDI has enabled healthy competition to flourish and mutual learning to occur. We also observed that many of the TNCs, especially those from Japan, soon brought along or cajoled their suppliers to station in Singapore as well. A broad base cumulative clustering effect was perceptively taking place.

2.3 Phase III: 1979–1985

The third phase of Singapore development experience covers the period 1979–1985. During this phase, a deliberate effort was made by the government to restructure the economy from the low value-added, labour-intensive industrial structure to one that is capital and technology intensive, and yielding high value-added. Singapore had begun to be more selective in the type of foreign investments attracted to the economy. A wage correction policy was instituted whereby wages through the recommendation of the NWC were raised by 20 % each year, starting in 1979, for three consecutive years. The intention is to give the industries the strong signal to upgrade and convert their production processes to more labour-saving techniques. It was a deliberate intention to move up the value chain. At the same time, it was also an effort to reduce the dependency on imported unskilled workers from neighbouring countries and as far as South Asia.

The quality of human resources had become an issue of concern. At the policy level, the Skill Development Fund (SDF) was set up. Companies were made to contribute two per cent of the payroll of those workers earning less than S$ 750 per month into the fund. The fund is used to finance training programmes for the workers. Meanwhile, EDB was also actively collaborating with TNCs in setting up industry skill-related courses to train more technicians as well as upgrading the skill of existing workforce. This is congruent to the advocacy of upgrading the competitive advantages to sustain the growth momentum.

2.4 Phase IV: 1986–1997

In 1985–1986 the city–state was hit by a severe recession. For the first time in 20 years, the growth rate of Singapore's real GDP was negative (−1.8%). Unemployment reached 6.5% and industrial output decreased by 8%. Post-recession activities for economic reform, industrial restructuring and recovery occupied the bulk of the agenda in fourth phase of development—1986–1997. The fourth phase of Singapore's economic development is perhaps the most eventful phase so far as it has included several 'development' innovation and ideas that were yet to be in vogue in developing economies of that period.

An Economic Committee was formed and helped to identify the causes of the recession.[1] Both internal and external factors were identified. In particular, the rising business cost engendered by the accumulated increases in wages, social security contributions and statutory charges have been singled out as a major cause of loss of competitiveness of the Singapore's economy. Competitors in the businesses of ship building and oil refining had eroded Singapore's market share in the international arena. The Economic Committee Report (Ministry of Trade and Industry, 1986) published in 1986 has profound influence on the subsequent investment policies in Singapore. The services sector was reckoned as another source of growth. In 1986, the EDB set up the Services Promotion Division (SPD), which focused on the development of financial and engineering services, telecommunications, information technology as well as educational and medical services.

The Pioneer Incentives Act and the Economic Expansion Act were extended to include promotion of investments in services. Between April 1985 and April 1986 alone, the EDB awarded pioneer status to 14 companies in services sector. The importance of local entrepreneurs was recognized and concerted efforts were made to promote local small and medium enterprises (SMEs). An iconoclastic initiative known as the local industry upgrading programme (LIUP) was started in 1986 by EDB to foster closer cooperation and partnership between TNCs and local enterprises. TNCs provide mentorship to local SMEs in the form of elevating managerial skill and raising technical competence to achieve quality standards demanded in international markets. The SMEs are helped through such programme to be more effective supporting industries. Some of them have grown to become TNCs.

To help the industries regain their international competitiveness, substantial reduction (15%) in the social security contribution (Central Provident Fund; CPF) by the employers was made. As a more long-term solution, workers remuneration structure was reformed to take into consideration the variability in economic performance due mainly to external demand shocks. Furthermore, rising business and production cost could only be ameliorated if land- and labour-intensive activities can be strategically guided to relocate to neighbouring countries, which are better endowed with land and labour. This marks the beginning of the concept of 'growth triangle' whereby industrial sites, with the approval and cooperation of the private sector and governments of neighbouring countries, are developed to enable the incumbent TNCs to expand and

[1] A list of the major documents and reports relating the economic planning and development is included in Appendix 2.

upgrade their production activities in the region.[2] Meanwhile new foreign investment can also be attracted to the region to foster greater economic growth.

Among the many incentives put forth by EDB, the overseas headquarters' scheme stands out as an innovation to attract and/or retain high value-added activities of TNCs in Singapore while at the same time assist them in relocating to nearby destinations where cheaper resources as in land and labour, are available to sustain productive activities and meeting profitability requirement. Several American-based companies like Eastman Chemical, Whirlpool, Unisys Asia Pacific and Digital Equipment Corporation as well as French-based Danone Asia and Groupe Schneider, Carnaud Metal Box Asia and Datacraft Asia took advantage of these incentives. Sony was the first Japanese TNC awarded the perk, as early as 1987.

In 1994, the overseas headquarters' scheme was complemented by the business headquarters' scheme. This scheme helps local service-oriented companies and TNCs expand in the region. Because production can be easily shifted based on cost considerations, core business support capabilities like product development, logistics operations and management, merchandizing and data management would give manufacturers a critical competitive advantage and broaden Singapore's expertise along the value-added chain. Both the overseas headquarters' and the business headquarters' schemes have a tax holiday for 10 years but the latter is more flexible. The five pioneer companies awarded the business headquarters include two foreign (Baker Hughes, DNV Petroleum Services) and three local firms.

The publication of the Strategic Economic Plan (SEP) by the Ministry of Trade and Industry in 1991 marks the beginning of a new development philosophy. It apparently incorporates the concepts and ideas associated with modern industrial development and strategic business management.

> The Strategic Economic Plan sets the strategies and programmes for Singapore to realise a vision—to attain the status and characteristics of a first league developed country within the next 30 to 40 years. Key facets of the Vision are economic dynamism, a high quality of life, a strong national identity and the configuration of a global city.
> Strategies for the long term, which will also produce some benefits for Singapore in the short to medium term, are directed at maintaining and extending the nation's inter-national competitiveness. Eight strategic thrusts have been identified to help propel Singapore's economic and social progress to that of a developed country.
> They are:
>
> 1. Enhancing Human Resources
> 2. Promoting National Teamwork
> 3. Becoming Internationally Oriented
> 4. Creating a Conducive Climate for Innovation
> 5. Developing Manufacturing and Service Clusters
> 6. Spearheading Economic Redevelopment
> 7. Maintaining International Competitiveness
> 8. Reducing Vulnerability
>
> (SEP (MTI 1991), *Executive Summary*, p. 1)

[2] For more detail discussion of the concept of growth triangles and their role in regional economic development, see Toh and Low (1993) *Regional Cooperation and Growth Triangles in ASEAN*. Singapore: Times Academic Press.

Obviously, from the excerpt above, we can note all the sound bites and concepts discussed in Section 2.2 of Chapter 2. Singapore has adopted the cluster-based approach in economic development. In fact, as a precursor to the SEP, EDB in an international forum call: Global Strategies: The Singapore Partnership declared Singapore's development philosophy:

> If it cannot be the final destination of goods, Singapore can still be a place to send them on their way. Even if it cannot absorb much more large industry within its borders, it can facilitate and help manage industrial operations in a nearby location….
>
> First, competitiveness, differentiation, as opposed to low cost, is pursued. Singapore cannot be as cheap as other up-and-coming developing countries. What Singapore can do is to provide superior and technical skills. Businesses will derive maximum value by operating from Singapore.
>
> Second, Singapore considers the nation as part of a chain of value adding activities. It will look at the total value chain, seeking to optimize every part of it. This means close coordination of infrastructure development, manpower training, development of industrial estates and business parks, education policies, and labor policies.
>
> Third, at the corporate level the same value chain analysis will also be applied by positioning itself to be highly competitive in certain part of the value chain. Other part of the chain can be established in other countries. It will not only support the establishment of such activities, either according to vertical or horizontal division of labor, but will also actively network the Singapore operation and related ones in other countries.
>
> Finally, it will monitor its overall competitive position closely so that any signs of the economy losing its competitiveness will be dealt with quickly.
>
> (Economic Development Board (1988), *Global Strategies: The Singapore Partnership*, pp. 10–11)

In the SEP (Ministry of Trade and Industry 1991), it was recognized that an industrial policy which takes into account the relative strengths of Singapore in specific areas and which intelligently supports those with the best chances of becoming world-class, will counter the limitations of small size. However, the identified clusters must still be subject to the tests of market efficiency and competitiveness. Based on an extensive survey of industries, 14 clusters were identified comprising of commodity trading, shipping, precision engineering, electronics, information technology, petroleum and petrochemical, construction, heavy engineering, finance, insurance, general supporting industries, tourism, international hub and domestic industries. Each of these clusters include enterprises that have some common features or core capabilities in the form of natural advantages, created competitive advantages or industry structure or attributes. The government had given assurance to invest in these core capabilities or provide special incentives to accelerate their development.

Government agencies and statutory boards previously assigned task of overseeing the performance and development of specific industries, had to reorientate and review their scope of responsibilities and coordination from the viewpoint of cluster development. The EDB, Singapore's premier agency in charge of attracting foreign investments and the development of the manufacturing sector spearheaded the national cluster development programme. Manufacturing is a key engine of the Singapore's economy, accounting for some 20–25 % of the GDP. Since 1990, the manufacturing sector was reorganized into six major industrial clusters: Electronics,

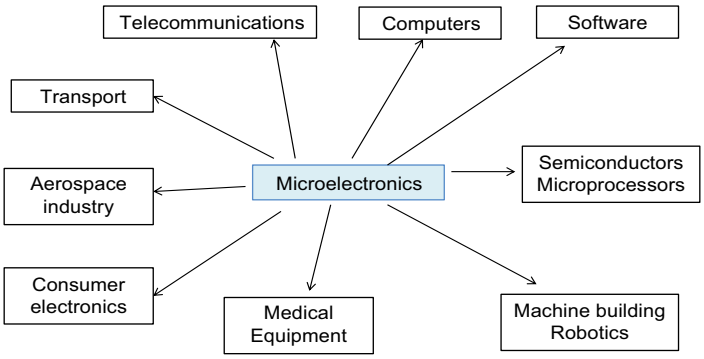

Fig. 1 Industries around microelectronics

Chemicals, Precision Engineering, Biomedical, Transport Engineering and General Manufacturing.

EDB considered how the cluster approach could enable the electronic industry to gain further expansion and growth. With rising wages and rentals, Singapore risked losing its manufacturing base and the threat of industrial hollowing out cannot be ignored. The solution came in the form that Singapore had to negotiate two transitions: internal to TNCs from labour-intensive to automation and from automation to integrated manufacturing, and from vertically integrated TNCs to a dynamic cluster. The Singapore operations shed the labour-intensive activities and focused increasingly on more engineering-intensive activities, including automation, product redesign, design for manufacture, and logistics functions associated with regional procurement including complementary business, logistics, marketing and financial services. For example, the division for product development projects focuses industrial design and engineering activities in Singapore. Assembly and other repetitive manufacturing operations are located primarily in Malaysia followed by Thailand, Indonesia and China (Best 1999).

The threat of deindustrialization was replaced by relocation and reorganizing the value chain. The TNCs were enlightened enough to take a cluster view of their production decisions. The TNCs did not relocate the whole operations to lower wage, labour surplus destinations. Instead they maintained non-labour-intensive manufacturing and higher value-added service-related activities in Singapore and relocated merely the labour-intensive activities off-shore. From the focal industry, electronics in this case, point of view, all vertically linked industries are called 'supporting industries'. Horizontal linkages connect a focal industry with other industries that are complementary in technology and/or marketing. All such industries involved in the horizontal linkages are called 'related industries'. Figure 1 shows the set of industries that can cluster around electronics.

In the mid-1990s, the electronics industry remains Singapore's most important manufacturing industry, accounting for 36 % of manufacturing value-added, 25 % of the manufacturing workforce and contributing 12 % of the island's gross domestic product. The feasibility and benefits of helping companies to relocate labour- and

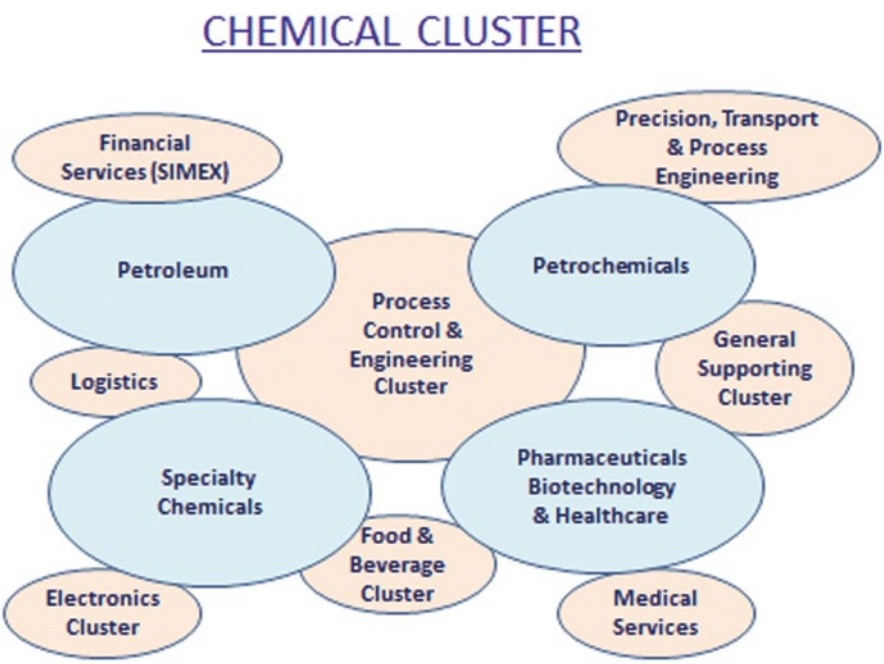

Fig. 2 The chemical cluster. *SIMEX* Singapore International Monetary Exchange. (Source: Economic Development Board)

land-intensive activities to destinations where such resources are in abundance had provided support of Singapore's active participation in cross-border regional development projects like the Singapore–Johor–Riau (SIJORI) growth triangle (Toh and Low 1993; Toh and Ng 2009), and the collaborative cross-country establishment of industrial parks such as the Singapore–Suzhou Industrial Park in China, Singapore–Bangalore Information Technology Park in India and the Vietnam–Singapore Industrial Park in Hanoi. They provided space and opportunities of expansion for Singapore-based enterprises, and the loss in low value-added activities is compensated by enhanced returns in the form of advanced processes and headquarters' activities retained in Singapore. Such initiatives served as nodes of clusters and will eventually develop value-chains that spark-off economic development and growth benefiting local communities and Singapore.

Jurong Chemical Island Project—Chemical Hub Another example of cluster development during this phase of development is the Jurong Island project started in 1993 to establish a world-class regional hub for the chemical industry. In 1990, Singapore was already the home of several world renowned refineries and also the third largest refining centre in the world. The development of the petrochemical industry in Singapore is a natural progression given Singapore's strong base in petroleum refining, which provides feed stocks such as naphtha for the petrochemical industry. Figure 2 provides a graphic view of the chemical industries cluster and

its linkages to other industries and clusters. It could benefit from the expansion of the industries expected to accompany the growth of emerging economies in Asia.

Jurong Island is an artificial island located to the southwest of the main island of Singapore, off Jurong Industrial Estate. It was formed from the amalgamation of seven offshore islands, done through land reclamation. The Jurong Island project is implemented based on a total approach to industry development. Central to the industry cluster concept and development of Jurong Island as an integrated complex is the sharing of common facilities. These include marine facilities, such as jetties and other berthing facilities; services such as warehousing, waste treatment, fire-fighting, medical and emergency response; a common service corridor and infrastructure such as roads and drains. The objective is to reduce capital investments and minimize operational costs through creating synergistic linkages, one of which is the concept of sharing facilities. For instance, feedstock transportation and handling cost could be minimized and economies of scale generated through the provision of centralized logistics and common corridors for materials flow.

Currently, Jurong Island hosts over 95 global companies including heavyweights such as Shell, ExxonMobil, Chevron, DuPont™, BASF, Sumitomo Chemicals and Mitsui Chemicals. Jurong Island has drawn cumulative fixed asset investments of over S$40 billion and employing about 10,000 in 2012.

2.5 Phase V: 1998–2008

In July 1997, the Singapore's economy was hit by the Asian Financial Crisis that started with the devaluation of the Thai Baht. Although its financial and economic fundamentals were sound, the rapidly deteriorating external environment adversely affected Singapore due to its close linkages with the regional economies. The Singapore Government responded to the Crisis by a series of fiscal measures via the Government Budget pronouncement in April 1998 as well as off-budget package to help reduce business cost and bring forward public development projects.

From a long-term perspective, the government adheres to the plan of developing Singapore into a knowledge-based economy. Technology and human capital development took on renewed importance as the economy cross into the New Millennium. Under the EDB Industry 21 initiative, the industrial sector development put emphasis on research and development (R&D), product design and development, process engineering, testing and market research. The, Ministry of Labour, renamed as Ministry of Manpower (MOM) launched its Manpower 21 blueprint (Ministry of Labour, 1999), which seeks to transform Singapore into a country known for its talent, ideas and capital flows.[3] It envisages that Singapore of the future will thrive on innovations and knowledge exchanges, encouraging further innovations among its people and attracting creative visitors from overseas.

[3] MOM was formed from the Ministry of Labour on 1 April 1998, with new responsibilities of 'developing a worldclass workforce to power Singapore's growth into the twenty-first century'.

The starting decade of the New Millennium is not less eventful than the closing decade of the twentieth Century. The Y2K problem which was expected to pervade across the cyber world linked by PCs and Internet apparently passed on without much harm. What's perhaps more serious that had taken its place was the global slump in the demand for electronic goods following the dot.com bust in 2001. With more than 40% of the industrial output, 60% of the domestic export dependent on electronic products, Singapore was hit by another recession in 2001. The synchronized downturns in the major developed economies as well as the global slump in the electronics industry led to a sharp deceleration in global growth. The terrorist attacks on 11 September 2001 further aggravated the slowdown. As a result, the Singapore's GDP fell by 2.4%, down from 10.1% growth in 2000. The rise of large new players like China and India brings both challenges and opportunities. However, Singapore is determined not to be knocked off-course by crisis and global recessionary impulses.

In October 2001, Prime Minister Goh Chok Tong announced the establishment of the Economic Review Committee (ERC) to fundamentally review the development strategy and formulate a blueprint to restructure the economy, amidst effort made to ride out the ensuing recession. After 2 years of deliberation and intensive consultation, the ERC Report (Ministry of Trade and Industry, 2003) published in 2003, presented six key strategies that would enable Singapore's aims to become a globalized, entrepreneurial and diversified economy, with economic growth of 3–5% per annum over the medium term:

- Expanding external ties—embracing globalization through the multilateral trading framework of the World Trade Organization (WTO), regional co-operation as well as bilateral free trade agreements (FTAs).
- Maintaining competitiveness and flexibility—keeping the burden of taxes and the CPF on the economy as low as possible, reviewing the labour market and wage system to make them more flexible, and pricing factors of production competitively.
- Promoting entrepreneurship and domestic companies—encouraging people to be innovative and improving the ability of firms to develop new ideas and businesses, tap new export markets and broaden the economic base.
- Growing manufacturing and services—upgrading these sectors by improving cost competitiveness, equipping the labour force with relevant skills and developing new capabilities and industries.
- Developing human capital—investing in education, helping workers train and upgrade and welcoming global talent to augment the indigenous talent pool. A continuous education and training (CET) framework for workers to be established.[4]

To be a diversified economy, the government embarked on identifying new key engines of growth for the economy in the twenty-first century. Concerted efforts are put in by many government ministries and statutory boards to implement the strategies delineated.

[4] Skill upgrading and retraining of domestic workforce to adapt to changing demand became more cogent. An agency known as the Workforce Development Agency (WDA) is established for that purpose.

Expanding International Linkages An island state very dependent on trade for economic survival, Singapore is fully committed to an environment where trade and investments flow freely and unfettered. A rule-based trading environment is one that will ensure fair treatment of all traders, big and small. With the limited progress seen in the global multilateral trade liberalization championed by WTO, Singapore had embarked on a very intensive programme to established bilateral FTAs with its trading partners. The existing Association of Southeast Asian Nations (ASEAN) Free Trade Agreement (AFTA) is an important first step for regional economic integration and there is still much more that can be done. FTAs are superhighways that connect Singapore to major economies and new markets. With FTAs, Singapore-based exporters and investors stand to enjoy a myriad of benefits like tariff concessions, preferential access to certain sectors, faster entry into markets and Intellectual Property (IP) protection (IES 2006). In fact, Singapore is the most 'promiscuous' country in the world in establishing FTAs. Singapore is well-connected to the world through an extensive network of FTAs. It has so far concluded 18 Regional and Bilateral FTAs, and is actively negotiating 10 more. In terms of economic output, the 83 FTA partners together account for over 50 % of the world's GDP. They also represent most of Singapore's major trading partners, accounting for more than 30 % of its domestic exports.

Tourism and Hospitality Industry Development Gambling activities are generally frowned upon by a large segment of the population in Singapore. The plan to build the casinos was subject to considerable debate among Singaporeans. The policymakers view it as a way to boost the stagnating tourism sector and to capitalize on the growing affluent visitors from Asian emerging economies and the region.

> Tourism is booming in Asia-Pacific and either Singapore stands still and doesn't take full advantage of this growth or we join everybody else and compete for part of this growth … if you want to compete for part of the growth, then Singapore must offer new attractions, new ways to attract people to Singapore.
>
> *Mr. Lim Hng Kiang, Minister for Trade and Industry at Lee Kuan Yew School of Public Policy Luncheon Talk, 7 April 2005.*

After 6 months of consultative exchanges with many sections of the population, the government decided to go ahead with the Integrated Resort (IR) project. An IR is not simply consisting of a casino, but configured to include a wide array of attractions and amenities to enhance the tourism landscape. New attractions such as the Skypark and Universal Studios Singapore, celebrity chef restaurants and museums are some examples. In addition, the IRs offer more than 33,500 m^2 of Meetings, Incentives, Conferences, and Exhibitions (MICE) space and over 4,000 hotel rooms. Two licenses were awarded when Marina Bay Sands started its operation in 2008, followed by Resorts World Sentosa in 2010.

Indeed, the cluster-based concept of development has once again helped the policy makers in resolving the difficulties faced in deliberating on the IR project. Economics returns as well as social concerns were squarely presented and evaluated so that solutions and compromises could be found. The two IRs support more than 40,000 jobs in the economy with about 22,000 directly employed at the resorts. It

also has the perceptible impact of increasing the length of stay of visitor for a day. In 2012, Singapore welcomed more than 13 million visitors and the tourism receipts exceed S$ 22 billion.

The Search for New Growth Engine: Biomedical Science Cluster Many countries, including Singapore, place much hope and trust in technological change and innovations to bring about structural shifts and generate growth impulses. Technological change creates new products, new jobs and new industries. Those countries that organized knowledge—R&D activities, specialized workforces and unique business structure—support industry innovation are most likely to capture technology-driven, globally competitive industries. Dedicated Ministry of Technology and public agencies in-charge of technological development and R&D can be found in several countries. In Singapore, the Agency for Science, Technology and Research (A*STAR) (formerly known as the National Science and Technology Board) plays that role.

A*STAR comprises 12 Research Institutes (RIs), with 5 RIs under the Biomedical Research Council (BMRC) and 7 RIs under the Science and Engineering Research Council (SERC). A*STAR has a rich talent pool of more than 1,800 Research Scientists and Engineers, half of whom have PhD training. A*STAR is tasked to chart the course for Singapore's Science and Technology. The SERC promotes public sector R&D in Science and Engineering with a focus on fields essential to Singapore's manufacturing industry (especially electronics, infocomms, chemicals and precision engineering). On the other hand, the BMRC established in October 2000, supports, oversees and coordinates public sector biomedical R&D activities in Singapore. BMRC works in close partnership with the Singapore EDB's Biomedical Sciences (BMS) Group and Bio*One Capital, in spearheading the BMS Initiative to develop Singapore into the Biopolis of Asia—an international BMS hub advancing human healthcare, through the pursuit of excellence in R&D, manufacturing and healthcare delivery.

The BMS Initiative is another example of cluster-based economic development. It is an international R&D centre located in Singapore for BMS. The iconic infrastructure for the BMS Initiative is the Biopolis complex. Biopolis was conceived as the cornerstone to a vision to build up the BMS as a key pillar of the Singapore's economy. Home to public as well as corporate research laboratories, Biopolis brings together over 2,000 scientists, researchers, technicians and administrators in one location at one-north. The strong leadership and dynamism at A*STAR have produced breakthrough discoveries and earned Biopolis international repute for successfully anchoring the development of Singapore's life sciences value chain, from R&D to manufacturing and healthcare delivery[5] (A*Star 2010).

The development milestones of BMS Initiative are organized in three phases. In Phase 1 (2000–2005), the BMS initiative focused on the rapid buildup of basic research capabilities and infrastructure as well as attracting industry R&D laborato-

[5] A more detailed discussion of the Singapore's cluster development of the Biomedical Science sector can be found in Toh and Thangavelu (2008) and Wong et al. (2009).

ries and activities into the country. In Phase 2 (2006–2010), the BMS initiative set out to build up the country's translational and clinical research (TCR) capability—to translate the basic scientific discoveries from the research laboratories into useful innovations and clinical applications. In the current third phase (2011–2015) of the BMS initiative, efforts and resources are channeled towards research programmes that will lead to greater healthcare and economic impacts. It also actively explores collaborations and partnership with industry. As of 2012, the value-added contribution of the BMS industry in the manufacturing is as large as that the electronics. It employed 15,700 workers and generated output worth S$ 29.4 billion. These have already exceeded the targets set for the year 2015.

Perhaps the first decade of the Millennium in Singapore is best remembered for the technological breakthrough in 'NEWater'. The Singapore Water Reclamation Study (NEWater Study) was initiated in 1998 as a joint initiative between the Public Utilities Board (PUB) and the Ministry of the Environment and Water Resources (MEWR). The primary objective of the joint initiative was to determine the suitability of using NEWater as a source of raw water to supplement Singapore's water supply. NEWater is treated used water that has undergone stringent purification and treatment process using advanced dual-membrane (microfiltration and reverse osmosis) and ultraviolet technologies. NEWater and desalination were explored as means to reduce reliance on water imported from Malaysia, which has been a source of friction over the years.[6] The water friction with Malaysia has helped to spawn a new industry 'Environment and Water Treatment' (EWT). This industry includes key players like Hyflux and Chevron, and they have expanded their business domestically and abroad in China, Middle East and Africa.

2.6 Phase V: 2009 and Beyond

In the aftermath of the Great Recession (US Sub-prime Crisis), Singapore's economic recovery was a tad slower than other countries in the Asia. The dynamism and agility of the economy became topical discussion points. Several commentators point to the ageing demographic profile and the stagnating productivity improvement as main reasons for the sluggish response.

The policymakers were not slow in reacting. To face the challenges in the new decade, the government has formed the Economic Strategy Committee (ESC) to chart out the new roadmap for Singapore. On 7 July 2009, the 25-member ESC had its first meeting to consider the key issues it will study, and to set up sub-committees to pursue specific areas of work. The ESC announced its key recommendations on 1 February 2010 (Ministry of Trade and Industry, 2010). The ESC recommended seven broad strategies to help Singapore sustains long-term growth of 3–5 % over the next decade.

[6] NEWater can provide up to one-third of Singapore's consumption needs. While the Malaysian government is treaty-bound to sell Singapore water until 2011, it is under no obligation to do so after this. It can still sell water until 2061.

The seven key strategies are:

1. Growing through skills and innovation
2. Anchor Singapore as a Global-Asia Hub
3. Build a Vibrant and Diverse Corporate Ecosystem
4. Make Innovation Pervasive, and Strengthen Commercialization of R&D
5. Become a Smart Energy Economy
6. Enhance Land Productivity to Secure Future Growth
7. Build a Distinctive Global City and an Endearing Home

ESC recommendations represent a bold strategic shift towards a focus on productivity. It is recommending a paradigm shift away from population-driven or immigration-driven towards productivity-driven economic growth. Basically, the intention is to make skill, innovation and productivity as the drivers of economic growth. It recognizes that Singapore needs to readjust its economic policies and model to address its over-reliance on the developed markets, importation of foreign workers and declining productivity.

The ESC reckons that competitive development advantages powered by skills and innovation will need continuous upgrading of skills through retraining, encourage R&D and investment in technology. The quantity and quality of foreign workers will be managed through phased increases in foreign worker levies. Developing Singapore as a key Global-Asia hub in manufacturing, finance and logistics will facilitate enterprises based in Singapore to tap on opportunities offered by a rising Asia. It will help to develop a deeper base of globally competitive Singapore enterprises.

The emphasis on technology remains pertinent for continued growth and sustainability. The National Technology Plan (NTP) implemented since 1991 was reviewed and continued with a new agenda and new targets under the latest Research, Innovation and Enterprise (RIE) Plan launched in 2011. Complementing the ESC, the target for Gross Expenditure on R&D (GERD) in 2015 is 3.5% of GDP, with private sector R&D increasing its share. Between 2011 and 2015, Singapore Government will invest $ 16.1 in RIE. At the same time the emphasis on commercialization of R&D will be strengthened. The RIE2015 Plan sets out Singapore's key R&D strategies, to support the long-term vision to be a research-intensive, innovative and entrepreneurial economy like Sweden, Finland or Israel.

3 Conclusion

Over the period of almost five decades, the Singapore's economy has undergone several phases of change to accommodate new demand and challenges posed by international and regional business and economic environment. It has shown remarkable adaptability and nimbleness to restructure and re-strategize to ensure economic viability and sustainability (Toh and Tan 1998).

One reason for the remarkable success achieved is the timely and creative adaptation and adoption of modern development concepts and tools used in strategic business management, industrial planning and urban development. The conventional development planning does not find much traction with fast-paced and resource deficient economy of Singapore.

The first Minister of Finance and also one of the founding fathers of Singapore, Dr. Goh Keng Swee had little fondness of economic planning. In fact when Singapore produced its first economic plan in 1960, he quipped:

> Actually when we first won the election in 1959, we had no plans at all. We produced a formal document called the First Four-Year Plan in 1960, only because the World Bank wanted a plan. We cooked it up during a long week-end. I have very little confidence in economic planning. Planning as we know it has a limited value. Economic policy is more important.
>
> (Goh Keng Swee, The Practice of Economic Growth 1977, p. 34)

The prevalence and relatively rapid adoption of modern concepts and tools in business and development could be attributed to the new generation of bureaucrats and civil servants having received their postgraduate training (MBAs) in top business schools, like Harvard University and Stanford University. Many management gurus travelled around the world advocating their new found theories and methods and also made efforts to engage many governments who were interested and believed in the application of business concepts and methods in guiding their economy. Singapore is one good example. Practically all the top management personnel of the Singapore's premier FDI promotion agency, EDB, civil service, as well as the current Prime Minister has post graduate training at top management schools in the USA. Common words and phrases like core competence, competitive advantage, value chain, clustering approach, reverse engineering, balanced score card, disruptive technology and others—had directly or indirectly percolated into the decision-making landscape of policymakers in the Singapore's public sector. Also the practice of having International Advisory Panel (IAP) in providing suggestions and reviews of government development policies has also helped to establish strong linkage between international business practices and public polices honed to promote industrial development and economic growth. The panel members often consist of accomplished CEOs of renowned international enterprises as well as management gurus with extensive business consulting experience.

As a result of an increasingly competitive economy, state governments must constantly be alert to opportunities to improve the effectiveness of their economic development efforts. On the other hand, there is no 'formula' for determining the right combination of policy tools and strategies appropriate for all states at all times.

There do, however, appear to be several guidelines evolving, based on academic research, common state experiences and best practices that can help states to understand the right set of economic development tasks for enhancing their future competitiveness. First, clusters of world-class firms in related industries are the most important economic development customers in the global economy. These clusters, rather than individual companies or simple industries, are the source of jobs, income and export growth. Second, effective economic policy must be grounded in

the realities of the industries at which it is targeted. Rather than presume to know what businesses and workers need from government, public policymaking needs to be structured in a way that permits businesses and workers to define these needs themselves based on the signals and pressures they face in the marketplace. Finally, direct industry participation in programme design will lead to higher programme quality in addition to ensuring a constituency for the service.

The single-minded pursuance of competiveness for a city is acceptable but may not be desirable for a nation. Developing a competitive society (nation) is a more sophisticated undertaking than just maximizing business efficiency. A competitive society is a society, which has found a dynamic equilibrium between wealth creation on one side and social cohesion on the other. It does not necessarily mean economic efficiency at all costs in all areas. Each country's competitiveness depends upon its ability to balance the economy of globality, which may generate revenues and technology, and the economy of proximity, which mainly generates employment and social cohesion. A successful development planning is one that ultimately benefits the people in the community.

Appendix 1

Table 2 Economic statistics—Singapore

	1960	1960−1970	1970−1980	1980−1990	1990–2000	2000–2012
GDP at Constant 2005 Prices as at end of period (S$million)	6,863	16,567	39,229	82,659	165,245	305,201
Average growth p.a. (%)		9.3	9.0	7.8	7.2	5.3
Manufacturing (%)		13.8	11.1	7.3	7.5	5.5
Construction (%)		16.7	6.4	5.3	10.8	2.3
Services (%)		7.6	8.5	7.9	7.5	5.3
Share in GDP (at end of period)						
Manufacturing (%)	15.2	22.8	27.4	26.3	25.7	26.7
Construction (%)	4.3	8.2	6.2	4.3	5.6	4.1
Services (%)	80.5	69.0	66.4	69.4	68.7	69.2
Aggregate demand						
1. *Average growth per annum (%)*						
Private consumption expenditure		6.4	7.1	6.1	6.7	4.8
Government consumption expenditure		14.4	7.3	7.0	9.3	4.7
Gross fixed capital formation		23.3	11.0	6.2	9.0	5.0
Exports of goods and services		8.5	14.4	9.5	10.7	8.2
Imports of goods and services		9.2	13.1	8.8	10.8	8.8
2. *Share in GDP (at end of period)*						
Private consumption expenditure	57.6	52.2	48.9	45.4	42.2	35.6
Government consumption expenditure (%)	5.3	9.8	9.3	9.2	10.8	9.2
Gross fixed capital formation (%)	36.1	41.7	40.8	33.6	33.3	28.6
Exports of goods and services (%)	63.7	65.6	116.7	146.1	195.6	226.4
Imports of goods and services (%)	66.7	73.4	115.7	136.6	182.0	198.2

Table 2 (continued)

	1960	1960–1970	1970–1980	1980–1990	1990–2000	2000–2012
Population (million)	1.6	2.1	2.4	3.0	4.0	5.3
Unemployment rate (%)	9.5	4.5	3.5	1.8	2.1	2.0
Share of indigenous GDP in total GDP (%)	na	81.8	70.8	69.5	63.3	55.0
Share of foreign workers in total employment (%)	na	na	12.3	17.9	29.4	35.0
Merchandize export (S$million)	2,000	4,756	41,452	95,206	237,826	501,329
Domestic export (S$million)	na	na	24,015	59,296	130,166	285,147
Current account balance as % of GDP (%)	na	na	−13.4	8.5	11.6	18.6

GDP gross domestic product
Source: Yearbook of Statistics (various years) published by Department of Statistics, Singapore

Appendix 2: Main Economic Plans and Reports for Singapore

- The Singapore's Economy: New Directions

Published in February 1986

The Economic Committee was convened in April 1985 to review the progress of the Singapore's economy and to identify new directions for its future growth. The work of the Committee is published in this comprehensive report. The Executive Summary outlines the causes of recession and policy changes recommended, future position and new directions, and highlights the fundamentals, strategies and key policies for Singapore.

- The Strategic Economic Plan: Towards a Developed Nation

Published in December 1991

The report sets out the strategies and programmes for Singapore to realize the vision of attaining the status and characteristics of a first league developed country within the next 30–40 years. The report is divided into two parts: Vision and Strategies and Implementation. There are six chapters in Part I, providing an overview of the economic landscape. It includes economic plans of Singapore, the vision, key macros strategies and two areas of specific interest namely, industrial strategy and economic resilience. Part II iterates the strategic thrusts mentioned in Part I, in con-

junction with the respective programmes identified to support the objectives of the strategic thrusts. There are a total of 8 strategic thrusts and 17 programmes.

- Committee on Singapore's Competitiveness Report (1998)

Published in November 1998

The report summarizes the Committee on Singapore's Competitiveness (CSC)'s assessment of Singapore's economic competitiveness in the short term and over the next decade. Although the CSC was formed in May 1997 with the aim of assessing Singapore's longer-term competitiveness, the onset of the economic crisis in July 1997 necessitated a critical re-examination of Singapore's competitiveness in the light of major changes in the external environment. The CSC's recommendations are presented in three parts. Part I focuses on immediate actions to enable the Singapore's economy to weather the crisis. Part II looks beyond the crisis and proposes strategies to position Singapore for the eventual recovery. Part III contains the detailed sectoral plans for manufacturing, finance and banking, hub services and domestic businesses.

- The Manpower 21: Vision of Talent Capital

Published in 1999 by Ministry of Manpower

The Manpower 21 blueprint seeks to transform Singapore into a country known for its talents, ideas and capital flows. The Singapore of the future will thrive on innovations and knowledge exchanges, encouraging further innovation among its people and attracting creative visitors to its shores. Our workforce will be transformed into prized intellectual capital with the necessary skills, knowledge, experience and capability to enhance Singapore's global competitiveness.

- Reports of the Economic Review Committee

Published in February 2003

The report of the Economic Review Committee reviewed policies related to taxation, wages, CPF and land; promoting entrepreneurship and internationalization of Singapore companies; upgrading and growing the manufacturing sector; developing services sector; growing domestic enterprises; developing our human capital and helping Singaporeans to respond to changes and take advantage of new opportunities.

- Science and Technology Plan 2010

Published in January 2006

SINGAPORE is at an exciting phase of growth as we face new challenges to sustain economic growth and prosperity. While we will continue to build on our existing strengths of an efficient workforce, clean government and world-class infrastructure, we need new strategies to differentiate ourselves and develop peaks of excellence in selected areas where we can build a sustainable comparative advantage. We should leverage on our tradition of excellence in science, mathematics and technology to grow a strong base of scientists, researchers and technologists who

will provide the leadership in the next phase of knowledge and innovation-driven growth.

- Report of the Economic Strategies Committee

Published in February 2010

To sustain Singapore's development as well as ensure that growth is inclusive, the ESC recommended seven strategies for the next decade. They aim to make skills, innovation and productivity the basis for economic growth and for a broad-based increase in living standards for all citizens. They also aim to make Singapore a distinctive global city and an endearing home.

- Research, Innovation and Enterprise (RIE) 2015

Published in 2011

R&D is an important part of Singapore's economic strategy. It is a source of innovation and value creation. Since the first NTP in 1991, our investments have supported the transformation of Singapore's economy by upgrading existing industries and catalyzing new growth areas.

To further boost RIE, the Singapore Government will invest $16.1 billion over 2011–2015. The RIE2015 Plan sets out Singapore's key R&D strategies, to support our long-term vision to be a research-intensive, innovative and entrepreneurial economy like Sweden, Finland or Israel.

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National Planning, Industrial Policy and the New Statism in Contemporary South Africa

Richard Haines

1 Introduction

This chapter explores the interplay between national and macro planning, industrial policy conceptualization and implementation, and state restructuring in South Africa. It also looks to contextualize such processes within changes brought about by contemporary globalization. The study draws from the emerging practice of development history as a means of providing additional insights into the current development policy within the country. This chapter has been informed by range of insights offered by intersecting traditions and discourses in critical institutionalist writings (Wood 2012).

The study suggests that development planning in apartheid South Africa was entwined with the social engineering of apartheid and the accompanying patterns of industrial development. Indeed, the National Party government's euphemistic but formal term for apartheid was that of 'separate development'. At the same time, one needs to appreciate the complexities and contradictions of the interventionist state that was constructed in the early and mid-twentieth century, and its involvement in industrial policy. The restructuring of the contemporary South African state and accompanying development policy in the post-1994 is also examined. This includes a consideration of the increased influence of international agencies in regard to the advocacy of rational choice and market friendly models of policy for developing and transitional economies during the 1990s. The challenges of adopting such approaches and yet dealing with the raised social and economic expectations from party members and supporters of the African National Congress (ANC) and its tripartite allies, the South African Communist Party (SACP) and the Congress of South African Trade Unions (COSATU) needs also to be appreciated. Given that the ANC is a broad church in regard to its membership, and that the tripartite alliance is even more diverse, then the mediation of policy is also a strategic consideration.

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2 The Political Economy of Planning in Contemporary South Africa: A Brief Incursion

Planning in South Africa, past and present, has a particular and paradoxical character that defies conventional analysis of middle income and emerging economies. This is in part a reflection of South Africa's apartheid past, but is also indicative of the trajectory of the country's path to industrial capitalism.

Historically, South Africa's path to nationhood and capitalism was rapid, stimulated by the discovery of diamonds in the late 1860s and of gold in the Transvaal Republic in the 1890s. Following the First Anglo Boer War (1881–1882) and the Second Anglo Boer War (1899–1902), the two Boer Republics were dismantled and placed under British colonial rule. This process hastened the unification of South Africa and a process of reconstruction that saw the establishment of South Africa in 1910 as a nominally independent country but as a dominion of the British Empire (later the Commonwealth).

The unification gave further impetus to capitalist industrialization, but spatial, class and ethnic divisions were—if anything—exacerbated by the process (Greenberg 1980; Feinstein 2005). The Second Anglo Boer War had led to bitterness between the Dutch (later Afrikaans speaking) whites and English-speaking local and metropolitan English population, notwithstanding the substantive inclusion of Afrikaans speakers into the structures of power and influence. Interestingly, the original 'race question' in the early decades of the twentieth century was not identified and constructed as a conflict between white and black South Africans, but between the English and Dutch inhabitants. It was only in the early 1920s that there was a structural shift with a new divide being described, in the terms of the day, as 'the Native Question' (Dubow 1989).

The post-1910 South African Government did little to address the political and economic aspirations and grievances of black Africans. Of the four constituent provinces, formed from the ex-Boer Republics and the British colonies of the Cape and Natal, it was only in the Cape that there was any meaningful degree of voting rights (on a qualified but common franchise basis). In the decades that followed, these voting rights would be further whittled down and diverted to a separate register. The loss of voting power was preceded by a dramatic circumscription of access to land and land-holding rights. The 1913 Land Act mostly confined African land ownership to reserves and small enclaves in designated white South Africa; a fraction of the overall land was allocated and this was mostly in 'reserves'. Although there was some degree of formal individual tenure in designated white urban areas, this was also eroded in time. The 1920 Native Affairs Act attempted to regulate further the presence of Africans in urban areas. At the same time there was a growing emphasis on extending spatial segregation, with the maintenance of African reserves and the underlying social relationships suiting the migrant labour system favoured by the mining houses (Lacey 1981; Bozzoli 1987). There was a structural tension between secondary industry, which favoured a more skilled and permanent urban workforce, and the needs of the mining industry; the latter was more favoured in the emerging segregationist thrust of successive governments in the 1920s and 1930s.

The 1936 Development Trust and Land Act enlarged the land reserved for black ownership in South Africa to a little over 13 % of the total, but circumscribed black land ownership in the remainder of South Africa (Lacey 1981; Feinstein 2005).

In the early post-war years there were signs of an attenuation of segregation under the United Party Government. However, the advent to power of the National Party of D.F. Malan on a white Afrikaans nationalist ticket saw a distinct shift in ideology and policy. Over time segregation mutated into a more systematic form of 'separate development'—or 'apartheid' as it notoriously came to be known. Social engineering was meshed with spatially-oriented planning in both the urban areas and reserves (Smith 1992; Lemon 1991). The Group Areas Act of 1950 was intended to entrench the idea of separate residential areas for the differing ethnic/racial groupings of South Africa. This was paralleled in time with efforts to transform reserves into ethnic 'homelands' for the majority of black South Africans. The Transkei territory was the first to be granted self-government in 1963, followed by KwaZulu, Ciskei and Bophuthatswana in 1972. The reserve territories of Gazankulu and Venda were granted self-governing status the following year. This process was extended with the elaboration of grand apartheid in the late 1970s. Four territories were granted 'independence' from South Africa by the apartheid government, namely, Transkei, Bophuthatswana and Venda—the so-called TBVC states. KwaZulu deliberately chose not to opt for such an arrangement. The five other reserve territories (homelands) remained as partially self-governing areas. While efforts to boost agricultural production in the homelands continued, high population density ratios and the persistence with communal tenure inhibited the growth of petty capitalist farmers. From the late 1960s, the National Party Government looked to stimulate industrial activity in the homelands, initially on the 'borders' of such territories close to white-run centres, and then later within the urban centres of the homelands, especially the TBVC 'states' (Geyer 1989; Bell 1997; Tomlinson 1990).

In this regard, spatial and industrial planning meshed with social engineering. The orthodox planning theory of the day was the default discourse with the works of Christaller[1] on central place theory being among the most popular (Tapscott et. al. 1984).

The surpluses generated by mining capital in the early and mid-twentieth century provided the necessary scope for social engineering and planning not dissimilar to shifts in the advanced economies and in the Soviet Union. Indeed, if one looks beyond the racial capitalism that informed the trajectory of the South Africa state in the early and mid-1900s (Greenberg 1980; Feinstein 2005; O'Meara 1983), then the structure of the national economy in many ways anticipated the policy interventions that underpinned the construction of the pioneering development states.

David Yudelman (1983) has argued that South Africa's post-1922 reforms established an extensive set of state structures, which in many respects prefigured 'Fordist' shifts and reforms in advanced capitalist societies. Charles Feinstein (2005) reveals the systematic construction of key elements of the development state from the 1920s to the 1960s, including the establishment of the Council for Scientific

[1] Ironically, German geographer, Walter Christaller, first put his theory to work in helping plan for the occupation of Poland.

and Industrial Research (CSIR), the Industrial Development Corporation (IDC) and productive state-owned enterprises such as Iscor, Sasol and Eskom.

As Martin Legassick argued in 1974, apartheid was compatible with continued capital accumulation in South Africa in the mid-twentieth century. He demonstrated how, since the 1940s, the South African state 'began to pay systematic attention to the planned development of the economy, and in particular to the development of a competitive secondary industrial sector' (1974, p. 9). As secondary industry grew in the 1950s and 1960s, it became more capital intensive in the cities and developed as labour-intensive decentralized industries in the rural peripheries. Legassick also contended that the state at the insistence of capital, provided housing for this new industrial proletariat, although ideally it would have liked Africans to live in the homelands and thus reduce the cost of their reproduction to the central state. The apartheid state can thus be argued to have been a 'developmental state', intervening to encourage the growth of secondary industry and improve South Africa's share of export markets, particularly with regard to those on the African continent.

3 South African Industrial Policy: The Historical Legacy

From the 1920s onwards, the development of the manufacturing sector has been directed by variants of import-substitution policies. Assisted by additional protection when South Africa was unable to access its traditional sources of supply during World War II, the manufacturing sector grew quite significantly. Growth slowed during the 1970s with an accompanying trend towards capital intensity in production. This led in turn to a relatively costly import-intensive industrial structure. Growth was constrained in part by the underdeveloped state of the local market and income inequalities (Archer 1987; Houghton 1964). In addition, as argued by certain progressive critics in the 1940s, mining capital had inhibited the full development of secondary industry by not financing diversification and fostering a kind of 'Cinderella syndrome'. Among the reasons was a concern by mining capital that higher urban wages would undermine the prevailing migrant labour system predicated on the reserve territories. By the 1960s, however, the state had responded in part to the industrialists' concerns (Feinstein 2005; Kaplinsky et. al. 1993; Haines 1996).

The manufacturing sector also showed a decreasing ability to sell products in the external markets, a situation exacerbated by increasing international sanctions from the 1970s onwards against trade with South Africa. With the winding down of the apartheid state, a major challenge for the Department of Trade and Industry (DTI) was the relatively poor export awareness among manufacturers (Finance Week, 7 January 1994). Possibly more significant was that past policies, which traditionally favoured capital-intensive upstream development, had paid insufficient attention to downstream industries, including improving their efficiency (Leistner 1994; SACOB 1993; Chang 1997S).

Rather than look to a continued and substantive diversification of industry with an allied beneficiation of primary products centred on the major urban hubs, with the hardening of apartheid industrial policy became a more politicized and

administratively complex enterprise (Black and Stanwix 1987; Bell 1997). From the mid-1960s onwards, industrial policy became enmeshed with the Bantustan strategy of the apartheid state (Geyer 1989). A policy of industrial decentralization gained currency as part of a deliberate effort to stimulate industrial growth away from the large white-run firms in metropolitan areas. In this vein, the 1967 Physical Planning Act sought to constrain the establishment of labour-intensive industries in metropolitan areas. By contrast, capital and other incentives were offered for industrial development points (IDPs) within and without the homelands. These incentives failed to attract the more progressive small- and medium-sized enterprises (SMEs) in numbers (Dewar1984; Black et al. 1986).

The nature and effects of the incentive packages of the original industrial decentralization programme (Regional Industrial Development Programme; RIDP) were extensively criticized. Apart from being seemingly costly, and including certain abuses of the differing incentives, a number of analysts underlined problems of location, agglomeration and the relative lack of backward and forward linkages between the different firms (Geyer 1989; van der Kooy 1985; Tomlinson 1990; Black et al. 1986). In 1989, a report by a panel of proclaimed experts highlighted the shortcomings in the existing RIDP. A revised and more modest incentive package and a direct invocation of market forces were among the distinguishing features of the revised RIDP, but by the early 1990s it was clear that the Programme was being wound up (Bell 1997; IDC 1996a; Hart and Todes 1997). The Regional Development Board, which had previously and somewhat quaintly been located in the Department of Regional and Land Affairs, was moved to the DTI. The announcement of new spatial development initiatives as part of the Growth, Employment and Redistribution (GEAR) macro-economic strategy of 1996 (RSA 1996), constituted the last rites of the Programme.

For strategically placed officials in the Regional Development Board and homeland development corporations, the new RIDP was problematic. ‘Levelling the playing field’ as outlined in the 1989 Report, in certain respects reconfirmed the spatial inequalities in South Africa. For instance, the removal of the rail and transport rebate for industries in the Border, and Ciskei and Transkei homelands had serious implications for industrialists in these areas. ‘South Africa pulled the rug from under us’ complained a senior official in the Ciskei Peoples’ Development Bank (CPDB) in 1991 (Interview, Mr. K Bern, Ciskei, September 1991).

The transition to the new RIDP was perhaps too abrupt, and arbitrary, with little effort made to identify those relatively successful firms who may have deserved a measure of longer-term support (Nel and Temple 1992). And the productive role, particularly of Taiwanese firms and Taiwanese investment within certain IDPs—in some cases close to secondary cities such as Newcastle—had been significantly underestimated (Hart and Todes 1997). Furthermore, the difficulty of sustaining productive enterprises in more peripheral areas was generally under-appreciated, as was the role industrial development plays in sustaining regional development (Nel and Temple 1992). Options such as creating and incentivizing more service-oriented enterprises and small-scale agroindustries were not explored in any depth (Nel and Temple 1992; Haines 1996).

The reworked RIDP was essentially a national programme and did not include those BLNS (Botswana, Lesotho, Namibia and Swaziland) countries that were members of the historical South African Customs Union (SACU) (DTI 2006). These states had complained about South Africa's recourse to market-distorting incentives to promote industrial decentralization, and of the dominance of South Africa in SACU. It was argued that incorporating SACU countries into a wider RIDP would have been more suitable for the Southern African Region (SAR) as a whole (Geyer 1989; Walraet 1991; Bell 1997; Davies 1991; Stoneman 1995).

With the assimilation of the homelands into the new post-1994 provincial structure, the industrial decentralization policy was formally ended. With the enunciation of South Africa's macro-economic strategy, GEAR, in mid-1996, it was mooted that the existing RIDP be replaced by a tax holiday scheme. Such a scheme was introduced in October 1996 and remained available until 1999 (DTI 2006). There were sophisticated efforts led by the IDC to establish a Regional Industrial Location Strategy (RILS), although this was never meaningfully implemented[2] (IDC 1996b; Haines 2004; DTI 2006). Government shifted in mid-1996 to a simpler regional development option that emphasized establishing 'development corridors', or Spatial Development Initiatives (SDIs) as well as Industrial Development Zones (IDZ) (Hosking and Jauch 1997).

4 Towards Global Neoliberalism?

Emphasis has often been placed on the distinctiveness of South Africa's macro policy and planning during the grand apartheid era. However, there was also a complex interplay between international trends and practices and national and local processes in terms of economic, financial and industrial restructuring in the country. Indeed, in some respects developments in South Africa either anticipated and/or paralleled restructuring in advanced and transitional economies.

The increased recourse to the market since the late 1970s, and the corresponding decline in support for the Fordist state in advanced industrial economies, involved a complex set of entwined events and discourses (Gore 2000; Harvey 2005; Hall 2011; Haque 2008). These include a concern by US, UK and European banks to ensure a means of securing the loan repayments of the lending boom of the 1960s and 1970s, the growth of a more distinct new right in political theory and practice, and efforts to restructure the seeming restrictions of international trade and gain access to partly protected and obdurate foreign markets (Watkins 1994; Harvey 2005; Whitehead and Cranshaw 2012). The massive relocation of production from traditional enclaves to cheaper locales as part of the trend to flexible production, and the associated global division of labour was also significant. Reinforcing these shifts in the 1980s and 1990s was a 'financial revolution' stimulated by new approaches to securities, commodities and currency exchanges, and the consequent growth in the mobility, power and influence of finance capital (Harvey 2005; Crouch 2011; Hall 2011).

[2] Interview, Mr. G Maia, IDC, Sandton, 13 September 1996.

Entwined with these processes was the increased influence of neoclassical economic approaches within and without the Washington headquarters of the World Bank and the International Monetary Fund (IMF). Economics had always been central to analyses, models and prescriptions concerning debates and discourses on ways and means of promoting economic, political and social transformation and 'development' of transitional economies and former colonial possessions. However, the original macro-theoretical narrative for developing such countries and regions, and which informed the 'modernization' approach of the post-war decades, was a more broad-based social scientific construction. The economics dimension was significant, but it was often represented in a mediated form of 'development economics' which had a Keynesian and institutional orientation (Fine 1999; Wade 1995; Kwon 1994; Hall 2011).

Shifts within the World Bank, centred in Washington, and an associated and closer partnership between US and UK banks, a kind of Anglo–American financial hegemony, contributed to new prescriptions for developing and, subsequently, transitional economies (Wade 1998; Fine 1996). The interventions were conditioned by the late-1970s attempt to deal with the Mexican fiscal crisis by means of a stabilization programme (Gore 2000; Harvey 2005) Over time, this kind of intervention was refined and extended, and saw a self-conscious application of market-oriented approaches to restructuring national economies, which included Structural Adjustment Programmes (SAPs). While there were variations in the nature, scope and spatial application of these SAPs, there are certain common elements: financial liberalization, reduced state spending, a shift to more market-friendly models and the expansion of export orientation industrialization and trade. This meant, in turn, reducing tariffs and explicit incentives and looking for reductions in the subsidization of industries (Kwon 1994; Gore 2000; Harvey 2005). A related outcome was the dilution of the recipient state's scope for macro planning (Gore 2000; Haque 2008).

The intersecting structures, discourses and imperatives discussed above led to increased use of the short-hand term, the 'Washington Consensus', in the later 1980s and early 1990s, and more generally to a heightened invocation of the market at national and international levels, and raised levels of personal and elite accumulation (Wade 1995; Gore 2000; Gore 2005; Wilkinson and Pickett 2009 Harvey 2005). For a range of scholars and analysts, these trends and their associated metanarrative came to be popularly known as neoliberalism. While neoliberalism may well be something of a 'floating signifier', what is becoming apparent in certain recent scholarship is that it is not merely externally imposed but constructed at a variety of levels—subnational, national, regional and global (Dean 2012; Hall 2011).

With the Washington Consensus entwined with neoliberalism at various levels, the discourse was seen as a distinct construction of the North, and particularly US and UK national economies (Gore 2000; Dean 2012). However, this is to gloss over the intersection of geographically diverse discourses and practices, and also the ways in which the practices and principles of neoliberal discourse were produced in differing sites and circumstances (King and Sznajder 2006; Dean 2012). And the South Africa narrative has its own complexities and contradictions. For many analysts there was a direct relationship between neoliberal theory and policy advocacy and the ways in which globalization was being constructed and rationalized and the notion of 'globaI neo-liberaIism' gained currency (Dean 2012).

5 Deconstructing the South African Development State, C1985–2000

The period 1990–1994 is often seen as a significant hiatus in terms of South Africa's political, social and economic history. Nevertheless, scholars have probably glossed over the continuities between past and present in analyses of contemporary historical processes. Although in a number of respects the late 1980s and early 1990s saw the partial dismantling of the apartheid development state and a shift to 'market triumphalism', such shifts were accelerated during the mid- and late 1990s, in processes in which sections of the old and emergent elites played a pivotal role. The point is often overlooked that the disinvestment from South Africa between 1976 and1990 was not the partial withdrawal of external investment, but the flight of domestic capital. Indeed, it has been argued that domestic capital flight exceeded that of the external component. The growth of a 'buccaneer' economy (or 'rogue capitalism') during the later years of the apartheid project was entwined with the expansion of elite accumulation strategies and processes. In addition, the later 1980s and early 1990s saw a further diminution of the play of public morality (Welz 1992) within state and parastatal entities and the management of the South African economy as a whole.

There was concerted pressure locally to open up regulated spaces within the financial economy. While bank regulations and credit controls remained relatively tight, the late 1980s saw the beginnings of a systematic drive to unlock financial savings caught up in mutual funds and pensions. State pension funds were a prime target and the global financial revolution strengthened the hands of local and international firms looking to expand their roles in managing such funds (de Jager 2002). By the early 1990s, the fragmentation of state and parastatal pension schemes was underway—a process which, if anything, was accelerated in the early post-1994 period (ibid.).

This process was linked to the partial commercialization and quasi-privatization of state-owned enterprises. Several of the strategic heights of the South African industrial economy established in the twentieth century were ceded to the private sector. A prime example is the state-owned entity, Iscor, which issued a massive share offering in 1989 (Iscor 2003).

The commercialization of the state-owned entities of the transport sector, most especially the South African railways and road networks, and the South African ports and harbours authority can also be traced to this period (Perkins, Fedderke and Luiz 2005; van Niekerk nd). As in similar exercises in privatization in advanced economies such as the UK, the emphasis fell on establishing new reward and incentive structures for executive management, which fell out of formal state pay guidelines. In addition, there was a growth of managerial positions, a process which expanded with the articulation of Black Economic Empowerment (BEE) employment policies in the post-1994 period.

Utilizing the homelands in facilitating the growth of circuits of 'vice capital', especially in the operations of Sol Kerzner and Sun International, was a further

dimension of the shift to a 'grey economy' in the 1980s (e.g. Haines and Tomaselli 1992), although further forensic study is required with regard to the linkages between such developments, and the calculations and shifts offshore of corporate capital.

There were other macro shifts which presaged the post-1994 period and the inception of the GEAR macro-economic strategy in 1996. In the area of industrial policy there was already a greater embrace of market-oriented and supply-side approaches by the beginning of the 1990s. This included the effective winding down of the industrial decentralization policy during the early 1990s, and the dilution of industrial subsidies (Nel and Temple 1992).

There was also concerted asset-stripping of key sectors of the South African industrial economy, which requires closer historical analysis. A case of both material and symbolic importance was the orchestrated dismantling of the Frame Trust which contributed to the breaking up of the KwaZulu Natal clothing and textile empire established by Philip Frame. While this event has been well chronicled in a leading investigative periodical, it still awaits scholarly theorizing and analysis (see Noseweek No. 45, April 2003).

Central to industrial asset-stripping during this period, was the unbundling of the South African national shipping line (Safren) which saw the sale of virtually all the South African owned and registered shipping stock—a process which was accompanied by declining levels of investment in the country's shipbuilding sectors. In 1984, government sold its controlling interest in the national shipping line to financial conglomerate Old Mutual. During 1991–1996, Old Mutual diluted the assets of the group by acquiring an interest in a Belgian shipping line and then establishing a key subsidiary of Safren in Belgium. In 1999, Old Mutual sold its share in Safren to the Moller–Maersk Group, which acquired the liner shipping interests and trading name of Safmarine. This buy-out helped facilitate the offshoring of the Old Mutual group. Further restructuring ensued, and led to the globalization of the brand name, Safmarine. These moves saw the loss of a South African-owned fleet and its procurement possibilities—which included opportunities for local shipbuilding and ship repair facilities (Haines 2005). In addition, there was a collective loss to the South African economy of the earnings of the seamen attached to the line (Hare 2012; Iheduru 1996).

6 Industrial Policy in South Africa

In South Africa, the conventional wisdom is that the social democratic Reconstruction and Development Programme (RDP) of the immediate post-apartheid years was replaced by the neoliberal GEAR strategy during 1996, a strategy that was literally designed at the headquarters of the World Bank (Bond 2002a). However, this is a set of events which appears to have been mythologized in subsequent years. The RDP was a broad-based and programmatic document that was drafted by the ANC in liaison with its political partners, the SACP and COSATU, and civil society,

during 1994, and adopted by the incoming Government of National Unity in that year. The RDP contained measures to stimulate the economy through controlled spending, the reduction of state debt and trade liberalization. It also included social welfare provisions and infrastructural projects. It was a mix of Keynesian and neoliberal elements (Adelzadeh 1996; Bond 2002a). The RDP was placed under the care of a junior minister, Jay Naidoo, and over time was de-prioritized, although formally acknowledged by the ANC government as a policy context for GEAR.

More significant were the continuities and discontinuities between the accumulation strategies of the outgoing and new elites in the 1990s, which need closer and more critical historical scrutiny. GEAR (RSA 1996) was not the disjunction it is often assumed to be. In certain respects it was instituted ex post facto.

6.1 Industrial Policy After 1994

Apart from a shift to supply-side measures, the industrial policy of the later 1990s and subsequently, comprised several specific sets of interventions formally predicated on the GEAR macro-economic strategy. The new industrial policy direction veered away from the development state approach. GEAR, as Africa Confidential saw it at the time, was in a sense a confirmation of a shift from a Keynesian approach to 'global economic orthodoxy' and fiscal discipline (Africa Confidential). The new approach entailed a move away from demand-side interventions such as tariffs and subsidies, which, it was argued, raises prices received by producers, to supply-side measures aimed at lowering unit costs and increasing the value-added portion of manufactured production. In tandem, a national spatial development framework was constructed to help integrate and optimize investment through such means as public–private partnerships (PPPs). While long-term survival strategies were created for 'sensitive' industrial sectors (Mail and Guardian July 1996), the outward-oriented model manifested in the restructuring of tariff policy. This saw the rationalization of the tariff structure and the phasing down of tariffs (a process which had commenced in 1995) by one-third on average over 5 years (RSA 1996).

Crucially, there was also the phasing out of the general export incentive scheme (GEIS). The 1996 industrial policy model emphasized five factors to achieve sustainable industrial development, namely, productiveness, employment, accumulation, competitiveness and export (PEACE). Five policy sets were identified. First, the primary industrial policy set stressed supply-side measures such as the implementation of industrial support packages to enhance human resource development (HRD), investment incentives, development finance and technology enhancement. In addition, long-term sectoral development programmes for the clothing and textile industries were put in place, as well as SME development. The second industrial policy focused on developing new procurement processes and improved means of coordinating and promoting investments, with an accompanying liberalization of the financial markets (RSA 1996; Chang 1997; Bezuidenout 2001).

Thirdly, a new Regional Industrial Development policy aimed to provide a more coherent framework for integrating existing arrangements at national and Southern African levels. Fourthly, the Trade Policy incorporated the process of tariff reduction, restructured customs and excise, and found a World Trade Organization (WTO)-friendly system of export facilitation and finance. The existing SACU was to be re-negotiated. Finally, a stable macro-economic environment to accommodate trade liberalization and stimulate industrial development was provided (RSA 1996; IDC 1996b; Chang 1997).

While the enunciation of GEAR and the associated industrial policy was important in calming doubts in the international markets regarding South Africa's long-term economic prospects, there was certain disquiet in a number of quarters (Hosking and Jauch 1997; Bezuidenhout 2001; Chang 1997). The GEAR programme has ideological importance, but for Andries Bezuidenhout, no clear industrial strategy leading to a coherent set of industrial policy measures occurred during the 1990s (Bezuidenhout 2001, p. 389). Chang (1997, p. 1) argues that government departments such as the DTI, were instrumental in spelling out initial industrial policy framework, but that the policy lacked the scope needed for the task ahead. Nevertheless, the DTI was committed to economic restructuring and HRD and R&D investment (Chang 1997, p. 6).

When unveiling GEAR, Treasury was insistent that there had to be a shift away from relying primarily on the state to drive economic and industrial development. The involvement of the private sector in a range of interventions from infrastructure to innovation support was crucial. This was in line with policy support for Public Private Initiatives (PPIs). Early examples of these were the formation of the Airports Company of South Africa (ACSA) to manage all South Africa's major public airports with substantive Italian investment, and early efforts at toll roads on several major on national highways (Chang 1997; Bezuidenhout 2001; Kaplan 2007; Bond 2010).

Two sets of programmes in particular embodied this new emphasis on leveraging private and foreign direct investment for economic and, more specifically, industrial development, (1) the new emerging model for spatial development and the (2) defence procurement programme initiated in the late 1990s.

The SDI programme was introduced in mid-1996, involving the DTI, the Development Bank of Southern Africa (DBSA), the IDC and the Department of Transport. This initiative entailed identifying the spatial clustering of economic activities to facilitate the promotion of private and public investment, and by the late 1990s appeared to embody certain aspects of the RILS venture (Hartzenberg 2001; DTI 2006). In theory, SDIs provided the private sector with opportunities to utilize government resources to realize the potential of under-utilized and marginalized areas. A central concern of the SDI was to promote a shift from import substitution to exports and international competitiveness, although the emphasis generally went beyond manufacturing to include tourism and services. This was especially the case in regard to the SDIs located in more peripheral rural areas (Hartzenburg 2001; Dunne and Haines 2001). The main objectives, as the DTI saw them, were to generate economic growth and development in relatively underdeveloped regions, provide long-term and sustainable employment, increase private investment, and use spin-

off opportunities for empowering local communities (DTI 2006). A related aspect was establishing IDZs. These are geographically defined areas in which modest incentives are made available to selected firms to establish themselves.

The emphasis on SDIs, IDZs and industrial participation (IP) as a support for investment (DTI 2003) constituted part of the continued emphasis on supply-side measures in industrial policy and the further erosion of direct state subsidies to production and export sales in the industrial sector. According to Bond, Export Processing Zones (EPZs), IDZs, and SDIs were old-fashioned strategies 'characterised by their top-down character, extremely high costs per job created (often in excess of R1-million), lack of inter-relationships with downstream/upstream industries, very little employment potential and adverse prospects for women workers' (2002b, p. 1).

The tendency to persist with the somewhat simplistic and spatially deterministic SDI approach was accompanied by a dwindling enthusiasm for a cluster-based approach to industrial development and trade promotion in the later 1990s and after. In the early 2000s, responsibility for the local SDI programme was, for the most part, transferred to relevant provincial governments (Hartzenberg 2001, p. 771), which in certain respects lacked the institutional capacity for championing these ventures. Over time the SDI strategy has somewhat de-emphasized within South Africa, with the IDZ option being preferred. But even here, there have been problems with the hidden costs and with operationalizing these ventures (Haines and Hosking 2005). Currently the South African IDZ policy has undergone a review and revision at the time of writing with Special Economic Zones (SEZs) being set to complement and/or supersede individual IDZs.

IP in both the civil and defence industrial sectors was a further component of the new industrial policy and helped underpin the controversial 'arms deal'—more formally known as the Strategic Defence Programme (SDP). In South Africa, under guidelines that took effect from September 1996, all government and parastatal contracts with an import content exceeding US$ 10 million were to include an IP component, otherwise known as offsets (DTI 2007b, p. 5). The value of the offsets was to comprise a minimum 30% of a bid's imported component for civilian contracts. For defence contracts, the offsets should comprise 50% of a bid's imported components (DTI 2007b; Armscor 2011).The IP portion of the bid was assessed according to 'credits' awarded for each type of benefit.

The SDP had two components. Defence Industrial Participation (DIP) sought to promote direct and indirect offsets to the national defence industrial base. The National Industrial Participation (NIP) programme component focused on industry. The state-owned defence procurement agency, Armscor, and the Department of Defence (DoD) administered the DIP, and the DTI and the DoD jointly administered the NIP scheme DTI 2007b. Government and actual estimates vary for the return value of the SDP programme (both NIP and DIP components). According to government estimates at the launch of the SDP programme (NIP and DIP aspects collectively) around 65,000 jobs would be created. It was also stressed, by Alec Irwin, the then Minister of Trade and Industry, that the programme would deepen and diversify the South African industrial economy. With regard to the NIP programme, the DTI also underlined the contribution to regional economic development because of the seemingly substantive geographic spread of mooted projects (DTI 2007b).

The official view on the NIP programme was that it was beneficial to the national economy (Batchelor and Dunne 2001). Independent and scholarly analyses suggest a different narrative. With regard to the civil industrial offsets there is no meaningful evidence of the reinforcement or diversification of the South African industrial economy. At best, a fraction of the 65,000 jobs were created. And if one considers jobs lost in the national defence industrial economy as a result of international procurement, it could indeed be argued that there was an overall loss of jobs in the exercise. Nor is there any reliable evidence of discernible increases in exports as a direct result of the NIP. The hope that the NIP programme would help with the regional diversification of the industrial economy was misplaced. DTI attempted to guide certain strategic investments into certain of the IDZs, but the implementation record left much to be desired (Dunne and Lamb 2004; Dunne and Haines 2001; Holden 2008 Haines 2004; Haines and Hosking 2005). The record of successfully implemented projects in the rural and peripheral areas of South Africa was equally problematic (Haines 2004, 2011). Ironically, the international defence firms or 'obligors' with previous experience in international defence deals, ensured that the South African defence procurement essentially incorporated the offset price into the price of equipment (see i.a. Dunne and Lamb 2004).

The DIP initiative was more complex and contradictory in its effects. It both attenuated and in some respects helped sustain the local defence industrial base (Haines 2012; Dunne and Lamb 2004; Dunne and Haines 2006; AMD 2006). What was underestimated at the time was the extent of social capital that had accumulated in defence-related industries and how long-term productive partnerships were undermined by creating new forms of bilateral and multi-national partnerships (Cilliers 1994; Buys 2006; Wesley 2002; Haines 2012; DTI 2010). The suggested recapitalization of the local defence industry, proposed by the 2013 Defence Review, is in a sense an acknowledgement of this oversight (DoD 2013).

While the neoliberal orientation within economic and industrial strategy and policy remained in the 2000s, there was something of a shift of emphasis around 2007 to increased state intervention in regard to certain industry sectors and subsectors, as well as periodic remodelling and extension of industrial policy.

One of the more promising developments in the mid-1990s was the invocation of a cluster-based approach to industrial development. This approach was based in part on the new institutionalist work of Michael Porter (e.g. Porter 1991) and his Monitor consultancy group (Monitor 2000) and implicitly sought to enhance social capital. Although the IDC and the DTI tended to take a positivistic approach to Porter's work, the cluster-based methodology promised more sophisticated policy work and advocacy on the institutional underpinnings of industrial and economic development in the national space economy. It was an approach more in line with thinking about industrial policy in East Asian development states than the more orthodox supply-side measures in post-1994 industrial policy. However, over time the DTI opted rather for an approach that utilized a value and supply chain methodology. Although not without its merits, this has been applied rather mechanistically in practice, and has not led to a questioning of the insertion and/or positioning of

South African firms in the lower reaches of global supply chains (e.g. Haines and Wellman 2005).

In time the reluctance of the DTI and associated agencies to take more cognizance of the play of institutions and the underestimated value of social and cultural capital, would impact on the capacity of the state to inculcate and direct reflexive industrial policy (e.g. Bond 2010).

6.2 Spatial Inequalities

Despite government's declared intention in the early 2000s (DTI 2000) of facilitating the partial shift of industrial, and more specifically economic activity to the coast, the hegemony of the industrial metropolitan complex in Gauteng has strengthened. There is also a shift in part of certain higher-end tertiary and secondary industrial production away from Durban to Johannesburg and environs, and, though to a lesser extent, to Cape Town (Kaplan 2007; Haines 2011). Government openly acknowledged in 2003 'that it needs to do more to improve the coherence of existing strategies to promote a more equitable geographic spread of investment and economic activities' (DTI 2003, p. 28). A core element in such an exercise was to develop appropriate value chains within and beyond the national space economy, and to utilize vehicles such as the SDIs (Haines and Wellman 2005).

Robin Bloch's argument outlined in 1999 (Bloch 1999), building in turn on the work of Fine and Rustomjee (1997), still has relevance. Bloch maintains that the problem lies mainly with a deeply entrenched core-periphery system in terms of industrial location. A national industrial core is dominated by the 'parallelogram' geographically defined by Rustenburg-Free State-Goldfields, Newcastle-Middleburg. It includes the industrial components of Gauteng, the adjacent mineral-rich areas, and the iron and steel, electrical and chemical - based centres in the North West, Free State, and Mpumalanga provinces. It is the heartland of the 'Mineral-Energy-Complex' that has dominated South African economic development in the post-war period (Bloch 1999). The Cape Town and Durban metropolitan areas are subordinate but integral parts of the core, as are Port Elizabeth and East London, although in an even more subordinate sense. Attempts by the DTI to attract investment and support business, argues Bloch, will not alter the South African space economy, in the short, medium, or even long-term, nor will it create new growth centres. Ironically, for all the seeming pessimism in his analysis, Bloch never fully grasped at the time the nature of the industrial underdevelopment of the Eastern Cape's major industrial centres.

A somewhat refurbished New Regional Industrial Development Strategy (DTI 2006) aimed to supplement regional industrial development support measures to deal with market failures and assist regions to reach their potential. Measures included efforts to support strategic Local Economic Development (LED) initiatives and supplement the theory and practice of SDIs and IDZs. While such broad-ranging strategy was useful, it was perhaps too broad to be effective in any one area, a reason perhaps for the growing hegemony of the Industrial Policy Action Plan (IPAP) approach.

There has been, however, some degree of success with the SDI model, within the SAR, with the DBSA playing a role in promoting the initiatives. Several of these are of a transnational character and provide a structured means for cross-border collaboration between two or more SADC states (Hartzenberg 2001). The leading question remains: what happens outside of the SDI whether on a national or regional basis? In turn this highlights the opportunities missed so far for more substantive forms of regional collaboration and industrial cooperation.

6.3 Refining Industrial Policy: The IPAP Iterations and Beyond

In August 2007, a National Industrial Policy Framework (NIPF) was released, along with an implementation of IPAP (DTI 2007a and 2007c). The documents represented a somewhat more active and interventionist industrial policy, in line with the emerging 'developmental state' discourse. The NIPF saw manufacturing as central to the country's development trajectory. Four essential preconditions for industrial development were identified:

- a stable macro-economic and regulatory environment
- traditional and modern forms of infrastructure
- substantive education and technological skills
- innovation, technology and R&D

In terms of trade policy, the NIPF raises the option of more interventionist protection of certain industries or even firms, coupled with smart incentives, flexible financing, and collaboration between government and business. There was some concern with from corporate capital with the possibility of increased interventionism, but there was a realization that the document was mostly bringing together current and previously announced processes. Nevertheless, there was a cautionary note: 'The NIPF's complex set of interventions…will only add to the implementation problems of an already overstretched state' (Draper and Alves 2007, p. 14).

IPAP 1 was instituted later in 2007. During the next 5 years, the DTI implemented further two IPAPs, reflecting in principle a more reflexive approach to the implementation of industrial development, and acknowledging in part certain of the shortcomings within predecessor documents. The further instalments, IPAP 2 (2011) and IPAP 3 (2012), also took heed of the 2008–2010 global economic crisis and its lessons. The new documents reflect on this and make some provision for crisis, which include increasing use of defensive trade measures—both tariffs and nontariff barriers such as technical and customs regulations (IPAP 2012, p. 43).

South Africa's trade policy continues on its post-1994 track of emphasizing tariff policy-setting on a sector-by-sector basis as dictated by the imperatives of evolving sector strategies. Successive IPAP iterations have dealt specifically with the perceived need to lower tariffs on intermediate inputs into manufacturing, while strategically adjusting tariffs and exploring the water between bound and applied rates in support of manufacturing sectors (ibid.).

The focus remains broadly on manufacturing. But before looking at the recent IPAP 3, it is important to review the first instalment and its revision in 2011.

The NIPF and IPAP, although claiming to be aware of structural weaknesses in South African foundations, did not go far enough in promoting and integrating with real foundational base structures like education. Limited professionalism and capacities of the government and the circumscribed strategic collaboration between government and business also impeded effective industrial policy in South Africa (Kaplan 2007, p. 14). The original IPAP and NIPF documents were an initial attempt to set the policy scene, but were largely primary steps. The current Trade and Industry Minister, Rob Davies, noted that while the 2007 IPAP had some successes—strengthening competition legislation and lowering certain tariffs—it had 'unwittingly fallen short by tackling the easier to do things' (South Africa Info, 24 March 2010).

The IPAP 2013/2014–2015/2016 is the fifth iteration of the IPAP 2013/142014-2015/2016 (DTI 2013). The document reflects on key achievements, constraints and challenges since the publication of IPAP (DTI 2007). It is also informed by the vision of the National Development Plan (NDP) and is located in the programmatic approach of the New Growth Path (NGP) (RSA 2012 and RSA 2011). Nevertheless, critics such as Zarenda (2013), point out that it still conforms to the general principles of NIPF (2007) and remains centralized under the DTI, not embedded across all government departments.

Rob Davies argues that IPAP (2013) is specifically geared to 'prevent industrial decline and support the growth and diversification of South Africa's manufacturing sector' (DTI 2013, p. 6). The main review item was the performance of the manufacturing sector—which has exhibited a distinct slowdown since 2007 due to a number of factors including the global economic crisis, small domestic market and consumption- not production-driven growth. The main focal points of IPAP (DTI 2013, pp. 20–21) centres on beneficiation, infrastructure development, regional economic development and industrial integration, creation of new export markets, local procurement, supplier development and greater linkages with Brazil, Russia, India and China (BRIC) countries, and regional integration through Brazil, Russia, India, China and South Africa (BRICS). A new suite of incentives for medium and large industrial investments have also been announced (ibid.).

Whether these modifications, including the mooted SEZs, will provide a sufficient stimulus for industrial and especially manufacturing development is questionable given the political will required to move from an administrative to a productionist perspective. Current trends are not that overly propitious.

South Africa has managed to project macro-economic stability since the mid-1990s, and has generally experienced positive if not dramatic growth rates (Table 1). However, unemployment is high at around 25% and socio-economic inequalities stubbornly persistent with South Africa seen in some quarters as having the world's highest Gini coefficient. Manufacturing employment has declined progressively over the last two decades although there has been some employment increases in other formal sectors of the economy (See Table 2) The contribution of the manufacturing sector to GDP (and therefore also employment) rose from about 17% in

Table 1 Annual formal sector employment and real gross value added growth series, 1980–2007. (Source: Hodge 2009)

Year	Employment level	Employment change (%)	Real growth in GDP (%)
1981	7,761,900	2.7	5
1982	7,894,700	1.7	−0.7
1983	7,843,500	−0.6	−2.2
1984	7,905,900	0.8	5.2
1985	7,842,700	−0.8	−0.4
1986	7,925,000	1	0
1987	8,017,000	1.2	1.6
1988	8,082,000	0.8	3.8
1989	8,157,000	0.9	2.5
1990	8,135,000	−0.3	−0.8
1991	7,988,000	−1.8	−1.1
1992	7,866,000	−1.5	2.2
1993	7,758,000	−1.4	1.4
1994	7,702,000	−0.7	3
1995	8,069,000	3.8	3
1996	8,291,000	3.7	4.2
1997	8,111,000	−2.2	2.6
1998	8,074,000	−0.5	0.7
1999	8,462,000	4.8	2.7
2000	8,790,000	3.9	4.4
2001	8,674,000	−1.3	2.9
2002	8,878,000	2.4	3.8
2003	9,101,000	2.5	3.2
2004	9,199,000	1.1	4.8
2005	9,425,000	2.5	5
2006	9,876,000	4.8	5.3
2007	10,658,000	7.9	5.2

GDP gross domestic product

1970 to about 20% in 1980 and 1990, before dropping to about 19% in 2000 and below 17% by 2010.

Since 2007 government has moved to provide more state support to the manufacturing sector, and industry more generally. There has been more creative targeting of industry subsectors and identifying relevant value chains. The increased effort has borne some fruit, but structural impediments remain. The labour policy still does not exhibit the requisite flexibility for establishing and promoting labour-intensive industries. Indeed, the Organisation for Economic Co-operation and Development (OECD) notes in its 2013 Economic Report on South Africa that 'the interaction of weak competition in product markets and dysfunctional labour markets is holding back growth and aggravating unemployment' (OECD 2013, p. 8).

The disproportionate power of large corporations in South Africa, identified in the mid-1990s as a structural impediment to economic growth, remains an issue (Haines 1996, p. 42; OECD 2013, p. 8). In a recent meeting of economic analysts

Table 2 South African private sector manufacturing employment 1994–2012 (excluding government). (Sources: South African Reserve Bank Quarterly Bulletin (September 2002, p. S-132), South African Reserve Bank Quarterly Bulletin (December 2009, p. S-132), South African Reserve Bank Quarterly Bulletin (December 2013, p. S-134))

Year	Index—manufacturing employment	Employment—manufacturing
1994	99.4	1,503,387
1995	100	1,512,462
1996	96.3	1,456,501
1997	92.3	1,396,002
1998	89.3	1,350,628
1999	87	1,315,841
2000	85.7	1,296,166
2001	83.5	1,262,906
2002	83	1,255,343
2003	82.7	1,250,806
2004	82.6	1,249,294
2005	78.4	1,185,770
2006	85.8	1,297,692
2007	87.3	1,320,379
2008	85.9	1,299,204
2009	80.2	1,212,995
2010	77.4	1,170,645
2011	76.3	1,154,009
2012	76	1,149,471

with the South African Treasury, ‘the discussion reverted to the notion that the government should be encouraging informal activity and small business development far more intensively rather than trying to collude, so to speak, with large companies involved in capital-intensive activities’ (Moneyweb, 24 January 2014).

Although some increased support mechanisms have been put in place, many a small and medium business in South Africa is in more marginal a position than their actual and/or potential contribution to the national economy warrants. By comparison with countries such as Chile, Thailand, Mexico and other emerging markets, South Africa ‘establishes, sustains and grows fewer businesses per head of population’ (SEDA 2013, p. 16).

South Africa’s education system, especially the schooling system, despite consuming in absolute and real terms more of the national budget than any other African economy, underperforms significantly compared to other large developing and transitional economies (Bloch 2009).

Vocational and technical education—a central pillar of technological innovation and change in a developmental state—remains in some disarray. This is illustrated by the attenuation in recent years of the Accelerated and Shared Growth Initiative (ASGISA)-inspired effort to coordinate strategically such training through the Joint Initiative on Priority Skills Acquisition (JIPSA) initiative. Other weaknesses in the South African economy, which impact inter alia on industrial performance, include infrastructural bottlenecks, transport and electricity networks, a still cumbersome regulatory system and rising government debt (Moneyweb, 24 January 2014).

The institutional terrain on which industrial policy is executed is a further issue. While the DTI has centralized and expanded its role within the formulation and implementation of industrial policy, in South Africa challenges remain. For one, despite the leading role of the DTI there is a plethora of agencies at national and sub-national levels involved in certain aspects of economic and industrial development. These include a range of development corporations at provincial and local levels. Improved co-ordination of the relevant activities of such structures is imperative for more efficacious development policy. The DTI has also in the past been hampered by capacity issues on programmes such as the NIP initiative (Haines 2004, 2011; Kaplan 2007; Bond 2010). A recent audit report on the arms deal, declared that the DTI concurred that 'no methodology' was developed to multiply the actual investments and that the main criterion was the 'perceived importance of the project' (City Press, 16 February 2014). While the DTI would seem to have improved capacity somewhat over the last few years, doubts remain as to its ability to provide reflexive and efficient promotion of industrial activity.

7 Planning and the Development State C2005–2014: A Return to Statism?

The period from 2006 to the present saw an upsurge in planning productions and announcements aimed in part at refining and/or restating the underlying philosophy of economic industrial policy. The ASGISA was the first of these. The first iteration of IPAP was released in 2007 and was followed by the NGP in 2010, the National Plan of 2012, the revised Defence Review in 2012/13 (DoD 2013), and the recent new bill on SEZs. Interacting with these events was the emergence and elaboration of a discourse on the construction of a developmental state.

In 2006, Government released the ASGISA, restating in effect the country's commitment to growth, redistribution and development. It was more of a programmatic statement than a formal modification of existing policy with a number of commentators noting its lack of clarity and focus (Business in Africa, June 2006). It identified a number of 'binding constraints' to growth and sought to raise the country's growth rate from the prevailing 4% at the time, to over 6%—the identified growth level for making inroads into the high level of unemployment. The document also suggested a partial shift from PPPs to a greater reliance on state investment in infrastructural development and industrial projects. ASGISA highlighted the skills constraint and meshed with government efforts to reduce red tape around attracting skilled emigrants, and better utilizing existing resources within the country. The most tangible ASGISA effect was the formation of the JIPSA in March 2006, with senior representation from government, business and labour and a seeming project focus.

The political background to the production of ASGISA is informative. There was increased internal political conflict in the ruling ANC due to President Mbeki's firing in 2005 of Jacob Zuma as deputy president on the grounds of Zuma's alleged

corruption with regard to the 'Arms Deal'. Furthermore, there was an increased populist critique of the GEAR approach within the tripartite alliance. Philosophically, ASGISA embodied Mbeki's notion of dual economy introduced into policy debates in 2004, which in turn informed policy efforts at bridging the gap between a productive first economy and a dependent 'second economy'. The designated protagonist of ASGISA was deputy president Mlambo-Ncquka, purported to be Mbeki's preferred successor to the presidency (Business in Africa, June 2006).

The ousting of President Thabo Mbeki at the national party conference at Polokwane in 2007, and his replacement by the previously sacked deputy president, Jacob Zuma, saw corresponding changes in the macro-policy environment. Zuma was voted in on a seemingly populist ticket, but the underlying macro-economic policy remained largely neoliberal in conception and implementation. With the emergence of a political breakaway party, Congress of the People (COPE) engineered by certain of the Mbeki loyalists, and growing dissatisfaction with some party supporters on matters such as service delivery, and continued opposition by the COSATU unions to the GEAR macro-economic policy, the pressure was on the Zuma administration to demonstrate a commitment to social and economic reform (Poon 2009: Holdt 2010).

The 2007 Polokwane conference informed the ANC's election manifesto with an emphasis on more substantive socio-economic transformation. And as Zuma stressed, 'the key to delivering these priorities will be building an effective developmental state' (quoted in Poon 2009, p. 1). The development state concept had been unveiled in 2005 but had not been met with overmuch enthusiasm. But the conjuncture of events in 2007 saw a differing reception both popularly and in policy and intellectual circles where the nature and functioning of such a state saw a burgeoning discourse (Bassaic 2009; Poon 2009; Bond 2010; Holdt 2010).

The New Growth Path (NGP) released by the Economic Development Minister, Ebrahim Patel, in November 2010, emphasized job creation as a national priority, and aimed at reducing unemployment by 10 percentage points by 2020, down from the current rate of 25 %. It set a target of 5 million jobs by 2020. The NGP acknowledges that economic growth in the period 1994–2008 did not lead to a marked reduction in unemployment, nor was there sufficient consideration of the environmental impact and challenges of economic growth. The NGP stressed, '[i]n a mixed economy, private business is a core driver of jobs and economic growth' (RSA 2011, p. 28).

The NGP builds on a long-term governmental orientation, as embodied *Inter alia* (i.a.) in the ASGISA South Africa and NIPF which appreciates that restructuring the national economy is imperative. The programme identifies six priority areas to job creation, namely, infrastructure development, agriculture, mining, manufacturing, the 'green' economy and tourism. A central concern in efforts to achieve the desired outcomes of the NGP was the need to enhance human capital, and achieve the requisite transformation and expansion of skills development and training. This would include utilizing endogenous growth models and deliberately harnessing the agencies and actors in the terrain between the state and market.

The NGP's job creation programme was criticized both by organized labour and business: a common argument was that the programme requires more concrete measures to combat unemployment. While business was concerned with the po-

tential additional costs and too much state intervention (and accompanying rise in tax rates), and the retention of what they perceived as an inflexible labour regime, unions were concerned about the possibility of a wage freeze in the private sector. The unions also emphasized the importance of generating decent jobs. COSATU pushed for an expansion of the NGP to include public healthcare and education and expand training opportunities, and argued more generally that the programme underestimated the role of the public sector (Mail and Guardian, January 2011).

Some commentators saw a suggestion of intergovernmental rivalry with the NGP, since the main thrust of the framework was to position the Economic Development Department as the lead agency overseeing the shift to a developmental state. Interestingly, the subsequent and complementary intervention would come from a different state agency. The National Development Plan (NDP), first unveiled in a preliminary strategic report on 11 November 2011 by the National Planning Commission headed by former Finance Minister, Trevor Manuel, was released in its final form in 2012. The Plan aims, optimistically, to create 11 million jobs by 2030, which would reduce the unemployment rate from around 25 % to a target of 6 %. The plan proposes a new focus on promoting labour-intensive industries, making exports more competitive and reinforcing the government's role in economic planning. The report assumes average economic growth of 5.4 % over the next two decades, which is at odds with the medium-term predictions of most economists, who see growth at 3.0–3.5 %. The plan emphasizes the importance of leadership, both within and without the public sector, in forging a more dynamic economic development path, and calls for more resources and safeguards in combating maladministration and corruption (RSA 2012).

Administrative power is often an underestimated yet possibly more defining aspect of the contemporary South African state. This can be seen in the high proportion of national, subnational and local budgetary allocation to HR expenditure rather than capital expenditure. Whereas the development states of the Far East would look to sustain an 'economic bureaucracy' with substantive experience of industry, finance and commerce (Kwon 1994; Wade 1995), the same trend is not discernible in the South African case. The need to change tack is evident in a number of recent strategy documents with the National Development Plan being probably the most prominent. However, the question of nationally and subnationally driven state reform is not an easy one to resolve. However, potentially declining municipal revenues and a modest tax base nationally, coupled with added social development pressures on Treasury makes the case for smart intervention strong.

Accumulation strategies via central, provincial and local state contracts grew apace during the later 1990s and after, as did the search for state jobs. While there was for a time an attempt to limit and where possible streamline state apparatus, this was a policy option that diminished progressively in importance. And in both state and parastatal agencies salaries were not subject to regimes of fiscal discipline and frugality. At the higher end of the pay-scales salary within state and parastatal structures, inequalities were reinforced rather than eroded. Contrary to ideal type and neoliberal logic, state spending was disproportionally allocated to personnel rather than capital costs (Poon 2009; Holdt 2010).

The performance of the South African state has been uneven, most especially at local level. The Auditor General report (RSA 2013) on the performance of the municipal financial administration showed that overall audit outcomes have regressed: 41 auditees improved but 50 auditees regressed with only '*48% of the auditees being able to obtain financially unqualified audit opinions, most of whom did so by correcting the mistakes identified through the audit process*' (SA Government Information 2013, p. 1). Related coverage of the high-incidence of state officials involved in tender provision and health and education delivery issues experienced by the provincial governments are further areas of concern that highlight the structural changes necessary to achieve a more disciplined and productive state. The situation has been compounded by increased service delivery and social movement protests.

There is a distinct and substantive relationship between the invocation of the market and accumulation strategies. This is evidenced in the use of PPPs with regard to lucrative toll road operations, airports infrastructure (ACSA) and certain proposed energy ventures. The workings of the parastatals, e.g. Transnet's Waterfront Development in Cape Town, is a further example.

The paradox, appreciated by the more successful developmental industrial states, is that state size per se and purely state solutions are counter-productive of strategies and efforts to create smart interventionist states and societies. An over-reliance on state resources can lead to entrenching the state as the centre of future struggles. South Africa has currently a relatively large bureaucratic state which, while considered interventionist, could be more effective in its relationships with productive institutions and forces. This is in part the outcome of the compromises of the negotiation process of the early 1990s, which left a cumbersome institutional legacy constituted by a set of informal rationales shaped by 'the imperative to undo racism and white domination in the state and in the society more broadly' (Holdt 2010, p. 1), which inherently tend to diminish the Weberian rationales for a meritocratic and effective state bureaucracy.

It is not altogether surprising that there is a dichotomy between the East Asian economies and the developmental trajectory of the South African state. The expanded discourse on the development state in South Africa serves, it would seem, a more complex set of purposes. As was argued earlier, the periods before and after 1994 have seen in effect a dismantling of the original development state, albeit one predicated on racial capitalism. And while South Africa may in certain respects be looking to recreate a more interventionist state, we need to take closer cognizance of the interplay between statism and neoliberalism at national and global levels. In addition, it has been argued (Mills 2012) that South Africa exhibits certain of the features of the neo-patrimonial states of sub-Saharan Africa. As in other post-independent African economies, the accrual of political power has opened up access for opportunities for accumulation, particularly for the new business and political elites.

The increased recourse to planning, and the accompanying emphasis on a developmental state, would seem to be more than a technical set of interventions. It is political in nature as well. On-going planning pronouncements in recent years are not unrelated to efforts to regulate increased conflict within and without the ruling

alliance, and ameliorate populist opposition to market orthodoxy and persistent inequalities, as well as dampen increased criticism of the accumulation strategies of the intersecting business, political and administrative elites.

Goran Hyden, in his classic and still controversial work, No Shortcuts to Progress: African Development Management in Perspective (1993), cautions against an over-reliance on what he terms the 'blueprint approach' to planning, in which an authoritative document, which could take the form of say a Five-Year Plan, or other future-oriented statement of intent are aimed in part at placating differing communities and stakeholders. Such documents are distinctly ideological and, in effect, defer or displace critical analysis. While Hyden's institutionalist analysis was essentially a commentary on trends in sub-Saharan African economies with soft states, it can and does provide a useful insight and corrective to future and emerging instrumentalist tendencies in current planning practice.

There is, however, a further consideration. The increased invocation of 'statism' in South Africa should not be seen in isolation from comparative international experiences. The South African experience can be contextualized with the 'neoliberal drift' or neoliberal restructuring of state forms and structures in developed, transitional and developing economies. Central to such processes is the interplay with contemporary globalization. But at the same time, the particularity of changes at national state level should also be appreciated.

There is a burgeoning scholarship on the ways in which neoliberal discourses and practices are informing the reconstruction of economic and political life within nation states (e.g. Hall 2011; Crouch 2011; Harvey 2005; Lee and McBride 2007; Pirie 2008; Hindness 2002; Lemke 2001; Haque 2008; Murray 2013).

There would appear to be an ideological tension between the notion of an open economy and the reality of neoliberal statism. Thatcherism was able to mesh the notion of a market economy with that of a strong state. Stuart Hall, considering this paradox of neoliberalism, argues that '[i]deology works best by suturing together contradictory lines of argument and emotional investment' (Hall 2011, p. 5).

With an increased recourse to market-oriented approaches since the later 1970s, there has over time been a distinct blurring of boundaries between the public and private sectors. As a range of scholars have shown (i.a. Harvey 2005; Crouch 2011; Hall 2011) there has been an insertion of neoliberal structures and practices into the strategic spheres of the state. This patterning can be seen, for example, in the privatization of certain state operations, the increased utilization of private finance initiatives (PFIs) and PPPs, and the outsourcing of previously mainstream state work. Furthermore, the now prevalent practice of using consultants, a distinct trend for instance in the South African case, and thus positioning expertize outside of formal state structures, has contributed to the erosion of state competence. In addition, via accommodative tax regimes for large capital including the seeming tolerance of MNC financial offshoring, states are allowing for the mobility of capital and adding legitimacy to the current workings of global markets (Harvey 2005; Crouch 2011; Haque 2008).

Colin Crouch (2011) argues that a strengthened alliance of interest between conglomerate and multinational capital and the state, most especially within advanced

economies, has seen a corresponding displacement of small business. He sees potential for future collaboration between such business and organized labour to better respond to the increased interpenetration of the state and big business. Tolbert et al. (1997) stress the potential of 'local capital' enhancing civic engagement and activity if local business is given due encouragement and support by the relevant local and district authorities.

A number of studies have focussed on the erosion of public space (including processes of the commercialization of the commons) and the shift to market logic and discourses among agencies and actors within the third sector (Crouch 2011; Murray 2013; Lee and McBride 2007). Underlying such process, is the transformation of the 'rights and obligations of citizens' (Haque 2008, p. 12), and the seeming prioritization of economic rights over human rights, globally and increasingly nationally (Harvey 2005; Crouch 2011; Haque 2008). In South Africa, for instance, the predatory behaviour of the established banking groups within regard to individuals and small businesses has been a distinct trend in the post-apartheid practices of large financial institutions.[3]

The hollowing out of the state and democratic processes is also seen to condition the shifts to neoliberal statism (Davies 2000; Jessop 2013; Giroux 2004; Kennett 2013). Scholars have analyzed entwined processes of authoritarianism and state surveillance both in Northern and Southern economies (Haque 2008). The likely passing of the Protection of Information Bill in South Africa provides the state with wide and punitive powers in regard to the regulation of information. This, newspaper editors and journalists stress, would inhibit inter alia exposes of corruption and malpractice at various levels of government, and allow more discretionary control of sensitive macro deals between government and large business.

8 Conclusion

This chapter explores the past and present interaction between the South African state and the conceptualization and execution of economic and industrial policy. It shows how planning was entwined with the planned extension and consolidation of apartheid. It is argued that mining surpluses in the interwar years helped underwrite an early development state and an accompanying import-substitution and quasi-protectionist industrial policy. In addition by the later 1960s, the authorities looked to a programme of decentralized industrialization in the border and homeland areas. While this programme inhibited somewhat the growth of manufacturing industry in the major centres, and proved costly to manage, there were some modest and often under-estimated achievements.

The industrial decentralization programme was progressively wound from 1989 by the state in the way of a direct replacement for such industrial work in peripheral

[3] These practices and in many cases the illustrative legal cases, are well documented in the back copies of South Africa's main investigative periodical, Noseweek.

areas. More market-friendly schemes were proposed but these did not materialize, with the post-apartheid government opting for a new export-oriented industrial policy after 1996, and the replacement of formal industrial decentralization with the SDI and IDZs. Although these retained a spatial location dimension, they were not particularly efficient means of creating and distributing industrial jobs.

During the 1980s, with an increased crisis of legitimacy experienced by the apartheid government, and with the growing influence of neoliberal options gaining currency in South African policy circles a massive process of public asset stripping began. This was not reversed by the accession of the ANC-dominated government in 1994. Indeed the dismantling of the development state and its policies continued in various respects in the 1990s and after. Successive ANC governments adhered to an orthodox monetary policy and a supply-side and export-oriented industrial policy. However, in the later 2000s there was a partial shift to a more interventionist approach in regards to certain sectors of the manufacturing sector. In 2007, the ANC declared its intention of constructing a developmental state to facilitate more transformative socio-economic policies. And in the period 2006–2013, there has been an upsurge in policy pronouncements and documents. There was a tension, however, between the invocation of such a state and the political will to build an agile and production-centred state. The new elite accumulation strategies centred quite extensively on the state (both national and subnational forms) and it was difficult to see such practices being reformed.

Internationally, the restructuring and 'hollowing out' of national states through neoliberal approaches and neoliberal governance has not been uncommon. And this is not to say that the resultant state would be trimmed down as in early ideal-type neoliberal prescriptions. Rather, the private sector has inscribed itself into the state in a variety of ways, with the borders between the state and the corporation more blurred than in previous decades. Thus the invocation of a new statism is not antithetical to neoliberalism but rather a means of ensuring processes of accumulation and business-friendly regulation.

The contemporary South African state does not easily conform to a particular model, and may in fact exhibit certain traits of the neo-patrimonial African state. But if there is a hybridity then it would be state in which neoliberalism is the senior partner.

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Part III
Industrial Policy, Technology Policy and Innovation Policy

Recent Industrial Policies in Japan

K. Ali Akkemik

1 Introduction

Industrial development policies in Japan since the 1970s led to a transformation of the economy towards a more capital- and knowledge-based one. This came at a time when the long-run growth rate (5-year moving averages) of the Japanese economy slowed down from about 9 % in the 1960s to about 4 % in the 1980s to less than 2 % in the 1990s and virtually to 0 % in the 2000s (see Fig. 1). During the same time, the share of relatively more capital-intensive industries, such as iron and steel, smelting, and refined petroleum products, decreased remarkably after the 1970s and that of technology-intensive industries and related services, such as transport equipment (automobiles, in particular), telecommunication services, research and development (R&D), information technologies (IT) and IT-related services, and medical services, increased during the same period. Table 1 portrays this transformation since 1970. The share of primary industries such as food and textile in total output also dropped significantly since the 1970s. The output share of medical services (public, private, and nonprofit combined), which is deemed as a promising sector nowadays, in particular demonstrated a rapid increase, from around 2 % of total output in the economy in the early 1970s to more than 4 % in 2009. IT services, another promising industry, on the other hand increased its share in total output sixfold from only 0.2 % to about 1.8 % during the same period. All these trends point to increasing importance of knowledge and technology and, accordingly, a significant structural change in this direction in the Japanese economy.

The transformation in the structure of the Japanese economy was facilitated by industrial policies of the economic bureaucracy, Ministry of International Trade and Industry (MITI), in particular. Industrial policies in Japan have evolved from traditional industrial policies that aimed at heavy industrialization during the 1950s and 1960s towards those emphasizing the development of the hi-tech and knowledge-

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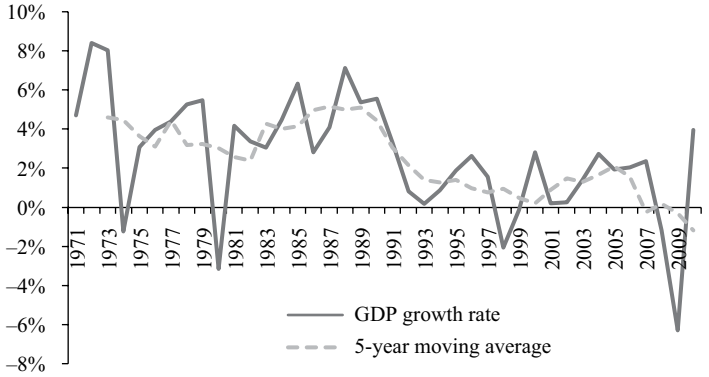

Fig. 1 GDP growth rates in Japan (1971–2010). *GDP* gross domestic product. (Source of data: Statistics Bureau of Japan)

intensive industries since the late 1970s. Following the nomenclature in Dobrinsky (2009), we will call the former "traditional industrial policies" and the latter "knowledge-based industrial policies." The characteristics of industrial policies have also changed during this transformation. In this chapter, the evolution and the transformation of the industrial policies are examined and the current state of industrial policies in Japan is briefly described. For this purpose, we employ theoretical discussions about traditional industrial policies in Japan and knowledge-based industrial policies thereafter. The theoretical underpinnings of these two types of industrial policies are quite different from each other. The knowledge-based industrial policies rely more on the government mostly as a facilitator of coordination across private firms and in facilitating the dissemination of knowledge. Traditional industrial policies, on the other hand, relied on the government as a guide for industrialization, which provides blueprints and allocates productive resources in the economy accordingly.

In what follows, we first build on the concept of industrial policy and distinguish between these two different types of industrial policies in Japan. We compare two policies in terms of the role of the government and policy instruments. A major difference with regard to policy instruments is the importance given to innovation by private firms in collaboration with the public sector in the knowledge-based industrial policies while traditional industrial policies mostly emphasized technological catch-up and the strong presence of the government in deliberately guiding technology development.

Another important aspect of the recent industrial policies is the emphasis on the changes in global economic conditions and the changing nature of manufacturing in the modern economy. The economic bureaucracy admits that Japan lagged behind China and Korea in meeting the demands of the changing consumer needs in the modern economy. To cope with it, the government has recently put into action an ambitious strategy to help Japanese industries and firms restructure themselves and adapt to the changing ways of business-doing. These new policies implemented by the Ministry of Economy, Trade, and Industry (METI), which replaced MITI in 2001, carry some elements of traditional industrial policies as well.

Table 1 Output composition of Japanese economy (1970–2009), period averages (unit: %). (Source: RIETI, JIP 2012 Database)

Industry	1970–1975	1975–1980	1980–1985	1985–1990	1990–1995	1995–2000	2000–2005	2005–2009
Agriculture, forestry, and fisheries	3.5	3.1	2.6	2.3	1.8	1.6	1.4	1.3
Mining	0.5	0.5	0.4	0.3	0.2	0.2	0.1	0.1
Food, beverages, and tobacco	5.6	5.4	5.4	5.1	4.3	4.1	3.9	3.6
Textile and leather	2.6	2.4	2.1	1.9	1.6	1.1	0.7	0.5
Wood and furniture	1.7	1.6	1.3	1.1	1.0	0.8	0.6	0.5
Paper and printing	2.1	1.9	1.9	2.0	1.9	1.8	1.6	1.4
Rubber and plastic products	1.2	1.2	1.4	1.5	1.5	1.4	1.4	1.4
Chemicals and pharmaceuticals	2.6	2.5	2.7	2.9	2.9	2.8	2.7	2.6
Petroleum and coal products	3.9	3.4	2.3	1.7	1.6	1.6	1.3	1.2
Glass, cement, pottery, nonmetallic minerals	1.6	1.4	1.3	1.2	1.1	1.0	0.8	0.7
Iron and steel	4.2	3.8	3.3	2.7	2.3	1.9	1.7	1.8
Smelting and fabricated metal products	2.6	2.4	2.4	2.4	2.4	2.2	1.9	1.7
Industrial machinery	3.1	3.0	3.5	3.7	3.6	3.3	3.0	3.4
Household electric appliances	0.2	0.4	0.6	0.7	0.8	0.8	0.9	1.2
Electronic and communication equipment	0.7	0.8	1.4	2.2	2.7	3.7	4.5	5.8
Transportation equipment	3.0	3.5	4.1	4.5	4.7	4.4	5.0	5.7
Precision equipment	0.4	0.4	0.5	0.5	0.5	0.4	0.4	0.4
Miscellaneous manufacturing	0.7	0.6	0.6	0.6	0.6	0.6	0.5	0.4
Construction	13.0	12.1	10.6	10.2	10.5	9.1	7.6	6.6
Electricity, gas, and water supply	2.3	2.4	2.3	2.3	2.4	2.6	2.6	2.6
Wholesale and retail trade	7.3	8.1	8.9	9.0	10.2	10.9	10.2	9.5
Finance and insurance	2.4	2.8	3.1	4.3	4.5	4.6	4.8	4.6
Real estate and housing	6.2	6.7	6.9	6.6	6.5	6.8	7.0	6.9
Transportation services	5.3	4.9	4.6	4.4	4.5	4.2	4.0	3.9
Telecommunication services	0.6	0.7	0.7	0.8	0.9	1.5	2.2	2.1
Research (private)	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Research (public)	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2
Research (nonprofit)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Medical (private)	1.4	1.8	2.2	2.0	1.9	2.1	2.5	2.7
Medical (public)	0.3	0.4	0.5	0.5	0.6	0.6	0.6	0.6
Medical (nonprofit)	0.3	0.4	0.6	0.7	0.7	0.8	0.8	0.8
Information services and internet-based services	0.2	0.3	0.5	0.7	0.8	1.1	1.7	1.8
Other public and private services	20.3	21.0	21.4	21.2	21.0	21.7	23.2	23.9

The shares are based on real value of output in 2,000 prices

The rest of the chapter is organized as follows. Section 9.2 briefly describes the theoretical underpinnings of industrial policies with a comparison of traditional and knowledge-based industrial policies. The third section summarizes the evolution of industrial policies in Japan. The fourth section describes the current state of Japanese industrial policies. Finally, Sect. 9.5 concludes with a wrap-up.

2 Traditional and Knowledge-Based Industrial Policies: Theoretical and Empirical Underpinnings

2.1 Debate on the Concept of Industrial Policy

The debate among economists on the concept of "industrial policy" is multifaceted and it has both ideological and theoretical dimensions. Nowadays, the term "industrial policy" has a general meaning and economists generally refer to any kind of government aid to help private sector and various forms of financial and technical assistance for private businesses to flourish.

In this chapter, we define traditional industrial policy as "a set of policies designed for the development of selected industries to increase the welfare of the country and to achieve dynamic comparative advantages for these industries by use of state apparatus for resource allocation," as defined in Akkemik (2009, p. 10). We take the view in Chang (2011) that private businesses do account for the success of industrial policies, but as opposed to the short-term focus of private businesses, the state (bureaucrats) implementing industrial policies has a rather nation-wide and long-term view of industrialization.

There are two strands of research on industrial policies. One strand of research focuses on theoretical aspects. The other strand examines the implementations of industrial policies across a wide range of countries. In a recent review of industrial policies, Rodrik (2008) argues that the theoretical case for industrial policy is much stronger than the empirical one. The theoretical underpinnings of industrial policy emphasize market failures and the corrective role the government can play. This is the rationale behind the traditional industrial policy. Rodrik (2008) also points out that due to the difficulty in implementation, industrial policy is practically ambiguous for skeptics. He raises various examples from across a wide range of countries where governments failed in their attempts to stimulate structural changes in the economy by intervening in the working of the markets. He argues that industrial policies may invite corruption and rent-seeking if implemented unsuccessfully.

Among the early theoretical and empirical debates on industrial policy, those such as Johnson (1982), Amsden (1989), Wade (1990), and Chang (1993) focused on the successful government-led industrial development experiences of East Asian economics, namely, Japan, Korea, and Taiwan (Akkemik 2009). These studies generally admit successful selection of industries during the course of industrial development and that these governments played an important role in enhancing comparative advantages of the respective economies by stimulating structural changes and the allocation of resources towards strategic industries through subsidies and other forms of support. Infant industry protection during the early stages of industrial development was another important pillar of industrial policies. Infant industries generally contain dynamic scale economies and they are generally selected due to their high income elasticity. Due to market failures in the allocation of productive resources, including financial resources, a Big-Push kind of industrial development plan is generally deemed necessary because the infant industries also have strong interlinkages. Therefore, coordination during the nurturing and development of

these industries is an important issue. Nurturing of these industries at the infant stage requires protection from foreign competition. Needless to say, they also enjoy various forms of government support that help them improve their productivity and competitiveness. Scale economies help these industries achieve competitive edge after successful exploitation of the domestic market (see Itoh et al. 1991). Successful industrial policies generally encourage these industries to expand their production to overseas markets via exports to reap further benefits from scale economies. At this stage, these firms are generally ready to compete with their foreign counterparts. The successful examples in East Asia were used to justify the positive role of the government in overcoming market failures. However, it should be noted that there was not a standard formulation for industrial policies in these success stories. Rather, as shown by Akkemik (2009), different historical and cultural conditions across countries led to different sets of policies.

On the other end, there are economists who are skeptical about the positive role of the government in industrial development. For these economists, what the governments did to contribute to industrialization was to make the markets work efficiently mainly by providing the necessary infrastructure and legal and regulatory measures. These economists explicitly downgrade the industrial policies of the government and stress the importance of the private sector. They assert that leading the markets by industrial policies requires that economic bureaucrats obtain a considerably large amount of information about the markets and the private firms, which they deem virtually impossible to acquire and process. Therefore, they claim that the government cannot effectively realize resource allocation and should leave it to the market to allocate resources to their best uses. It is obvious that these economists focus their attention to large costs involved with industrial policies. However, World Bank (1993), sharing the opinion that the industrial policies in East Asia were market-friendly by their nature, also praised the governments for getting the policies right so that the benefits were much larger than the costs, thereby yielding positive gains for the economy.

From an institutional economics perspective, Aoki et al. (1998) provided evidence for the importance of complementary relations between the government and private businesses in East Asia's economic development. In this framework, which they name "market enhancing approach," the government plays an important role in establishing and maintaining coordination between private sector firms and between public and private agents in the economy.

2.2 Traditional Industrial Policy and Its Instruments

The instruments of traditional industrial policy are explained in detail in Akkemik (2009, pp. 13–24). In this subsection, we suffice with a short summary with some additions.

Competition Policy: It is well known that, from the 1950s to the 1970s, the Japanese economic bureaucracy encouraged cooperation rather than competition. This was an ideological issue at the bureaucratic level. Johnson (1982, pp. 221–224) showed that, starting from 1952, MITI organized domestic industries by setting

production constraints or quotas for each industry and reorganizing them by determining the market shares for major producers in each industry. Bureaucrats threatened those firms who resisted such bureaucratic practices to cut their materials and funds. By doing so, the government effectively created oligopolistic markets, so to say "legal cartels," under the control of economic bureaucrats and strictly controlled market entry and exit (Katz 1998; Okazaki and Okuno-Fujiwara 1999). Rationing of foreign exchange and funds was used by these bureaucrats as carrot or stick. The dominant type of organization in these industries was the *keiretsu*. After the liberalization of international trade and later capital movements starting from the mid-1960s, the government shifted its focus away from infant industry protection to enhancing international competitiveness of domestic industries. For this purpose, the government encouraged mergers and hence increased economic concentration (Kuchiki 2003). Creation of economic rents by bureaucrats for the large firms in oligopolistic markets was carried out successfully and did not suffer from the potential risk of perpetuation of rent-seeking by these favored large firms (Itoh et al. 1991, pp. 177–178).

Trade Policy: Japanese industrial policies aimed to create dynamic comparative advantages for the Japanese firms. Infant industry protection was lifted when these firms became competitive and trade liberalization was introduced after the mid-1960s. However, Osada (1993) showed that even after trade liberalization effective protection rates for strategic industries such as automobiles and electrical appliances were still very high.

Tax and Financial Sector Policies: Japanese economic bureaucrats extended tax incentives, such as accelerated depreciation and exemption from import taxes for capital goods imports, and low-cost capital to firms for use in industrial investments and industrial rationalization (i.e., technological upgrading) in targeted industries. Ministry of Finance, MITI, Bank of Japan, Japan Development Bank, and Exim Bank of Japan, among others, directed public and private funds towards targeted industries. It is also well-known that the private funds accumulated in the postal savings system were partially used for such investments through the Fiscal Investment and Loan Program, which served as a second budget for the Japanese government for industrial investments and rationalization of the production techniques.[1] The main bank system was also used effectively to finance capacity expansion and rationalization in industries (Teranishi 1999).

Labor Market Policies: After fierce disputes between capitalists and labor, Japanese bureaucrats created positive industrial relations conducive to economic development around the early 1960s. The government also encouraged large industrial firms' attempts to create a business culture in line with such industrial relations as reflected in the life-time employment system, seniority-based wage system, and

[1] It is true that most of the publicly controlled funds, especially postal savings in the Fiscal Investment and Loan Program, were used for infrastructure and welfare-state purposes. However, this shall not degrade the substantial amount of funds reserved for industrialization notwithstanding the private funds that were mobilized indirectly by government guidance for the same purpose.

enterprise-based labor unions. In addition, productivity improvement through quality enhancing practices such as quality circles and total quality management were promoted by Japanese companies.

Technology Policies: During the catch-up stage, Japanese companies were heavily dependent on foreign technologies. When the technological gap with the advanced West was largely closed by the early 1970s, Japanese companies started restructuring themselves to enhance their competitiveness and to improve their ability to generate new technologies in the promising high-tech sectors with high value-added content such as electronics, computers, and automobiles. The government played an important role as a facilitator of knowledge creating and dissemination. To this aim, the government promoted coordination between public and private R&D firms and private companies. Joint R&D research projects were subsidized and various cheap financing schemes were provided. These are also essential components of the knowledge-based industrial policies which are discussed in detail in the following subsection.

Foreign Investment Policies: It is well known that ideologically the economic bureaucrats at MITI were against utilization of foreign investment in industrialization (Johnson 1982, pp. 80–81). These bureaucrats were nationalist in general but not xenophobic. They valued national interests more and preferred domestic entrepreneurs with whom they had already established a symbiotic relationship. To discourage acquisition of Japanese firms by foreign firms, they promoted the main bank system and the cross-shareholding system within the *keiretsu* system. Changing global business environment led to changes in industrial polices. According to Chang (2011), these changes are related to the increasing internalization of industrial production and the changing way of "doing business" with regard to global supply chains.

2.3 Knowledge-Based Industrial Policy and Its Instruments

Pack and Saggi (2006) point out that international competition has taken a different shape nowadays in the era of knowledge economy with extremely rapid innovation and rapidly falling prices and fast-changing product characteristics. These severely limit governments' capabilities to steer the market unlike the 1950s and the 1960s. However, this does not mean that the market mechanism is the only or the best option. There are strong reasons, both theoretically and from policy implementation viewpoint, to expect that the governments in the era of knowledge economy can still play a role but with a different motivation.

The role of the government took a different shape in the knowledge economy where the diffusion of knowledge and industrial information is crucially important. In this case, the government and its interventions in the market can play a positive role in industrialization by facilitating the generation and spread of knowledge to all stakeholders. The current stage of industrial development based on knowledge is

very different from the heavy industrialization stage of industrial development and necessitates a differentiated role for the government in industrial development. In the knowledge economy, public sector is thought to be more of a facilitator of the creation and spread of knowledge by and among private firms rather than an agency governing the market and guiding private firms in which activities they should invest as in traditional industrial policies. This is because of the different nature of knowledge. Effective spread of knowledge across economic activities and firms is crucially important in the knowledge economy. Rodrik (2008) points to the multidimensional character of the information flowing from the firms to the government and stresses that there is a need to create a mechanism to elicit information about the constraints in the market which will also facilitate collaboration between private businesses and the government. Rodrik emphasizes that the right industrial policy is one that creates and maintains strategic collaboration and coordination between the private and public sectors in order to design the most appropriate forms of government interventions. He raises the case of deliberation councils as a successful example that works. Rodrik (2008) proposes a form of knowledge-based industrial policy without naming it so. In Rodrik's prescription, bringing discipline to the market is favorable when it is a workable option because that might enhance the flow of information from the market to the government.

The role of the government as a coordinator in industrial development, as proposed by Rodrik above, in fact, has been discussed earlier in the industrial policy literature, e.g., by Okuno-Fujiwara (1988). He showed that government can enhance coordination among firms by communicating and facilitating the exchange of various sorts of information with regard to production plans and intended allocation of productive resources. He further argued that markets often fail in establishing and maintaining such information exchanges. MITI-guided deliberation councils in Japan, among other institutions, often served this purpose. Pack and Saggi (2006) also argued that modern industrial policies should address collaboration and information sharing among private firms to enhance comparative advantages. They also demonstrated that there was little transmission of knowledge from targeted to nontargeted industries even though the industrial policies succeeded in stimulating structural changes.

Dobrinsky (2009) compares the traditional and knowledge-based industrial policies with regard to objectives, rationale, and policy instruments. He takes the term "industrial policy" in its general meaning, which is not directly comparable to our view of industrial policy. However, he provides a comprehensive overview and outlay of traditional and knowledge-based industrial policies. His comparison of traditional and knowledge-based industrial policies encompasses a large number of countries. Table 2 compares the two types of industrial policies. Here we take his taxonomy of various policy instruments and base our arguments for Japan's knowledge-based industrial policies on this taxonomy. This subsection draws heavily on Dobrinsky (2009).

Dobrinsky (2009, p. 274) defines "knowledge-based industrial policy" as follows: "a new brand of public sector interventions targeting various structural aspects of the economy through transmission channels and mechanisms that hinge on the driving forces of knowledge flows and stocks and incorporating a systemic understanding of the policy rationale." This brand of industrial policy has become

Table 2 Comparison of traditional and knowledge-based industrial policies. (Source: Obtained and modified slightly from Dobrinsky 2009, pp. 278–279)

Criterion	Traditional industrial policy	Knowledge-based industrial policy
The role of the state	The state is endowed with rationality	The state has bounded rationality
	The roles of the state and the private sector are separated	The roles are not separate and public–private partnerships are encouraged
	The state acts as a referee, not a player	The state is a player and a stakeholder in the knowledge creation process
Rationale for policy intervention	Enhancing social welfare	Fostering dynamic competitiveness
	Promoting industrialization and economic development	Helping stakeholders achieve mutually agreed goals
	Exploiting economies of scale	Economies of scope
	Address market distortions	Facilitate smooth operation of markets
	Mitigating the negative implications of externalities	Discovering externalities and relevant remedies
	Enhancing performance of economic agents	Facilitating risk sharing among agents and stakeholders
	Establishing rules of the game for others to play	Helping and coordinating market agents in establishing acceptable rules of the game
Targets of intervention	Output and factor inputs	Systemic interactions
	Firms and industries	Networks and systemic linkages
	Winners (selected industries)	Specific behavioral aspects across firms
	Supply side of the economy (producers)	Both supply and demand sides (producer-user cooperation)
Expected effects of intervention	Responses traceable to agents	Systemic responses
	Distinctive response	Range of possible responses
	Measurable (quantitative) responses to intervention	Some responses qualitative in nature
Design and implementation of policy intervention	Policy objectives are exogenous in nature	Policy is a learning process and policy objectives are endogenous
	Sequential phases of policy design and implementation	No clear distinction between policy design and implementation
	State monitors implementation	State participates in implementation

important in the "knowledge economy" into which post-industrial economies transform. Dobrinsky shows that economic theory follows this change as well and especially institutional and evolutionary economics provide a theoretical foundation for knowledge-based industrial policies. Without getting into detail on this aspect, in what follows, we elaborate on some empirical issues for knowledge-based industrial policies.[2] Traditional industrial policies treated knowledge as a homogeneous

[2] The reader is guided to Dobrinsky (2009) for a thorough debate surrounding a large number of concepts, such as codified and tacit knowledge, appropriability, knowledge spillovers, innovation, national innovation system, horizontal and vertical policies, knowledge externalities, innovation intermediaries, seed-and-breed support institutions, cluster policies, and so on, as paradigmatic foundations of the knowledge-based industrial policies. Dobrinsky explains the paradigmatic shift in large detail. Early on, knowledge was treated as a homogeneous public good with the characteristics of nonrivalry, nonexcludability, and nonappropriability. Endogenous growth theory distinguished rivalrous and nonrivalrous components of knowledge and knowledge is not treated

public good with externalities and knowledge spillovers as sources of market failures and hence it was argued that government intervention prevented under-supply. However, knowledge-based industrial policies relying on evolutionary economics emphasize the heterogeneous nature of knowledge and various forms of appropriation by private firms. In addition, Dobrinsky (2009, p. 281) argues that evolutionary economics does not treat knowledge as public good, especially tacit knowledge, and treats some types of knowledge as proprietary and argues that knowledge-spillovers apply to only specific types of knowledge. This, according to Dobrinsky, lessens the need for government intervention.

The role of the state: In traditional industrial policy, the state had a regulatory role in the economy while in the knowledge-based economy the state is rather a coordinator of knowledge dissemination and sharing. The competition policy of the state in traditional industrial policy emphasized market distortions and the correction of market failures. If the government adopts the traditional industrial policies in the era of knowledge economy, it will face a number of serious problems as discussed by Pack and Saggi (2006), such as the designation of firms and industries that would generate knowledge and knowledge spillovers, designation of firms and industries that would benefit from dynamic economies of scale, and estimation of the sizes of industrial spillovers and scale economies. However, in line with the Schumpetarian approach, knowledge-based industrial policies emphasize the heterogeneity of firms and hence differentiated policies for individual firms rather than a single competition policy applied to all firms as in the traditional industrial policy. This is because knowledge-based activities of firms determine the pattern of competition and monopolistic power of a firm is expected to increase with more investment in knowledge. The state in knowledge-based industrial policy facilitates knowledge and skills formation and promotes public–private partnership for this purpose.

Policy rationale: Traditional industrial policies relied on welfare economics and market failure. In the knowledge-based industrial policy, there are more interventions but these interventions are less ambitious. As Dobrinsky (2009, p. 284) puts it: "Knowledge-oriented policy is much more about greasing the system than about direct intervention." This means that government interventions in the knowledge-based industrial policy are not addressing specific industries but rather systemic and knowledge-specific failures of the market in coordination.[3] An important aspect of government intervention of this type is that it gives the government a big role in facilitating the market mechanism. Ironic as it may seem, the existence of knowledge externalities calls for government intervention to promote knowledge creation and knowledge-sharing process and thereby enhance entrepreneurship. The state is assumed to possess the capacity to undertake this task.

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as a homogeneous good any more. Evolutionary economics, for instance, made a distinction between codified knowledge (such as published scientific knowledge) and tacit knowledge (such as skills and know-how).

[3] Pack and Saggi (2006) argue that the government can play a role in enforcing property rights over knowledge and government intervention for this purpose can be tolerated.

Traditional industrial policies picked the "winners" while knowledge-based industrial policy is more "horizontal" by nature. Rather than designing industry- or firm-specific ("vertical") policies, knowledge-based industrial policy focuses on creating an environment whereby the interactions and network relations are enhanced to resolve the market failures.[4]

Policy instruments: Dobrinsky (2009, pp. 288–298) provides a typology of policy instruments. Below we summarize the main instruments:

- *Instruments supporting and facilitating the generation and accumulation of knowledge*: There have been changes in the allocation of public funds to support R&D activities. First, funding of R&D has become more selective. Second, project financing emphasizes collaboration among private firms rather than targeting a specific firm or industry. Third, financing schemes are based more on competition basis, i.e., unsuccessful firms are allowed to fail and only surviving firms, which also bear and share among themselves the risks, receive the bulk of the financial resources.
- *Instruments addressing uncertainties and knowledge externalities and supporting and facilitating the transmission and dissemination of knowledge*: These instruments, financial and nonfinancial, aim to internalize the externalities related to knowledge and knowledge spillovers at different stages of knowledge generation and dissemination process. A well-known case is the provision of patent rights for innovative firms. Apart from this, majority of the financial instruments under this category are allocated to start-up firms rather than established ones. Strengthening of industry–university or industry–science relations are generally an essential component of such financing schemes. The state generally plays a role as a facilitator and coordinator, not the driver (as in traditional industrial policy) of knowledge generation. In the selection of the firms to be funded for knowledge investments, the state does not adopt "picking the winners" type of a policy where the firms are selected in advance, but rather leaves it to the market forces to determine those firms. Therefore, these financing schemes are "pro-market" in nature. There are also nonfinancial support mechanisms involving risk sharing and internalization of externalities. These are related to the coordination capacity of the state. For instance, facilitation of the flow of knowledge (both codified and tacit) and promotion of the sharing of risk through systemic interventions in the form of coordination and information sharing serves for this purpose. To this end, there are "innovation intermediaries" that facilitate the dissemination of generated knowledge such as technology transfer offices at universities. In short, the government can intervene in the market to facilitate risk sharing and to establish collaborative relations among private entrepreneurs on different stages of the value chain.
- *Instruments promoting connectivity and coordination through knowledge sharing*: Dobrinsky calls these instruments "hybrid" because they incorporate

[4] Dobrinsky (2009) also shows that in various countries the promotion of small and medium-sized enterprises (SMEs) in a specific sector can be called a hybrid system incorporating elements of traditional and knowledge-based industrial policy.

different instruments and perform different knowledge functions. Examples of these instruments are business incubators, science and technology parks, "seed-and-breed support institutions," and public–private partnerships. These instruments facilitate connectivity and coordination. By doing so, they help resolve the problems of information asymmetries. Another type of instrument, cluster policies, helps create positive externalities among entrepreneurs.

On the effectiveness of these policies, Dobrinsky (2009, p. 298) argues that evaluation is rather difficult because (1) policy objectives are often vague; (2) many instruments are of systemic in nature, hence making the evaluation of individual entrepreneurs difficult; and (3) some of the policy outcomes are of secondary nature arising from indirect effects. Overall, Dobrinsky (2009, p. 301) states that "Compared to more traditional policies, the newly emerging policy approaches presume a less assertive role for the state but are grounded on a broader, systemic rationale for intervention. The key transmission mechanisms of knowledge-oriented industrial policy hinge on the driving forces of knowledge flows and stocks and on systemic connectivity among stakeholders. Accordingly, knowledge-oriented industrial policy is a policy of "soft" touch that seeks to identify common interests and objectives, promotes collaboration among the stakeholders involved and relies on market-friendly models of cooperative effort."

3 Transformation of Traditional Industrial Policies into Knowledge-Based Industrial Policies in Japan

3.1 Traditional Industrial Policies in Japan

It is well-known by now that Japanese economic bureaucracy, most notably the MITI, which was transformed in to METI in 2001, and Ministry of Finance played important roles as architects of industrial policies in Japan from 1949 onwards. They first protected targeted infant industries from foreign competition. When they became competitive and when Japan introduced liberalization in capital flows and international trade, these industries were opened to foreign competition. The strategic industries in the aftermath of the postwar period and the 1950s were designated as coal, iron, and steel industries, which had strong forward linkages. In the 1960s, the targeted industries were capital-intensive petrochemicals, steel, industrial machinery, electrical appliances, and automobile industries. After the oil shocks in the 1970s, high-tech and relatively less energy-intensive electronics, computers, and semiconductors industries received preferential treatment from the government.

The role of MITI in industrial development in Japan has been a controversial subject of debate. While most economists admit the positive role played by MITI in industrial policy formulation and implementation, some others such as Sakoh (1984) and Pack and Saggi (2006) argue that private firms were the major actors in industrialization in Japan and what MITI succeeded was the provision of superior infrastruc-

ture and a positive business environment by putting in place the appropriate policies for the development of private firms. On the extreme, Sakoh (1984) even claims that there is no clear evidence of "administrative guidance" and that Japanese industries did not particularly receive preferential treatment from Japan Development Bank. He contends that Japanese government was like other governments and mostly supported politically strong groups such as farmers and ailing industries suffering from comparative disadvantages such as energy-intensive ones. He points to "government failure" in the form of inefficiencies and overcapacity in industries the government attempted to allocate resources.[5] However, this assertion is overly simplistic and ignores the political economy and state–capital relations which had indirect effects on industries. Based on a vast literature of empirical studies, it can be safely asserted that private firms were indeed the main actors and deserve most of the credit for successful industrial development in Japan but the role of MITI as a facilitator and early on as a "guide" cannot be degraded. It should be remembered that although substantial amount of public funds were mobilized towards targeted industries, Japanese industrial policies relied on private firms, not public firms. Also, as Chang (2011) warned, the impact of industrial policies shall not be confined to the performances of targeted industries only. They also have indirect effects such as complementarities, linkages, and externalities, which are difficult to quantify.

During the 1960s and 1970s MITI utilized "deliberation councils" and industry-level associations or organizations to guide the industries in investment and production decisions. Sometimes, retired bureaucrats (*amakudari*) were employed as top-level executives in the firms monitored by MITI and this enabled continued information exchange between the bureaucrats and the private firms.

In the 1970s and 1980s, MITI designated high-tech industries, including electronics, computers, and automobile, as strategic industries. MITI promoted the restructuring in Japanese high-tech industries to develop them into world-class competitive industries by offering various supports. An important development in the 1990s was the Science and Technology Basic Law (1995). This law obligated the Japanese government to support basic scientific research and share the created knowledge with all stakeholders in the industry. Science and technology policies of the government mostly favored upper-end electronics in the 1990s. The most well-known of such industries are various digital telecommunications equipment, flat-screen panel display, and cellular phone industries.

3.2 Recent Demise of Japanese Industries

The recent changes in the industrial policies are generally attributed to growing concerns of the Japanese government for the demise of Japanese industries and the loss of world markets to the emerging Asian economies, namely, China and Korea.

[5] A notorious case is MITI's order to Honda Motor Company to give up their decision to enter the automobile market in the 1960s. Despite the government's resistance, Honda entered the market and proved to be a competitive firm at the global scale in the future.

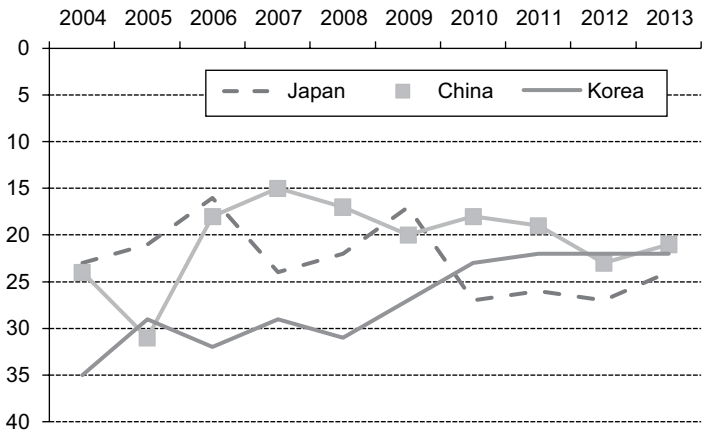

Fig. 2 World competitiveness rankings for Japan, Korea, and China (2004–2013). (Source: IMD, *World Competitiveness Yearbook*, various issues)

Economic bureaucracy, mainly METI, has responded to such changes by revising the industrial policies in line with the changing global economic conditions and changes in the manufacturing architecture.

It is easy to see from available data that Japanese firms seem to have lost the battle especially in the newly developing smart phone technologies and computer industries in the 2000s. Assuming the role of being the relevant agency to devise industrial development policies in Japan, METI is highly concerned about the declining rank of Japan as a major industrial power in the world economy. METI (2010) reported that the share of Japan in world gross domestic product (GDP) shrank remarkably from 14.3% in 1990 to 8.9% in 2008. The share of Japanese firms in world markets also demonstrated large declines during the last decade. To illustrate, Japan's share in lithium-ion batteries declined from more than 90% in 2000 to about 50% in 2008, the share of LCD panels from more than 80% (1997) to about 10% (2005), DVD players from 90% (1997) to about 20% (2006), car navigation systems from virtually 100% (2003) to about 20% (2007), and DRAM memory from about 40% (1997) to less than 10% (2004). In a similar fashion, METI emphasized that while Japan ranked first in the International Institute for Management Development (IMD) World Competitiveness Ranking, her overall rank declined to 22nd in 2008. It is noteworthy that Japan has recently been overtaken by her Asian neighbors Korea and China in the overall rankings of world competitiveness (see Fig. 2). In 2012, Japan's rank in the list was further below that level at 27th (IMD 2012). As of 2013, Japan (24th) still ranked below China (20th) and Korea (21st). However, these trends in competitiveness rankings do not necessarily mean total collapse of Japanese industries. Japanese firms have successfully maintained market share in some traditional products such as automobiles and digital cameras (METI 2010).[6]

[6] It is noteworthy that the contribution of automotive industry, an industry Japan traditionally had a comparative advantage, to the economy declined from 2.5% of GDP in 2001 to only 1.1% in

3.3 Restructuring in the Bureaucracy and Policy Formulation

Transformation in industrial policies was accompanied by a large scale restructuring and change of mindset in economic bureaucracy. This is of central importance in understanding recent changes in industrial policies. New economic bureaucracy places more emphasis on the role of the private sector in industrial rationalization and restructuring and seems to be more aware of the importance of external relations as an engine of industrial growth.

During the central government reform in 2001, MITI was abolished and merged into the newly established METI. Prime Minister Junichiro Koizumi (2001–2006) carried out various reforms he called *Kozo Kaikaku* (structural reforms) to fully establish the market mechanism in the Japanese economy and its industries. Therefore, METI was given a duty quite different than MITI of the past. Officially, the government announced that the main task of METI is to strengthen the working of the free market principle in Japanese industries. Its role in industrial development seems to be mostly confined to assisting the private firms to enhance their productivity and competitiveness in the era of knowledge economy. METI does not interfere with investments and does not put any supply constraints as MITI did before. However, METI designates "priority" industries to be promoted. Officially, METI assumes a strong position in facilitating information exchange and coordination among private firms in the priority industries. Deliberation councils are still important policy instruments.

Shinji Fukukawa, former vice minister of MITI during 1987–1988, has written extensively in mass media about how the Japanese industries can be revived and what kind of policy changes are necessary for this purpose. Fukukawa (2010) reminds that the Japanese firms lost their global market shares to Korean firms in the flat-panel television market and they failed to exploit the profit opportunities in the global LED television, 3D television, and tablet computer markets. He emphasizes that in industries where Japan traditionally had a comparative advantage, such as steel and personal computers Japanese firms are losing their markets especially to the newly emerging Chinese firms. Fukukawa claims that the importance given to market mechanism and the demise of the traditional industrial policies can be held responsible for the decline of Japanese competitiveness in these industries, at least partially.

It is obvious that the Japanese government aimed to increase the knowledge content in industrial output, but largely failed in its attempts to stimulate "rationalization" in domestic industries, which might have resulted in increasing technological content matching those like iPad and iPhone (Fukukawa 2010). It is clear that Japanese firms followed, rather than led, these industries. The most striking fact is probably the rise of the "latecomers," Korea, Taiwan, and China in these industries ahead of the once "forerunner" Japan. The governments in these three latecomers are well-known to be supporting high-tech industries in various forms, thus bring-

2007 (METI 2010).

ing industrial policy back on the agenda. Japanese government, although it did not totally abandon its traditional industrial policies, relies more on private sector dynamism like the 1980s and the 1990s but the degree of support has been reduced significantly since then.

The London-based economics newspaper The Economist reported in 2010 that industrial policies, and hence government intervention, were back on the agenda for advanced countries' governments in the aftermath of the global financial crisis in 2007–2008 and during the Great Recession (Economist 2010). The newspaper asserted that the newly elected prime minister Naoto Kan wanted to create a new Japan, Inc. and that METI announced a strategy to combat the increasingly aggressive industrial policies of the top advanced economies. However, it was also stated that it is a very tough job for governments to correctly evaluate the costs and benefits of such interventions. The Economist also degrades Japanese industrial policies for the failure of the Japanese economic bureaucracy to develop a semiconductor industry during 1980–1982.

Fukukawa (2010) proposed four measures to be taken by the Japanese government to enhance competitiveness in high-tech industries:

1. Improving the business environment for domestic high-tech firms. For this purpose the following are deemed necessary:
   - Reducing the corporate tax rate (as high as 38 % since 2012, down from 40.69 previously)[7]
   - Undertaking the necessary regulatory reforms (for instance to allow domestic medical welfare service companies to extend their services to exploit the growing foreign demand)
   - Taking necessary measures to remedy the negative effects of environmental measures which led some Japanese firms to relocate their activities to more environmentally tolerant countries
2. The vision of the government should be clear and shared with the public.
3. Revision of corporate methods: In this regard, the old style management techniques in Japanese firms, which promoted vertical management relations, may need to be replaced with transverse management style, which promotes innovations.
4. Improvement in social infrastructure to promote innovation: Attracting foreign talent may be a viable policy.

These recommendations were reflected in METI's official growth strategy, which is discussed later in Section 4.2.

[7] According to KPMG, corporate tax rates for the USA, China, Germany, France, Italy, Korea, Singapore, Taiwan, and the UK are 40 %, 25 %, 30 %, 33 %, 31 %, 24 %, 17 %, 17 %, and 23 %, respectively (http://www.kpmg.com/global/en/services/tax/tax-tools-and-resources/pages/corporate-tax-rates-table.aspx, retrieved 4 June 2013).

3.4 Did the Japanese Government Reduce Interventions?

The answer to this question is not straightforward and requires a deep analysis of the changes in the political economy in Japan. Sato (2009) demonstrates evidence that the Japanese government did not reduce interventions. He takes the cases of Japanese and Korean steel industries and examines the evolution of the industrial policies in both countries. He argues against the common the belief that industrial policies have served their purpose of heavy industrialization and the role of the government has since then (late 1970s for Japan and late 1990s for Korea) deteriorated and neoliberal policies replaced industrial policies. He shows that such a strong belief ignores the effort of the government in restructuring and rationalizing the ailing industries such as steel. He asserts that the restructuring of the national industries after the 1970s was not realized entirely by the private sector and the role of the state was never reduced during the process. For instance, the rationalization efforts after the second oil shock in 1979 were facilitated by the Japanese government partially by establishing a mechanism for communication of information regarding rationalization across private firms, reduction in corporate tax rates in order to create internal funds to be used for rationalization. In addition, the government facilitated coordination in the industry by cartels to control production and prevent overcapacity.

Allowance of holding companies after 1997 also helped government in this aspect. The investment boom during the bubble economy in the second half of the 1980s led to overcapacity and when then government decided to cut public expenditures after the bubble burst in the early 1990s, steel firms requested the government's favor for protection, which the government responded positively by helping these firms in restructuring and offered them tax incentives and preferential financial support. In other words, the relations between the government and industrial firms did not deteriorate over time and was revived in a different form during the Lost Decade of the 1990s when these firms were in financial distress.

According to Sato (2009), another important issue to take into account is the internationalization of Japanese companies. Overseas investments by Japanese industrial firms had already accelerated after the Plaza Accord (1985) due to real appreciation of the Japanese yen. Over time Japanese firms have established themselves as major providers of foreign direct investment in the USA as well as East Asia. Equally important, on the other hand, is the cooperation between Japanese and foreign firms. The government is actively encouraging such joint efforts especially in high-tech industries.

Sato (2009) points out that the Japanese government, most notably the economic bureaucracy, has played an important role as a mediator of interests between industrial firms, public sector, and recently, foreign firms. He lists some of the recent changes in government policies concerning the complex web of these relations as follows:

- Amendment of various laws, for instance allowing holding companies to be established.
- Promotion of mergers and acquisitions, including those involving foreign firms.

- Deregulation of the labor markets to allow flexible employment practices which would help firms economize on labor costs.
- Promoting rationalization and diversification of industrial activities.
- Reduction of corporate taxes.

4 Current State of Industrial Policies in Japan

A number of changes in the global economic conditions and the changing nature of manufacturing and business-doing led the Japanese economic bureaucracy and politicians to revise the industrial development strategy in Japan. This is obvious in the writings of ex-MITI bureaucrats such as Shinji Fukukawa (as shown below) and in the official reports of METI, such as the *Industrial Structure Vision*.[8] This section explains the current state of industrial policies based on these sources.

Fukukawa (2012a) pointed out that competition will be fiercer in the manufacturing sector in the near future. As also argued by METI (2010), he asserts that partly responsible for this is the aggressive and offensive industrial policies of the USA and the EU aiming to "reindustralize" as well as increasing supply capacity build-up in emerging economies, most notably in China and India. On the other hand, he warns that, not only Japanese manufacturing but East Asia in general, lags behind the USA in software while the region has specialized and gained a remarkable comparative advantage in hardware. This is especially important in the newly developed communication technologies. To remedy, he proposes that Asian economies take the necessary measures to enhance technology development capacity especially in information technologies, nanotechnology, biotechnology, medical care, environment, and the development of new energy resources. These are technology- and knowledge-intensive industries. Fukukawa (2012b) denotes that the government needs to take necessary steps to promote innovation in the private sector.

Japanese firms were praised for their productivity-enhancing management techniques such as total quality management, quality circles, and *kaizen*, in the 1970s and the 1980s, and even throughout the turbulent decade of the 1990s. To understand the comparative advantage of Japanese firms vis-à-vis other major industrial and industrializing economies, Fujimoto (2006) looked at specific products on an individual basis and proposed a new theoretical framework that focuses on the organizational capacity and manufacturing architecture is more useful. Fujimoto views comparative advantages across countries from the lens of manufacturing architecture and organization at the shop-floor level. He shows that large Japanese firms faced high growth and labor and materials shortages and therefore they established

[8] For a long time, politicians have had secondary roles in the economic decision-making process. Economic bureaucrats were the principal decision makers with their strong influence in the respective markets they regulated. However, it seems that policy formulation surrounding various economic issues has recently been passed on to politicians. Economic bureaucrats seem to have receded from their historical strong position.

a system of long-term employment. Accordingly, they organized manufacturing activities in a way that encourages teamwork among multiskilled workers which Fujimoto names "integrative manufacturing." This system, as exemplified by the *kanban* system, just in time system, and quality circles, among other shop floor-level practices, resulted in high productivity growth in Japanese industries.

Fujimoto (2006) distinguishes between two types of manufacturing architectures, namely, "modular architecture" and "integral architecture." In modular architecture, the structural elements of a product are linked with only one function (i.e., standardized modality of interaction among components). Personal computer is a representative product for this type of manufacturing and various specific-purpose components imported from different countries can be assembled. In integral architecture, on the other hand, there are strong interlinkages among multiple structural parts of a sophisticated product and these parts simultaneously serve for multiple functions. Automobile is a representative product for this kind of manufacturing. Fujimoto argues that modular architecture yields quick results while integral architecture requires persistent improvement in product quality. He hypothesizes that Japan's business culture is suited to integral architecture because its business organizations exhibit characteristics of integrative manufacturing and organizational capability. In other words, due to the organization of the shop floor in Japanese manufacturing firms, which encourages coordination, Japanese firms can be expected to have a competitive advantage in integral manufacturing products.[9] Fujimoto (2006) also classifies various economies according to their comparative advantages based on manufacturing architecture. He contends that Japan has a comparative advantage in integral manufacturing while China and the USA hold comparative advantages in modular architecture for labor-intensive and knowledge-intensive products, respectively.[10]

The economic troubles of the two lost decades, 1990s and 2000s, seem to have affected the innovation consciousness of large Japanese firms negatively. Hence, they lagged behind Korean, Taiwanese, and Chinese high-tech firms, which is most notably visible in the smart television industry. It seems that the Chinese and Korean firms and the respective governments in these countries have found effective ways to introduce integral manufacturing architectures in their business cultures. Therefore, they appeared as strong competitors against Japanese firms. The govern-

[9] Fujimoto (2006) also tests this hypothesis using survey data from Japanese firms. He found a positive correlation between the integral architecture characteristic of manufactured products and export to domestic production ratio. This result holds also when overseas manufacturing activities are taken into account. This finding can be taken as evidence for the comparative advantages of Japanese manufacturing firms in integral manufacturing products.

[10] Fujimoto (2006) argues that integral manufacturing architecture requires the existence of highly capable supporting industries (typically, SMEs) and high level of human capital. Some Japanese SMEs (especially in Ota-ku in Tokyo and Higashi Osaka in Osaka) are well-known technology creators with strong base of innovation. The Japanese government is expected to play an important role in assisting private firms, especially the SMEs, in enhancing and continuously upgrading the technological capabilities of their production lines and workers. According to Fujimoto, the Japanese government had achieved limited success in such policies.

ment in Japan can also be held responsible for its failure to stimulate more innovation. In the case of R&D, for instance, the Japanese government has a number of R&D subsidies for private firms, but the official report of the Industrial Competitiveness Committee states that these subsidies are of a small-scale and short-sighted nature (ICC 2011).

All issues raised above demonstrate a departure of the Japanese industrial policies from traditional industrial policies of the past towards knowledge-based industrial policies. In what follows, certain features of the newly designed and currently implemented industrial policies are explained briefly.

4.1 Strategic Industries

According to the interim report of the Industrial Competitiveness Committee under the Industrial Structure Council, which was submitted to METI in June 2011, a major problem for the Japanese economy following the Great East Japan Earthquake in March 2011 was the hollowing-out (*kudoka*) of Japanese industries (ICC 2011). The report envisaged that developing the medical and healthcare, robot, transport equipment by integrating them with information technologies was crucially important to improve competitive power of the Japanese economy. This requires cooperation and coordination among various private businesses and the government as mediator. The report also deems globalization, i.e., trade and overseas investments, important for Japanese firms to expand their operations and sales overseas.

Recent industrial development strategy of the Japanese government emphasizes environment, energy, and medical industries including healthcare and biomedical sectors. These are highly R&D-intensive industries and persistent R&D investments are essential for growth in these industries. The government's stance in industrial development is such that it is trying to promote the participation of private sectors in these industries by providing various types of assistance and by facilitating and creating a suitable environment for private firms to interact positively with each other. An important component of the New Growth Strategy is *Industrial Structure Vision 2010*, prepared by the Industrial Competitiveness Committee in June 2010 (METI 2010). This strategy envisages the development of the following five promising clusters to ensure future economic growth for Japan (METI 2010):

1. Infrastructure industries such as railways, renewable energy, and ICT,
2. Environment-related creative industries such as next generation vehicles,
3. Content industry,[11]
4. Medical and healthcare industries, and

[11] We do not elaborate on the content industry here but the government is highly ambitious about promoting this industry. Study Group on the Content Industry's Growth Strategy, which was established under METI, submitted its final report in May 2010. The report concluded that the content industry, i.e., design, fashion, traditional culture, and media products (such as anime and manga) with brand names, has a big potential to develop in the future as an engine of growth and to become a major export industry (SGCI 2010).

5. Advanced industries generating frontier technologies, such as robotics, nanotechnology, rare metals, and space.

The plan deems it important to continuously support these promising industries. To support these industries, the following measures were announced:

1. Attracting skilled human recession from abroad,
2. Establishing strategic centers,
3. Reducing corporate tax rate to enhance competitiveness vis-à-vis foreign firms,
4. A competition policies and legislation to monitor mergers to enhance competitiveness,
5. Trade policy that promotes integration with foreign markets, especially Asian markets, enhancing public R&D investments, and
6. Enhancing government–industry–university cooperation.

4.2 Industrial Structure Vision and Industrial Restructuring

Industrial Structure Vision admits the demise of the Japanese industries in the global markets and analyzes in detail the state of the Japanese manufacturing industries as of 2010 and proposes policies to improve competitiveness of the Japanese industries at the global scale (METI 2010). The report emphasizes the need for further structural changes in the manufacturing sector. In addition, the report also envisages that technological upgrading is important to enhance the competitiveness of Japanese firms and as such the business models of the Japanese firms need to be readjusted to meet this demand. The report also emphasizes the role of the government in facilitating the improvement in the competitiveness of Japanese firms. The plan envisaged to increase the size of these markets to 27 trillion yens (about US$ 320 billion) by 2020 and create about 2.5 million more jobs (Economist 2010).

The recent change in the way of doing business in the manufacturing industries also seems to have changed the government's mindset. In modern manufacturing business, customer choices have gained priority over mass production with specified characteristics. This issue becomes especially important for exports, which required careful treatment of data related to consumers' preferences in overseas markets. In the *Industrial Structure Vision* METI contends that China and Korea could successfully adapt to the changes in production technologies and new ways of doing business while Japanese firms lagged in this regard. The report praises China and Korea for their success in materializing their comparative advantages in the supply of intermediate industrial products in the global supply chains. Therefore, compared to Japan, these two economies seem to have made better use of globalization of production. METI also warns against the danger of technology leakage. Another danger, according to the report, was deindustrialization as evident from decreasing number of manufacturing jobs and increasing number of overseas subsidiaries of Japanese companies, especially in the neighboring East Asian economies, a process also strengthened by the real appreciation of the yen at times.

Industrial Structure Vision envisages to change the business-doing traditions of Japanese industries in such a way that while the market shares of traditional industries where Japanese firms hold a competitive position (such as automobiles) are to be maintained for most industries promotion of the establishment of direct links with foreign markets is a desired corporate strategy (METI 2010). In addition, this long-term plan also acknowledges business opportunities provided by the need to deal with social issues related to environment (such as clean energy) and aging of the society (such as medical and healthcare industries and services).

4.3 Opportunities Provided by Overseas Markets

METI (2010) acknowledges the great potential for market expansion in the emerging and developing markets in the future. This is mostly due to growing middle class in these economies. According to World Bank (2013, p. 7), by the year 2030 the current population of 1.8 billion people in the middle class will increase to about 5 billion and Asia will account for a dominantly large portion of this increase. Therefore, penetrating into these markets is a vitally important issue for Japanese firms. METI, therefore, deems it extremely important to promote partnerships with these economies. On the other hand, these economies, most notably China, are an emerging rival for Japanese firms in the global markets as well. Japanese companies have traditionally been successful in penetrating foreign markets and recently their annual overseas investments (in net terms) has increased from under 40 billion dollars during 2002–2004 to more than 130 billion dollars in 2008 whereas their domestic capital expenditures declined by more than 37% in a single year in 2008 (METI 2010).

While admitting that exports are important for future growth, METI (2011) warned that Japan's competitive edge in overseas markets was diminishing due to the ambitious industrial policies of emerging markets, most notably Korea, Taiwan, and China. This is a major structural change in the world economy that the Japanese government views as an important constraining factor in devising industrial policies. Another major concern with regard to recent changes in the global economic environment was the problem of *endaka*, i.e., appreciation of the yen.

To cope with these changes, the government launched the New Growth Strategy in 2010. Three major pillars of this strategy as reported in METI's 2011 white paper were (1) maintaining the competitiveness of Japanese industries through active investment and employment policies, (2) increasing overseas investments by Japanese firms in order to enlarge the Japanese firms' shares in overseas markets, and (3) easing international business operations through policy actions such as stabilization of electricity supply, reducing corporate tax rate, providing support for investments in Japan, and economic partnership agreements.

An important reason for Japanese firms' declining competitive power in overseas markets, according to METI, is excessive competition and overlapping R&D investments which put Japanese firms in a disadvantageous position. METI sug-

gests that a certain corporate size through restructuring of the industries is necessary to reap the benefits of economies of scale.[12] METI (2010) compared Japanese and Korean firms and showed that Korean firms enjoyed a larger market size in the domestic economy than Japanese companies in the Japanese market, hence leading to lower profit rates for Japanese firms. For instance, in 2008, the market size per company for automobile firms was 1.02 million automobiles in Korea, whereas it was 0.7 million automobiles for automobile firms in Japan. Therefore, Korean firms enjoyed a market size per firm 1.5 times larger than that for Japanese firms. In steel industry, Korean firms' market size per firm was 1.5 times larger than Japanese firms, in cell phone industry it was 2.2 times larger, and in electricity generation industry it was 3.9 times larger. METI (2010) attributes the enhanced competitiveness of Korean firms to the ambitious industrial structure policies of the Korean government, which promoted mergers to boost scale economies. The white paper of METI (2011), therefore, demonstrates signs of further government intervention in industrial development, competition policy, and trade policy, in the near future.

5 Conclusion

The aim of industrial policies in Japan shifted from infant industry protection in markets governed by bureaucrats to the promotion of dynamism of the private sector for technology development under more competitive market conditions. With this shift in industrial policies, new policy instruments have been formulated. This chapter summarized these instruments within the context of recent knowledge-based industrial policies in Japan.

It is clear that Japanese firms are losing in the race of competitiveness in global markets, most notably in high-tech industries. As it was always expected throughout the recent economic history of Japan, the Japanese government needs to take necessary steps for this purpose. It is true that since the 1990s the Japanese government, more specifically the economic bureaucracy, left most of its autonomy in economic decision-making to private firms and government guidance was largely replaced with market dynamism. However, recent developments in the world economy after the global financial crisis in 2007–2008 and the subsequent rise of China as a threatening rival in global high-tech markets started a new debate in Japan about the role of the government. The concept of "industrial policy" is on the table again. However, this time, unlike the 1960s and 1970s, the government is expected to act as a facilitator of coordination and knowledge dissemination rather than governing the market.

The government undertook most of these reforms to help Japanese companies improve their competitiveness. Overall, Sato (2009) argues that the Japanese gov-

[12] Japanese government aims to facilitate this restructuring by providing financing through Innovation Network Corporation of Japan, supporting flexible labor market practices of private firms, and developing the legislation required for effective restructuring of industries, among others.

ernment can hardly be called "noninterventionist." Accordingly, he contends that while the traditional industrial policies are rightly described by economists as government-intervention type of policies to correct market failures, it is misleading to argue that the recent industrial policies do not involve government intervention. He further argues that political economy is still very important to understand the changing nature of government interventions and industrial policies in Japan because what was eroded in Japan was only a specific type of state–capital–labor relations but not industrial policy. Such a heterodox approach, rare among academics, is necessary to understand the evolution of industrial policies in Japan. In a similar vein, Ikpe (2008) argued for Japan that developmental state does not require a zero sum game between the market and the state and that the interplay of various developmental activities surrounding structural transformation of industries and the development of capital markets impact the roles and outcomes. According to Ikpe, globalization does not necessarily run counter to the developmental state paradigm.

While adopting the new industrial policies, the government emphasizes the need to enhance competitiveness of Japanese industries by using various measures. METI (2010) emphasized declining competitiveness of Japanese industries due to high business costs such as high corporate tax rates, declining competitiveness of Japanese human resources, and declining power of port infrastructure. METI (2010) also warns that export-based manufacturing-oriented economies such as Japan and Germany faced declining employee compensation, which implies that there was severe cost competition from emerging economies. However, unlike Germany, Japan's export dependence seems fairly low at only 17.4 % of GDP in 2010, compared to 47.5 % in Germany. This figure is even much lower than China (37 %) and Korea (55 %).

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The New Industrial Policy in Europe a Decade After (2002–2012)

Franco Mosconi

1 Introduction

An extensive report by the Conseil d'Analyse Économique (CAE), set up by the French Prime Minister's Office (Cohen and Lorenzi 2000), noted how—in the European tradition—industrial policy was the result of a triangle formed by (1) "Competition policy", (2) "Commercial (Trade) policy" and (3) "Technology policy".[1] In fact, competition policy is leading to the so-called *level playing field* where firms may meet and compete on equal footing. For its part, Europe's commercial policy for international trade must continue to contribute to a growing openness of world economy and inclusion of new players, thus overcoming closure that is damaging chiefly for developing countries.

Today's core issue, more than in the past, is how to envisage new policies for the competitiveness of European industry, over the years of new technological revolutions (information and communication technologies [ICTs] of course, but also biotechnologies and life sciences), and the growing extension of international markets on which to compete (the "Asian miracle" and an "enlarged Europe"); policies that here in Europe call into play R&D investment, innovation, human capital. In a word: the third side of the above-mentioned "triangle".

A suitable path should be—to our mind—that the new industrial policy we are beginning to glimpse in the European Union (EU) must lean to a definite reinforcement of the triangle's third side ("technology policy") at a European level, without weakening the other two ("competition" and "commercial" policies). The main purpose of this chapter is to shed light on this reinforcement taking into account the manufacturing renaissance. In fact, the rebirth of manufacturing is one

[1] "Les autores notent que la politique industrielle est la résultante d'un 'triangle' formé par la politique de la concurrence, la politique commercial (échange extrérieures) et la politique technologique."

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of the most distinctive characteristics of the twenty-first century when the Western world—Anglo-Saxon capitalism, first of all—is rediscovering its fundamental role in promoting economic growth. The objective of this chapter is to chart a course to maximize the economic and social potential of a new industrial policy, in order to pull out a manufacturing industry Renaissance.

After this Introduction, the plan of the chapter is as follows. Section 10.2 goes back to the very beginning of the twenty-first century when in Brussels the European Commission (2002) unveiled its first new Communication on Industrial policy. Section 10.3 sets the groundwork by providing an overview of the main EU industrial policy-related documents and studies which now cover the whole decade (2002–2012), splitting them in two groups with the aim of highlighting the "integrated approach". Is this approach (and especially the proposed "vertical applications") consistent with the technological revolution that is taking place worldwide? A look to the USA and, within EU, Germany provides some proofs, while—in the same vein—Sect. 10.4 provides a theoretical background to the debate by drawing from the insights of two prominent scholars like the late Alexis Jacquemin and Dani Rodrik: they both advocate a strategic industrial policy. The next two paragraphs dealing with, respectively, the European manufacturing base (Sect. 10.5) and innovation landscape (Sect. 10.6) describe what is happening on the ground, trying to bridge the gap between theory and practice. Section 10.7 concludes by drawing once again attention to the fact that in the European tradition, industrial policy should be seen as the result of a "triangle" formed by (1) *Competition policy*, (2) *Trade policy*, and (3) *Technology Policy*. A suitable conclusion is that the new industrial policy in the EU must lean towards a definite reinforcement—at a European level—of the *triangle's third side*, without weakening the other two. Today it is vital to reach this balance, and a full-fledged European technology policy means an industrial policy focused on "knowledge investment" (i.e. R&D, human capital, and ICT).

2 The Relaunch of Industrial Policy in Brussels

Since the 1990s, European industrial policy has not been at the top of the political agenda with the impact noted over the last decade. At that time, the European Commission presented a Communication entitled "Industrial Policy in an Open and Competitive Environment: Guidelines for a Community Approach" (European Commission 1990, p. 556). However, in December 2002—here we are in the present days—the Commission issued a new paper entitled "Industrial Policy in an Enlarged Europe" (COM 2002, p. 714). This was the first of a long series of new Community reports which we will discuss further. Actually, in the first instance, the original Bangemann Communication—from the name of the Commissioner who was responsible for the dossier at that time—was followed by others through the 1990s.[2] Nevertheless, at least in this context, there is the distinct impression of unfinished business.

[2] See, European Commission (1994, 1998).

Europe was making headway in completing the two great and winning ideas for a *Single Market* (the "four freedoms" of circulation) and for the *European Monetary Union* (the convergence towards the "Maastricht criteria"). Despite the necessary integrations and improvements required, these achievements contributed to build the European economic structure we know today. In addition, it was at the turn of the twenty-first century that the fundamental steps were being taken for what was to become the third great EU historical success: its *Enlargement towards the East* (the "unification of Europe").

What remains to be understood, however, is what caused the sort of "suspension" of industrial policy we refer to and which lasted at least 10 years. Was it because in those years united Europe was completing the fulfilment of three of its great ideas, as we just described? Or was it depending more on the fact that for much of the 1990s, competition policy, liberalization and privatization were considered the best tools for public intervention in the economy?

If we take the first theory as good, it is not surprising that we have to make a leap from 1990—following our simple reconstruction—to 2002 to discover a decisive drive by Community institutions towards (new) industrial policy: in the previous decade united Europe had other priorities ("One market, one money"), and much was achieved. On the other hand, if we are curious about the second theory, we need to undertake patient investigation of how the European integration process came about: the ideas that influenced its progress, the institutions called upon to generate its growth. This essay[3] is an initial attempt in the latter direction.

In any case, aside from the preferred theory, there is another key factor: the economic context was different, at least in the early 1990s. A revolution focusing on ICT—and America's new economic boom (Council of Economic Advisers 2001)—was just starting. The affirmation of new major world economic players—above all China, but more in general all the "Brazil, Russia, India and China (BRICs) countries" (Goldman Sachs 2003)—could certainly be glimpsed but still it had not produced in full its present shattering effects. We do know that all these phenomena completed their growth curve between the end of the 1990s and the beginning of the new century, thus fully revealing their effects. So, driven by this dual revolution (the New Economy and the Asian miracle), European economy—starting with the manufacturing industry—found itself dealing with quite long-term challenges, which had not occurred for some time.

As we mentioned, another big challenge was on home ground: the EU enlargement to embrace eight to ten Central Eastern European countries, as well as Cyprus and Malta. By simplifying a great deal, we can restrict eastward enlargement merely to its economic dimension, without neglecting its enormous importance in political, historical, cultural and institutional terms. Yet, if we consider the economic implications of the enlargement—especially against a backdrop of literature that has become quite boundless (European Commission 2001)—we will see that first of all there is a further extension of the Single Market, which has always been (from the

[3] And more in general the book I have edited, *Le nuove politiche industriali nell'Europa allargata* (Mosconi 2004).

Treaty of Rome onwards) the driving force of European integration and the growth of wealth in a united Europe.

The analysis of the links between "growth effects" and "European integration" was at the heart of the well-known textbook by Richard Baldwin and Charles Wyplosz (2004). Building on the new theoretical foundations offered by endogenous growth models, the authors tried to demonstrate how international economic integration—and European integration is an excellent example—stimulates economic growth "(…) by changing the rate at which new factors of production—mainly capital—are accumulated, hence the name 'accumulation effects'". In turn, the creation of new "capital" must be considered as part of three categories: "(…) physical capital (machines, etc), human capital (skills, training, experience, etc) and knowledge capital (technology)". All three categories contribute to economic growth. What changes is their relative importance in the medium and long term: certainly, the accumulation of investments in physical capital is a significant growth factor. Nevertheless, as such investments face diminishing returns to scale—the argument goes—"(…) long-run growth effects typically refer to the rate accumulation of knowledge capital, i.e. technological progress". In the same perspective, we could include the Organization for Economic Cooperation and Development (OECD 2003) works published in the context of *The Sources of Economic Growth in OECD Countries* extensive research project.[4]

To sum up these initial points, we could say that the challenge the EU faced at the turn of the century was twofold: firstly, the renewed American challenge, whose core is in hi-tech production, and secondly, the new Asian challenge, consisting initially of large volumes and low costs, but also in growing technological improvement of production. In addition, the EU was dealing with the challenge—which is definitely European—of Eastern enlargement, i.e. a bigger Single Market. According to André Sapir (Sapir 2005), this should be seen as a great opportunity—and not as a burden—for "(…) a pan-European industrial reorganisation", provided that Europe is able to transform "the enlarged European Union of 27+ members into a genuine Single Market, where goods, services, capital and labour are allowed to freely circulate (…) Giving countries the opportunity to exploit their full comparative advantage and companies the chance to restructure their activity on a pan-European scale, would much improve the attractiveness of Europe as a place to create wealth and employment".

3 The Sources of New European Industrial Policy

It should be observed that in Europe the rediscovery of industrial policy—after more than a decade of silence on the subject—has been accompanied by a new impulse to the academic studies in this field. In a literature that has become significant again, we would like to mention, by way of example, the works of Bianchi and

[4] See also, Visco (2004).

Labory (2006), Pelkmans (2006), Budzincki and Schmidt (2006), Chang (2010), Aghion et al. (2011) up to the most recent of Owen (2012). In the Introduction to their *Handbook*, Bianchi and Labory significantly write: "The meaning of the term 'industrial policy' has changed a lot over time. Until the 1980s, the term meant the direct intervention of the state in the economy, the direct control by the government of large parts of the production apparatus and a set of public action aimed at limiting the extent of the market and at conditioning productive organization. Nowadays, the term 'industrial policy' indicates instead a variety of policies which are implemented by various institutional subjects in order to stimulate firm creation, to favour their agglomeration and promote innovation and competitive development in the context of an open economy" (Bianchi and Labory 2006).

The EU's documents are useful to distinguish what can be called *new* European industrial policy from what the Nation-states and the then-European Economic Community (EEC) implemented throughout the early decades of the post Second World War (WWII). Considering them, we will first make reference to fundamental documents beginning in December 2002; then we will discuss what approach emerges, on what principles it is founded and what nuances emerge.

The heading "Industrial Policy"[5] currently covers many European Commission Communications, all presented in the 2002–2012 period. For the sake of simplicity, this decade will be divided into two periods: in fact, firstly focusing on 2002–2006 Communications, we will try to clear up the approach to the new industrial policy, which, although it is mainly horizontal, has also some vertical applications (i.e. specific sectors); secondly, we will focus on 2006–2012 Commission Communications, making also a comparison between the European approach and the one which has in the meantime emerged in the USA.

3.1 Towards an "Integrated" Approach (2002–2006)

Let us start by recalling the documents:

I. The first, already indicated as the start of this new story, was that dated December 2002;
II. The second arrived in November 2003: "Some key issues in Europe's competitiveness—towards an integrated approach" (European Commission 2003);
III. Whilst the third was dated April 2004: "Fostering structural change: an industrial policy for an enlarged Europe";
IV. The fourth issued on October 2005 by the new Barroso Commission: "Implementing the Community Lisbon Programme: A policy framework to strengthen manufacturing—towards a more integrated approach for industrial policy" (European Commission 2005b), which "includes new horizontal initiatives and tailor-made initiatives for specific sectors" (Table 1).

[5] See, European Commission website http://ec.europa.eu/enterprise/policies/industrial-competitiveness/industrial-policy/index_en.htm.

Table 1 A new "Integrated" (horizontal and vertical) industrial policy. (Source: European Commission 2005b)

Seven major cross-sectoral policy initiatives	Seven new sector-specific initiatives
(1) An intellectual property right (IPR) and counterfeiting (2006)	(1) New pharmaceuticals forum (first meeting in 2006)
(2) A high level group on competitiveness, energy and the environment (end 2005)	(2) Mid-term review of life sciences and biotechnology strategy (2006–2007)
(3) External aspects of competitiveness and market access (Spring 2006)	(3) New high-level groups on the chemical and the defence industry (2007)
(4) New legislative simplification programme (October 2005)	(4) European Space Programme
(5) Improving sectoral skills (2006)	(5) Taskforce ICT competitiveness (2005/2006)
(6) Managing structural change in manufacturing (ed. 2005)	(6) Mechanical engineering policy dialogue (2005/2006)
(7) An integrated European approach to industry and innovation (2005)	(7) A series of competitiveness studies, including for the ICT, food, and fashion and design industries

ICT information and communication technology

All the Communications are supported by many extensive research projects that include *ad hoc* studies and presentation conferences—the first dated January 2003—including speeches by President Prodi and Commissioner Liikanen. Even though this is quite an extensive selection of studies and analyses, the set of documents worth reviewing in the light of new industrial policy does not end here. A useful integration certainly involves the annual *European Competitiveness Report*, a series inaugurated during the 1990s.

In the background there are also two main points of reference:

1. The "Lisbon Agenda", a farsighted strategy for the modernization of the European economic and social models, but at the same time showing countless significant methodological problems (European Commission 2004[6]);
2. The "Sapir Report" (*An Agenda for a Growing Europe),*[7] an excellent attempt to update what the Report by Tommaso Padoa-Schioppa (*Efficiency, Stability and Equity*)[8] laid down 15 years before, i.e. "(…)the intellectual foundation for the construction of a coherent economic edifice resting on three pillars: the Single Market, to improve economic efficiency; an effective monetary arrangement, to ensure monetary stability; and an expanded Community budget, to foster cohesion". In short terms, "Europe's growth problem" (Table 2) has been at the heart of the new Report, and as a consequence "growth must become Europe's number one economic priority". In 2003, the "Sapir Report"—a six-point *agenda*—demonstrated the importance of encouraging "knowledge investments".

[6] "Kok Report" (European Commission 2004c); European Commission (2005a).

[7] Sapir et al. (2003).

[8] Padoa-Schioppa (1987).

Table 2 Europe's growth problem. (Source: adapted from A. Sapir 2003 for 1950–2000, and EUROSTAT, *Annual National Account*, for 2001–2012)

	1950–1973 "The Golden Age"	1973–1993 "The Fall"	1993–2000 "The Stabilisation"	2001–2012 "The Weakness"
Growth	4.6%	2.4%	2.4%	1.2%
Cohesion				
Unemployment	2%	8%	9%	10%
Public spending (% GDP)	< 35%	37% → 51%	51% → 46%	46% → 52%
Stability				
Inflation	4%	8%	3%	2.3%
Public deficit	< 2%	0% → 6%	6% → 0%	0% → 2.7%

GDP gross domestic product

Figures indicated in Table 2 show the decreasing trend of growth in the EU since the creation of the first European Community until today.

As mentioned above, for the sake of simplicity we focused, thus far, on the 2002–2006 period in which the new European industrial policy—with the so called "integrated" approach—took shape in Brussels (then, as we shall see in the next paragraph, other Communications will follow until the last, so far of October 2012).

Bringing together all the various insights and policy advice that have been put out by the Commission in various documents on industrial policy's third side (i.e. research and technology policy), we can see which sectors have gained most prominence in the last few years: ICT, energy, defence, space, biotechnology and pharmaceuticals (Table 3).

It is evident that the core businesses of firms in these sectors are all very high-tech and R&D-intensive. In order for European companies to develop a leading edge in such sectors, two factors are absolutely crucial: first, they must have access to a high level of financial resources in order to conduct R&D at the required level; second, they must be able to hire excellent researchers, engineers and managers—human capital—who have the right skills and knowledge to come up with new and innovative production, organizational and management outputs. As a result, developing strong European research, technology and education policies, overcoming the segmentation of policies of individual national governments, is the main path for innovation and growth.

Meanwhile, between the first and second period of revival of industrial policy that here we have plotted (2002–2006 and 2007–2012), the economic and financial crisis in which Western European industry still struggles—due to the bankruptcy in September 2008 of Lehman Brothers—will explode. In addition, Europe is facing an increasingly global competition, especially from emerging Asia and Latin America economies. A remarkable change in attitude has been emerging in the ruling classes, even—and perhaps above all—of the Anglo-Saxons: it is now customary to speak of "manufacturing renaissance", to mean that manufacturing industry is recovering its rightful place in the economy as a springboard of growth.

Table 3 A summary of Commission documents on the new industrial policy (vertical applications). (Source: Author's elaboration on European commission documents)

Sectors identified	Biotech[a]	ICT[b]	Energy[c]	Defence[d]	Space[e]	Pharma[f]	Mech[g]	Health[h]	Environment[i]	Transports[j]	Digital[k]	Nano[l]	Socio-economic[m]
European background documents													
EC Communication I.P. (2002)	✓	✓	✓	✓	✓								
EC Communication I.P. (2005)	✓	✓		✓	✓	✓	✓						
"Aho Report" (2006)			✓			✓		✓	✓	✓	✓		
Joint Tech Initiatives (2006)		✓	✓	✓	✓	✓			✓			✓	
Competitiveness Report (2006)		✓				✓							
FP7 (2007–2013)[n]	✓		✓	✓	✓			✓	✓	✓		✓	✓

ICT information and communication technologies, *I.P.* industrial policy, *FP7* seventh Framework Programme

[a] Life sciences and biotechnology

[b] Including embedded computing systems

[c] Including renewable forms of energy (e.g. hydrogen and fuel cells)

[d] As far as FP7 is concerned, global monitoring for security

[e] Including aerospace industry, the European space program, aeronautics

[f] Pharmaceutical industry, including innovative medicines

[g] Mechanical engineering

[h] Including e-Health

[i] Including climate change; as far as FP7 is concerned, global monitoring for environment

[j] Transportation and logistics, and in the FP7 including Aeronautics

[k] Digital security and content

[l] Nanoelectronics technologies, nanosciences, materials and new production technologies

[m] Socio-economic sciences and the humanities

[n] The European Research Council's Work Program identifies three main research domains: (1) Physical Science & Engineering; (2) Life Science; (3) Social Science & Humanities

Europe needs its industry but industry needs Europe as well. It is essential to increase productivity in manufacturing industry and associated services to underpin the recovery of growth and jobs. "*This house believes*—wrote 'The Economist' launching its Debate of June/July 2011—*that an economy cannot succeed without a big manufacturing base*". From the way the thesis is formulated, we think we can say that a change of attitude emerges compared to the previous year: here the topic of manufacturing is tackled positively, whereas the issue of industrial policy was dealt with in a negative approach ("industrial policy always fails"), as we will see in the following paragraphs.[9] While in 2010 the readers defeated the thesis of "The Economist", in 2011 they approved it—again with a large majority (76 % against 24 %)—thus giving consistency to the two results, which can be summarized as follows: manufacturing matters, and in order to make it grow a smart industrial policy is needed.

3.2 Identifying New European Industries (2007–2012)

Europe is a world-leader in many strategic sectors such as automotive, aeronautics, engineering, space, chemicals and pharmaceuticals. When at the beginning of twenty-first century the European Commission began speaking of "European champions"—early 2003, right after the first Communication on new Industrial policy (December 2002)—it simultaneously identified a sort of proper playing field. In his speech, President Prodi[10] provided an initial list, as follows:

i. Biotechnologies and life sciences;
ii. Information and communications technology sector ("where our leadership in mobile telecommunications runs heavy risks in a new standards battle");
iii. The so-called "hydrogen economy" ("as the alternative means for accumulating and transferring energy");
iv. Defence industry ("still fragmented in the absence of the intention to build a truly integrated European defence system");
v. Our aerospace ("still undecided between civilian and safety applications").

Alongside some unequivocal strengths in European industry, which have been outlined above, we do meet some weaknesses that constitute the *raison d'être* for renewing industrial policy at European level. As far as competitiveness of Euro-

[9] In his opening statement in defence of his motion Ha-Joon Chang ("The Economist" 2011) writes: "There is truth in the argument that above a certain level of development, countries become 'post-industrial', or 'deindustrialised'. But this is only in terms of employment—the falling proportion of the workforce is engaged in manufacturing. Even the richest economies have not really become post-industrial in terms of their production and consumption. From expenditure data in current (rather than constant) prices, it may appear that people in rich countries are consuming even more services, but this is mainly because services are becoming even more expensive in relative terms, thanks to structurally faster productivity growth in manufacturing".

[10] Prodi (2003).

pean industry is concerned— the European Commission (2002) pointed out—the performance is not entirely positive "in some of the highest value added segments of the economy" (e.g. Electronics and Office machinery and computer industries). In other words, the EU "tends to specialise in medium-high-technology and mature capital-intensive industries. If it is essential to keep the strengths in these sectors (…) the EU should seek to reinforce its position in enabling technologies such as ICT, electronics, biotechnology or nanotechnology".

The "integrated" approach, with an emphasis on high-tech sectors, will consolidate in Brussels year after year, as clearly the last Communication approved in October by the European Commission (2012) just 10 years after the first, which marked the revival of industrial policy: "*Europe needs to reverse the declining role of industry in Europe for the 21st century* (…) To achieve this, a comprehensive vision is needed, focusing on investment and on innovation, but also mobilising all the levers available at EU level, notably the single market, trade policy, SME policy, competition policy, environmental and research policy in favour of European companies. *This Communication proposes a partnership between the EU, its Member States and industry* to dramatically step up investment into new technologies and give Europe a competitive lead in the new industrial revolution".

Between 2005 and 2006 (the time of mid-term review) and this Communication of 2012 there will be numerous other documents approved and/or published on the subject (the full list is published in the Appendix to this chapter), especially in view of the fact that industrial policy has become part of wider economic reforms strategy, named "Europe 2020" (European Commission 2010), which in 2010 has replaced the "Lisbon Strategy". Summing up, *An industrial policy for the globalisation era* represents one of the so-called "Europe 2020 Flagship Initiatives" since the Commission "will draw up a framework for a modern industrial policy, to support entrepreneurship (…), to promote the competitiveness of Europe's primary, manufacturing and service industries and help them seize the opportunities of globalisation and of green economy".

Drawing our attention on the "*six priority action lines*" expressly mentioned in the latest Communication (October 2012), we find the evidence that had already emerged in the early 2000s (see Table 5); namely, the idea of focusing the public–private joint investment on general purpose technologies rather than on individual industrial sectors strictly defined ("picking the winners") as happened in the 1970s and on the 1980s.

The trend seems to be more general. Two other important experiences are currently in place. The first in the USA, promoted in 2011 at the behest of the Obama Administration; the second within the EU industrial powerhouse, Germany. Table 4 gives an account of these three initiatives, which together with some specificity share a common setting.

As a whole, Table 3 reveals the many existing similarities—both from the point of view of the method (move forward the technological frontier) and from the point of view of the substance (technologies development)—among these three initiatives. The "national"—so to speak—differences reside, in our opinion—more on theoretical aspects. For example, while the European Commission speaks specifi-

Table 4 Science-based industries and blending technologies: A summary of initiatives. (Source: Author's elaboration on various official documents, respectively: Federal Ministry of Education and Research 2010; European Commission 2012; The White House 2011b)

Year/country	2010/GERMANY	2012/EU	2011/USA
Institution(s)	Federal Ministry of Education and Research	European Commission	The White House
Title	"*Ideas. Innovation. Prosperity: High-Tech Strategy 2020 for Germany*"	"*A Stronger European Industry for Growth and Economic Recovery*"	"*Advanced Manufacturing Partnership*"[a]
Contents	*5 Key Technologies*:	*6 Priority Action Lines*:	*4 Key Steps*:
	Climate/energy	Advanced manufacturing technologies	Capabilities in critical national security industries
	Health/nutrition	Key enabling technologies	Advanced materials
	Mobility	Bio-based products	Next-generation robotics
	Security	Sustainable industrial and construction policy and raw materials	Energy-efficient manufacturing processes
	Communication	Clean vehicles, Smart grids	

[a] According to the Council of Advisors on Science and Technology, "Advanced manufacturing is a family of activities that (a) depend on the use and coordination of information, automation, computation, software, sensing, and networking, and/or (b) make use of cutting edge materials and emerging capabilities enabled by the physical and biological sciences, for example nanotechnology, chemistry, and biology" (see: *Advanced Manufacturing Portal*, www.manufacturing.gov)

Table 5 Overview of major economic areas: Structural indicators (*value added by economic activity, % of total*)[a]. (Source: ECB (2013), *Statistics Pocket Book*, April)

	EU	USA	Japan
Agriculture, fishing and forestry	1.7	1.2	1.2
Industry (incl. construction)	25.7	20.0	26.8
Services	72.6	78.8	72.1

[a] China has recently been added: Agri (10.1%), Ind. (45.3%), Serv. (44.6%)

cally of "Industrial Policy" because "The word is no longer taboo" (Monti 2010),[11] the Federal Government of the USA describes its solutions in great detail but omits the explicit expression. However, at a time when President Obama launched, with a speech at Carnegie Mellon University (The White House 2011), the Advanced Manufacturing Partnership (AMP) the official website of the White House explained that: "*The U.S. Government has had a long history of partnership with companies and universities* in developing and commercializing the new technologies

[11] In his report (*A New Strategy for the Single Market*) to the President of the European Commission, Monti (2010), in the same paragraph argues that: "In Europe, leaders are discussing the merits, and limits, of an active industrial policy. The return of interest for industrial policy goes parallel with a renewed attention to the importance of manufacturing for Europe's economy and a wide concern for the profound transformation of the European industrial base triggered by the crisis".

that have been the foundation of our economic success—from the telephone, to the microwave, to the jet engine, to the internet. The AMP will provide the platform for similar breakthroughs in the next decade (…)" (The White House 2013).[12]

Returning to Europe's landscape we can see that even the Federal Government of Germany is very cautious to use the expression "industrial policy," preferring to speak about "High-Tech Strategy 2020". Through the pages of this document, however, once again we can find the *fil rouge* which binds the other two initiatives (EU and USA): "The aim of the High-Tech Strategy is to make Germany a leader when it comes to solving these global challenges" (see the abovementioned "five key technologies", Table 3). "This will not just improve people's lives and standard of living; it will also offer new value creation potential for the private sector, create high-level jobs in Germany and help us make better use of talents here in Germany. For this reason, the Federal Government's innovation policy activities are geared towards these five fields of action, with the aim of tapping emerging markets"[13].

This strong and persistent "structural change" must be regarded as the main road to strengthen their competitiveness in manufacturing and, for this route, coping with competition that comes from emerging countries. It is essential to set up the right framework conditions for industry to develop the technologies and production capabilities needed to deliver this challenge. Overall, this is precisely the task of industrial policy as the broad economic literature mentioned at the beginning of the paragraph shows.

4 The "Jacquemin-Rodrik Synthesis"

Few topics have aroused such extensive debate amongst economists of various schools and belief as industrial policy regularly does. However, it is equally true that few essays like that by Alexis Jacquemin (1987) have offered a clear analysis of the various roles assigned to industrial policy. Professor Jacquemin wrote that depending on the stress attributed to the spontaneous settling of market forces, or on strategic behaviour, this will eventually lead to the choice of social model.

The contrasting position between the two paradigms (or points of view) that Jacquemin called—respectively—"the efficiency of selection through market mechanisms" and "the role of strategic behaviour (private or public) affecting these same mechanisms" are the *leit-motiv* of his well-known essay on *The New Industrial Organization—Market Forces and Strategic Behavior:* a contrast that could not fail to have an effect on economic policy choices and on industrial policy in particular.

So—he argued—"for those who have full confidence in market mechanisms, the only real requirement is the existence of a healthy macroeconomic environment", whereas—he continues—"there is a whole tide of research questioning whether the market alone can efficiently accomplish selections leading to new industrial

[12] http://www.manufacturing.gov/welcome.html.

[13] http://www.bmbf.de/en/6618.php.

organisations". The author then developed the latter thought to arrive at the classic two-level argument that justifies an industrial policy:

i. "The long list of so-called market failures" (in this context R&D support in high-tech sectors is openly mentioned[14]);
ii. "A second level of argument in favour of a positive industrial policy goes beyond the consideration of failures inherent in certain markets. It concerns strategies that deliberately influence the transformation and the industrial reorganization of sectors, and nations".

Alexis Jacquemin did not conceal his own preference. He also made use of numerous examples of those years, the 1980s (and his overview takes into account the USA, Japan and, above all, Europe), and he made severe criticism of the methodological approach "based on the idea that competitive processes ensure the survival of the fittest".

Lastly, he dedicated himself to a study of the "characteristics of an approach that allows for the existence of a strategic dimension in socio-economic behaviour". Over the years, several of his intuitions have shown great foresight, for instance including criticism of domestic policy in member states that pursued the creation of "National champions". On the other hand, the time lost by our European companies compared to those in America and Japan—wrote Jacquemin (1987)—"[will] lead to the possibility of *a concerted European industrial policy that will help overcome industry strategies along national lines*, reduce barriers between national champions, and develop a large home European market for industrial applications". It is important to note that this is a far-sighted vision as it has currently reappeared in the EU—a quarter century later.

After Jacquemin's work (in the 1980s) and a decade of silence on industrial policy (the 1990s)—a policy area that fell victim both of its own past mistakes and of the rise of a dominant ideology (the so-called *Washington Consensus*)—we quickly reached the 2000s. Halfway through the new decade a couple of papers by Dani Rodrik (2004, 2007) shed light on what industrial policy really was at the start of the twenty-first century. To avoid misunderstandings, the adjective "new" has been added to industrial policy, in order to distinguish it from the industrial policy of the past, which was focused on the "picking the winners" and, more generally, on excessive public intervention (above all by the nation-state) in the economy, mainly through the state ownership of industrial and/or services enterprises and through "State aids".

Rodrik's papers that are usually referred to in the economic literature are those of 2004 and 2007, respectively, entitled *Industrial Policy for the Twenty-First Century* and *Normalizing Industrial Policy*. In both papers the author illustrates "his own"

[14] "Public authorities—the argument goes (Jacquemin 1997, Chap. 6)—could then favour organizational forms that internalize the external effect of important technological choices and promote the emergence of poles of competition; through financial aids and specific public programs they would be required to support research and development in high-technology industries (microcomputers, aerospace, biotechnology) affected by important fixed and sunk costs […]".

definition of industrial policy: "I will use the term to denote policies that stimulate specific economic activities and promote structural change" (not only, he argues, in the manufacturing industry but also in all kinds of "non-traditional activities" in agriculture or in the services). Like Jacquemin, Dani Rodrik starts from a conventional point of view for industrial policy, i.e. "market failures" ("markets for credit, labor, products, and knowledge", he adds) and the need to deal with them. Yet, like Jacquemin, there is more to Rodrik's thought: "The right model for industrial policy is not that of an autonomous government applying Pigovian taxes or subsidies but of strategic collaboration between the private sector and the government with the aim of uncovering where the most significant obstacles to restructuring lie and what type of interventions are most likely to remove them (…) It is innovation that enables restructuring and productivity growth". Rodrik continues to promote the principles inspiring a modern industrial policy in the debate promoted by "The Economist" in July 2010 with the title: "*This house believes that industrial policy always fails*", whereas Josh Lerner (Harvard Business School) was called to support the thesis of the British weekly[15].

Examining what is happening around the world, starting with the USA, Dani Rodrik, in his counterargument, asks is it really true that industrial policy "always fails"? His basic thesis is that "normalizing industrial policy" means considering this public policy like any other policy. Do governments deal with education, health and taxes, while addressing the interests of advocacy groups and lobbies? Obviously the answer is yes, but this cannot prevent them from intervening. Indeed, everybody—governments and scholars—discusses how to offer these public services to all citizens in the best way possible. The same—the argument goes—needs to be done with industrial policy, without getting scared by problems, which exist, such as the "regulatory capture" and the fine-tuning of the right incentives for the implementation and assessment of aid schemes for enterprises. Going back to "The Economist" Debate, Rodrik pointed out that: "The essence of economic development is structural transformation, the rise of new industries to replace traditional ones. But this is not an easy or automatic process. It requires a mix of market forces and government support. If the government is too heavy-handed, it kills private entrepreneurship. If it is too standoffish, markets keep doing what they know how to do best, confining the country to its specialisation in traditional, low-productivity products" (The Economist 2010). In the face of such great challenges, which remind

[15] Have "The Economist" readers suddenly become all nostalgic about some form of planned economy? This is unlikely and one hopes that no one will judge the result of the debate on industrial policy promoted by the British weekly magazine through the lenses of the past. There is no nostalgia in the minds of the 72% of the readers who, on Saturday 17 July 2010, at the end of an engaging week of debate between two opposite theses, have defeated the motion of "The Economist", which was the following: "*This house believes that industrial policy always fails*". It is almost impossible to summarize how rich the debate was: the debate, as usual, was divided in three phases ("Opening remarks", "Rebuttal statements", "Closing statements") which lasted a whole week (12–17 July) and was moderated by a journalist of "The Economist", Tamzin Booth. The debate was also enriched by many online comments by the readers, as well as by two special guests. The Debate is available at: http://www.economist.com/debate/overview/177.

us of Joseph A. Schumpeter's "creative destruction", the question is not so much to ask "whether" there should be an industrial policy, but rather "how" to organize, manage and assess its outcomes.[16]

Bearing in mind both Alexis Jacquemin's and Dani Rodrik's insights, we have seen an industrial policy that "overcomes industry strategies along national lines" thanks to combined efforts at the European level; and a policy that, thanks to a "strategic cooperation" between the public and private sphere of the economy, is concerned above all with the provision of public goods for the productive sector. That is: "Public labs and public R&D, health and infrastructural facilities, sanitary and phytosanitary standards, infrastructure, vocational and technical training can all be viewed as public goods required for enhancing technological capabilities. From this perspective, industrial policy is just good economic policy of the type that traditional, orthodox approaches prescribe". We should label this policy as "The Jacquemin-Rodrik Synthesis".

5 The Worldwide "Manufacturing Renaissance" and the European Response

Gary Pisano, distinguished professor at Harvard Business School, one of the global meccas of Anglo-Saxon-style managerial culture, claims that: "One of our key messages is to get students to appreciate that manufacturing involves a lot of knowledge work. There has almost been a whole generation of MBA students and managers who have been brought up on a false idea that manufacturing is kind of the brawn and not the brain, and that the country should focus on the brain" (Pisano 2011).

One could equally cite other works by Pisano (Pisano and Shih 2012) or other authors (Sirkin et al. 2012). It seems, therefore, that the winds are changing: can we reasonably hope for a profound change in attitude from the years when the "pensée unique" was king? Perhaps we can. Alongside the intellectual debate within the USA, we point out the previously mentioned actions taken by President Obama, as well as his constant call for a needed "revival" in manufacturing: "Today, I'm calling for all of us to come together—private sector industry, universities, and the government—to spark a renaissance in American manufacturing and help our manufacturers develop the cutting-edge tools they need to compete with anyone in the

[16] Almost three quarters of the voters (72 % against 28 %) agreed with Rodrik, as the moderator of the debate declared in the "Winner announcement". However, Lerner did not agree—or at least not completely; in fact, in his final remarks there was a timid and partial opening to Rodrik's thesis: with industrial policy there are both unresolved conceptual problems and some downright "failures in its implementation", but something can be done. The counterevidence is Lerner's book—cited and recommended by Rodrik himself—where the author spoke about the historically important role played by the US Department of Defense in the growth of the Silicon Valley (Lerner 2009). Following this debate from a European perspective, there is an additional argument that can be made: for my own contribution to this Debate, see: "Comments from the floor, 9/58" (http://www.economist.com/debate/overview/177).

Table 6 Overview of major economic areas: Structural indicators (*external, % of GDP*)[a]. (Source: ECB (2013), *Statistics Pocket Book*, April)

	EU	USA	Japan
Exports of goods and services	17.1	14.0	15.8
Imports of goods and services	17.2	17.7	16.5
Current account balance	−0.2	−3.1	+ 2.0

[a] China has recently been added: Exp. (27.4%), Imp. (24.8%), Balance (+2.8%)

world… With these key investments, we can ensure that (…) remains a nation that 'invents it here and manufactures it here' and creates high-quality, good paying jobs for (…) workers" (The White House 2011a).

Now, if the winds of change are nigh what will happen to us, in the sense of the EU? The first lesson after decades of globalization is that no country is an island: neither in terms of the flow of goods, nor (more importantly) in terms of the flow of ideas. This is of even greater truth in the case of the EU. Data published by the European Central Bank (ECB) shed light on the relative strength of European industry compared to that of America and Japan, as well as the relative strength of the EU as a world trade power. These data—referring as they do to what was formerly defined as the "Triad" during the 1980s and 1990s—obviously do not tell the whole story, considering the growing influence of newly industrialized countries, developing nations, and BRIC on the global economy. But we believe they *are* sufficient to make our point: the position of the EU from both perspectives examined here seems remarkable, even in comparison with its two traditional competitors (Tables 5−6).

With manufacturing and export numbers on this scale—along with others related to the *big players* that we will inspect later—comes a concomitant responsibility for the European ruling class in the fields of production, academia and government. It would indeed be paradoxical if, in the moment when the elite of the Anglo-Saxon culture rediscovered manufacturing, the EU was not putting all of its forces—intellectual and material—behind the evolution of its own manufacturing industry, *in primis* from the technological and knowledge-based perspectives.

After all, from Joseph Schumpeter's *The Theory of Economic Development* (1983) on,[17] we have learned that the quintessence of economic growth lies in "structural transformation": the rise of new industries. This lesson has been re-proposed in recent years by Dani Rodrik (2004, 2007) in a series of seminal papers on industrial policy for the twenty-first century (see the previous paragraph). So what *is* the role of European manufacturing on the global scale? Table 7 is drawn from an analysis by the Centro studi Confindustria (CsC 2012).

Confindustria rightly describes a situation of "nations on the rise": their performance, in the space of little more than a decade, has been truly spectacular (in 2011, they accounted for almost a third of global production). But the data for Europe in 2011 are hardly irrelevant. When we put together EU-15 and new-EU, we arrive at the notable number of 23.4% (that is, almost a quarter of global production comes

[17] The Theory was originally published in 1911.

Table 7 World manufacturing production: Top 20[a] producers (% of total, 2011). (Source: CsC (2012), June)

Countries	2000	2007	2011	2007–2011 change
1. China	8.3	14.0	21.7	+1
2. USA	24.8	18.4	14.5	−1
3. Japan	15.8	9.4	9.4	=
4. Germany	*6.6*	*7.4*	*6.3*	=
5. South Korea	3.1	3.9	4.0	+2
6. Brazil	2.0	2.6	3.5	+4
7. India	1.8	2.9	3.3	+2
8. Italy	*4.1*	*4.5*	*3.3*	−3
9. France	*4.0*	*3.9*	*2.9*	−3
10. Russia	0.7	2.1	2.3	+2
11. United Kingdom	*3.5*	*3.0*	*2.0*	−3
12. Spain	*2.0*	*2.5*	*1.7*	−1
13. Mexico	2.3	1.9	1.6	+1
14. Indonesia	0.8	1.1	1.6	+3
15. Canada	2.3	2.0	1.6	−2
16. Taiwan	1.7	1.6	1.5	−1
17. Netherlands	*1.1*	*1.2*	*1.1*	−1
18.Australia	0.8	0.9	1.0	+3
19. Turkey	0.9	1.1	1.0	−1
20. Poland	*0.6*	*0.9*	*0.9*	=
EU-15	*25.7*	*27.1*	*21.0*	
BRICs	12.8	21.6	30.9	
EU-NEW	*1.4*	*2.6*	*2.4*	

BRICs Brazil, Russia, India and China

[a] In italics EU countries

from Europe): a figure that, on one hand, is not too far from that of 2000 (27.1%) and which, on the other, is significantly higher than the portion of global production in the USA (14.5%) and Japan (9.4%). Moreover, viewed in its entirety as the "European quota"—and not simply as the single portions of the member states—this is even higher than any of the BRIC nations considered singularly, starting from the largest of them all (as can be seen from the table, China, the world's largest producer, is at 21.7%).

The lesson we can learn is simple: the EU continues to have a primary role to play on the world's stage of manufacturing. Nonetheless, the supplemental responsibility that we have just spoken of demands a qualitative leap: in public discourse, in policy-making, in corporate strategies. For example, from the perspective of Italy, we cannot limit ourselves to crowing about our achievements, even if these are not insignificant: second place in the EU after Germany as a manufacturing power. We need to ask ourselves what we can reasonably change or reform within Italian capitalism so as to bring it as close as possible to the model of "Rhine capitalism" (Hall and Soskice 2001). The same thing goes for all other member states (in their own proportions), or at least for all others which believe that Germany truly repre-

sents a model to aspire to; in the words of Horst Siebert (2005), long time economic advisor to Chancellor Kohl: "Germany is an open economy with a strong industrial base, producing about a third of its gross domestic product for export".

And so let us return to the "triangle of industrial policy" mentioned at the beginning of this chapter. There exists a field in which the process of European integration has led the EU, decade after decade, to speak with a "single voice": trade policy (consider, for example, the role of the EU in the World Trade Organization). Once again: there exists a field like competition policy where supranational jurisdiction is strong, and is an integral part of the *acquis communataire* (consider the control of concentrations, the fines levied for abuses of dominant positions, the state aids control, and so forth). But the third side of industrial policy—technological policy—is still primarily in the hands of single member states. How far do we have to go before reaching the objective of an authentically European industrial policy, one where even this third side is genuinely community-oriented?

Since Article 130 of the Treaty of Maastricht (now article 189), something has changed in the structure of the EU, and not by chance has a new series of Communications about industrial policy been approved by the European Commission since December 2002. We are speaking about an industrial policy that, more so now than in the past, is essentially a policy for promoting—according to the previously given definition—the "structural change" of industry, therein bringing about an increase in "knowledge investments"—starting from R&D.

The fundamental question, at this point, is the following: is the idea of taking technological policy into the realm of supranational governance so very unthinkable, considering how the issues it involves are no less important than those of international trade and competition policy (the first two sides of the triangle), which have clearly gone past the confines of any single nation-state? Taking the case of R&D, once again, we should keep in mind the positive externality that is inherent in this kind of investment.[18]

Connecting the third side of the triangle with a technological policy that is managed at the supranational level should be one of the cornerstones of the new European governance, which has so long been spoken of, and where it seems that questions of a macroeconomic nature always predominate. Going back to Jacquemin, compared to the period when he worked in Brussels alongside President Delors, "overcoming industrial strategies along national lines" is a step that has become even more necessary due to the dynamics of the global economy in the first decade of the twenty-first century. At the time, as already mentioned, the "Triad" (EEC, USA, Japan) reigned, whereas now we are in the midst of the rise of the BRICs and, more generally, of those countries which the International Monetary Fund has called the "Emerging and developing economies", which account for the majority of the additional growth of global gross national product (GNP). All of this leads, as we know, to a different composition of global manufacturing production. Along with

[18] Alexis Jacquemin (1987) was already talking about the need for this type of industrial policy at the end of the 1980s; more recently, many have returned to the topic, including Philippe Aghion et al. (2011).

the data from the CsC presented above in Table 6, the transformation is described by "The Economist" (2012) in its special report entitled *A Third Industrial Revolution*. The London weekly writes: "For over 100 years America was the world's leading manufacturer, but now it is neck-and-neck with China. In the decade to 2010, the number of manufacturing jobs in America fell by about a third. The rise of outsourcing and offshoring and the growth of sophisticated supply chains enabled companies the world over to use China, India and other low-wage countries as workshops."

Much other data could be cited but it would not change the substance of the story, which is that of the well-documented growing role of the BRIC nations and of all developing countries as the "factories of the world". It is however equally true that these countries also have become, in recent years, extraordinary new export markets for quality goods (from both the technological and design point of view), such as those produced in Europe (*Made in Italy* is a strong point among these), because of the sudden economic growth, spurred by industrialization, that these nations have experienced. Indeed, in global industry, is there not still room for a united Europe—and even more specifically—for its industry? The data on its economic "structure" shown in Tables 2 and 3 argue in favour of this enduring role, though with changing circumstances and players. But there is more: a further positive reply comes to us when we look at things from a particular perspective, that of the so-called "European Champions" which hold positions of leadership within the new genuinely globalized market.

The definition, genus and typology of the "European Champions" have already been the topic of previous works, which can be referenced (Mosconi 2006, 2007). In each case, though, we are talking about large multinational companies that have business operations in multiple European countries and, branching out expressly from its original European base, are often capable of carrying their growth strategies into the major extra-European markets (think of America and Asia). There are "Champions"—those which we have named "Type I"—that come about from joint initiatives of two or more governments: the success story of Airbus is the most famous example. But the prevailing typology of "Champions" is another, which we have named "Type II", comprised of large enterprises that erupted into the market thanks to cross-border Mergers and Acquisitions (M&A) operations.

Economic history teaches that M&A operations, worldwide, tend to go in "waves" that match relevant productive, technological and economic transformations (Carlton and Perloff 2005). The one that was developing with particular strength in the middle of the last decade, and which had Europe as its main actor, has partially dissipated in the wake of the subprime crisis in September 2008, but it has not passed in vain. We begin by saying first that there are many signs that indicate a certain upswing in M&A operations, even though we are still in the midst of a fragile macroeconomic situation. Second, the three extraordinary accomplishments of the EU in the past two decades—the internal market ("Objective '92'"), the single currency (the Euro and a system of fixed exchange rates) and the enlargement toward the East (which from an economic point of view should be understood as a further enlargement of the internal market) —have all positively influenced the success of the best European enterprises. A new European oligopoly has thus come about, and in this—by definition—the role of large firms is fundamental.

Table 8 Big Player: *Fortune Global 500* (World's 500 largest enterprises country breakdown, July 2012)[a]. (Source: Fortune 2012)

Austria	1
Belgium	4
(Great Britain/Netherlands)	(1)
Denmark	1
Finland	1
France	32
Germany	32
Great Britain	26
Ireland	2
Italy	9
Luxembourg	2
Holland	12
Poland	1
Spain	8
Sweden	4
Hungary	1
Total EU	*137*
Brazil	8
Russia	7
India	8
China	73
Total BRICs	*96*
United States	132
Canada	11
Mexico	3
Total North America	*146*
South Korea	13
Japan	68
Singapore	2
Thailand	1
Taiwan	6
Malaysia	1
Total South East Asia	*91*

[a] In order to complete the full list, countries from Europe are also considered: 15 for Switzerland, 1 for Norway and 1 for Turkey; Middle East: 1 for South Arabia and 1 for the United Arab Emirates; Latin America, 1 for Colombia and 1 for Venezuela and finally, 9 for Australia, bringing the total to 500

The essential aspect is that these "European Champions" have therefore become able to play a role on the global scenario, as the data on the importance of industrial activity in the EU and its performance in export terms seem to suggest on the aggregate. Another way of looking at the relative strength of European industry from a global perspective is by looking at the performance of our *big players*. We can make reference to two distinguished sources on this score: the first (Table 8) is the annual rankings by "Fortune" (2012) in its *Global 500* and the second (Table 9) is

Table 9 Big Player: Multinationals in industry and services (breakdown by macro-area, July 2012). (Source: R & S-Mediobanca 2012)

Europe	148
North America	68
Japan	36
Asia-Russia	50
Rest of the World	23
Total Industry	*325*
Telecommunication	29
Utilities	22
Industry and Service	*376*

the studies undertaken by R & S-Mediobanca (2012).[19] In the two tables printed above, we present the essential data for each of the two classifications.

The position held by Europe's industrial giants, when looked at through international eyes, comes out loud and clear from these data, and it confirms, at the business level, the empirical data that have already been seen at the macroeconomic level (value added from industry and exports). Let us begin with the first ranking from "Fortune": adding up all of the EU countries we get a number (137) that is higher than those of our historical competitors—USA (132)[20] and Japan (68)—as well as that of the BRICs (96). The second classification—from Mediobanca—not only confirms Europe's status, but it also helps shed light on a situation that is rather heterogenous within the EU: in fact, on examination of 148 multinationals, Mediobanca writes, for example, that in "sales distribution, only 6.6 % (of the European total) comes from Italian-based companies", compared to numbers that exceed 20 % in the UK and Germany, followed by France at 15.8 % and even Scandinavia (10.3 %) and Benelux (9.8 %).

It is certainly not news that large companies have for a long time been the cornerstone of the European economy (particularly in some member states). Even in the recent past other distinguished studies (Veron 2006) have highlighted their leadership position in certain industrial fields, though not without underlining the relative weakness of European industry in some of the most promising new technologies.

This is where the most delicate question on policy lies: how to promote the structural change of European industry during the years which witnessed simultaneously, on the one hand, the internal market, the Euro, Eastern expansion, and, on the other, new global challenges coming from the USA and the BRIC. One path,

[19] Both of these rankings/studies, aside from being annual publications, are based not on market capitalization but on the total turnover of the relevant companies. In particular, Mediobanca's definition of the terms of its study is given in the following: "*Objective*: a study of the aggregate accounts of the largest multinationals in the world. *Object*: companies with sales over 3 billion Euros, equal to at least 1 % of the total sales in its respective area or nation. *Sectors*: manufacturing and energy industry, telecommunications and utilities; businesses not involving manufacturing are not included: construction, finance, etc. *Geographic Area*: global, divided into three macro-areas: Triad (Europe-North America-Japan), Asia-Russia, and the Rest of the World."

[20] Considering, though, the North American continent (or, if we prefer, North American Free Trade Agreement; NAFTA), we must add 11 from Canada and 3 from Mexico to the big American players, for a total of 146 (a figure that surpasses the European companies by 9).

though admittedly not the only one,[21] lies in the "European Champions"—those which have already proven themselves as well as those to come—benefitting from a new industrial policy that is able to manage, from a supranational position, the most relevant parts of R&D programs, technological innovation, and the development of human capital. We would then be in the presence of an EU that speaks with a "single voice" even in the field of technological policy, providing the latter with the same status that trade policy and antitrust already enjoy. This is the path that we propose in this setting, in particular because of the intrinsic strength of European manufacturing and its large businesses. Can European technological capacity match up to this manufacturing strength? Or is there a gap that needs to be bridged? And if so, by which methods and governance? We will attempt to answer these questions below.

6 The European Innovation Landscape and the "Triangle"'s Third Side

Making a paraphrase of the well-known "Keynesian multiplier", nowadays we should define the new concept of "Manufacturing multiplier". Let us take the EU economy as a first example: according to the European Commission (2012), the current level of industry in Europe is around 16% of GDP, but it "still accounts for 4/5 of Europe's export, and 80% of private sector R&D investment comes from manufacturing".[22]

The same holds true at a worldwide level. McKinsey (2012) in a recent *Report* shows that "manufacturing contributes disproportionately to exports, innovation, and productivity growth", especially in the advanced world where "it remains a vital source of innovation and competitiveness, making outsized contribution to research and development, exports, and productivity growth". The figures speak for themselves: the manufacturing shares of exports and private sector R&D (respectively, 70% and 77%) are much higher than the manufacturing shares of global GDP (16%), and employment (14%).[23]

[21] Think only of the importance held by start-ups in the high-tech sector, especially those that come out of academic settings. And there's no need to mention the importance of the small and medium enterprises (SMEs), the backbone of all economies in the EU.

[22] Then, the Commission (2012) adds a footnote which deserves attention: "Industrial activities also have important spillover effects on production and employment in other sectors. For every 100 jobs created in industry, it is estimated that between 60 and 200 new jobs are created in the rest of the economy, depending on the industrial sector".

[23] McKinsey [2012], like the European commission, points out the changing boundaries between the different sectors (manufacturing vs services): "Service inputs (everything from logistics to advertising) make up an increasing amount of manufacturing activity. In the United States, every dollar of manufacturing output requires 19 cents of services. And in some manufacturing industries, more than half of all employees work in service roles, such as R&D engineers and office-support staff".

Table 10 R&D big spenders: Top seven countries and the EU (2009). (Source: Adapted from Veugelers 2013)

Country	R&D ($, billion)	Share of global R&D (%)	EU member state
1) USA	402	32	
2) CHINA	154	12	
3) JAP	138	11	
4) GER	83	7	✓
5) FRA	48	4	✓
6) S. KOREA	44	4	
7) UK	40	3	✓
Italy + Spain	25 + 20	3	✓
Sweden + Finland + Denmark	26	2	✓

If the main goal of the EU's renewed industrial strategy is to reverse the declining role of industry in Europe from 16 % of GDP "to as much as 20 % by 2020", there will be a strong incentive to strengthen R&D and innovation policies at the supranational level—since the "multiplier" comes into play. The EU is lagging behind the US in the world innovation landscape, where Asia is rapidly rising. In comparison to the USA, the European starting point is characterized not only by a lower level of R&D investment, a lower R&D intensity and a weaker specialization in high-tech sectors (European commission 2011); the EU is also characterized by a fragmentation of R&D-related policies on national bases. Drawing a parallel with the previous paragraph where the big players have been ranked by country, here (Table 9) we show the big spenders on R&D.

Doing some simple calculations from the data shown in Table 8 (EU-8 = $ 242 billion), and adding all the other European countries will demonstrate that "the EU accounted for 23 % of total global R&D in 2009, down from 27 % in 1999", while "the R&D performed in Asia represented only 24 % of global R&D total in 1999. By 2009, Asia accounted for 32 %, compared to 34 % for North America" (R. Veugelers 2013).

Notwithstanding the competition coming from both the USA and Asia, Europe still has a role to play as one of the world's most innovative economies. Despite the rise of Asia, the EU's share of R&D (23 %) comes in second place just after the USA (32 %), almost doubling both China (12 %) and Japan (11 %). In other words, is there a European potential to be exploited? The reasons for a positive answer lies in the third side of the industrial policy triangle (i.e. technology policy), provided that this side should be shaped as the other two. Hence, the question becomes: Why after a decade of Brussels-based new industrial policy thinking, is the practice still far away from a fully integrated and supranational approach? The answer has many facets and, at least, is due to the fact that:

- The EU budget has remained essentially the same, with a substantial part (almost 40 %) of it still destined to agriculture (common agricultural policy; CAP), in spite of some changes made over the last decades;

- So far, this budget has not been thoroughly reformed, as the "Sapir Report" (Sapir et al. 2003) commissioned by then-President Prodi sought by creating a "Fund for economic growth" amounting to 45 % of the total resources;
- There is still a "missing link in the new EU cohesion package" (Marzinotto 2012)—i.e. the use of EU Structural and Cohesion funds (2014–2020) "to support long-term investment". With the new European Semester process—Bruegel's argument goes—"consistency" should exist not only *across policy* areas but also *across national reform plans*: "A European industrial policy strategy—Benedicta Marzinotto concludes—is what would contribute to enhanced coordination across countries";
- The research and technology policy, while there are important EU programs that deal with it, is mainly carried out by the single member states, each of them with its own research "system" and its own policy for technological innovation (not to mention the further fragmentation of powers between central government and regions that occurs in many countries, Italy among them);
- Although the European Parliament has approved the norms of the "Community patent" regulation, dated 11 December 2012, it is also difficult to reach a final agreement: it will be introduced from 2014 but Italy is currently outside the Community patent system, as well as Spain, both because they are opposed to the only three usable languages (English, French and German);
- The creation of big European infrastructural networks, the *Trans-european Networks* (*TENs*) of President Delors' White Paper (European Commission 1993), has remained a dead letter for many years (decades);
- The Eurobonds, conceived by Delors himself to finance the *TENs* mentioned in the previous item, in spite of several types that have been devised since then,[24] have not yet become part of the *acquis communautaire* (only some minor steps forward have been made).

Combining the seven reasons mentioned above reveals the opposite of the transfer to the supranational level of policies and instruments (starting with R&D) that today are a substantial part of the new industrial policy. We shall look further at research and innovation, and what we can label the "arithmetic of R&D" simply tells us these stylized facts (Table 11 for a summing up):

i. The gap between the USA and the EU for R&D investments, which is known to be 1 % of GDP (the former invests almost 3 % and the latter is skimming 2 %), is big: it was worth—to fix ideas—almost $ 70 billion in 1999, and more than $ 100 billion in 2009;
ii. In one of its most significant quantity targets, the "Lisbon Agenda" (2000–2010) envisaged for the EU a 3 % R&D/GDP ratio by 2010, and the same target has been confirmed by "Europe 2020" (2010–2020);
iii. The "Research Framework Programme", which is the Community's most important tool in this field, was worth respectively € 14.8 billion in its fifth edition

[24] It is worth mentioning, among the most innovative and forward-looking proposals, the one called "EuroUnionBond" put forward by Romano Prodi and Alberto Quadrio Curzio (2011, 2012).

Table 11 Summing up R&D Investments: Global and EU versus USA[a]. (Source: author's elaboration from R. Veugelers (2013, p. 2) and European Commission-DG Research)

	R&D global investment ($ billion)[b]	US share of global investment ($ billion and %)[b]	EU share of global investment ($ billion and %)[b]	EU–US total gap ($ billion)	FP: total commitments ($ billion)[c]	FP: annual commitments ($ billion)[c]	FP commitments/EU–US total gap year-over-year basis for the FP length
1999	641	244 (38%)	173 (27%)	70	17.1 (= €14.8)	4.3 (= €3.7)	4.3/70 → 6,1%
2009	1276	402 (32%)	293 (23%)	109	73.7 (= €55.8)	10.4 (= €7.9)	10.4/109 → 9,6%

FP framework programme

[a] R&D expenditures and FP commitments are nominal, expressed in $, PPP; see: http://stats.oecd.org/Index.aspx?datasetcode=SNA_TABLE4

[b] Veugelers (2013). www.bruegel.org

[c] European Commission-DG Research: for 1999, FP 5 (1998–2002); for 2009, FP 7 (2007–2013)

(1998–2002), € 19.2 billion in its sixth edition (2002–2006) and € 55.8 billion in its seventh edition (2007–2013).

iv. Continuing with our simple arithmetic, we could ask: how many (multiyear) Research Framework Programmes would be needed—even if progressively increased in their budget(s)—to bridge the gap that historically divides the EU from the USA, capable of holding on to leadership in almost all high-tech production? A tentative answer is showed in Table 9;

v. From this to other questions that seek to give the issues a positive flavour: on which other fields, if not those of science and technology, could the long awaited "Centres of European excellence" be built? Centres able to (re)attract hundreds of thousands of young researchers—those that "Time" (2004) called *Europe's Science Stars*—who have abandoned European countries to study and work in the USA. Why not combine, at least in key sectors, the resources (human and financial, public and private) that each member state dedicates to research and higher education undertaken at national level and through national bodies and programmes?

With the creation of authentically European budgets in the field of the so-called—to quote the Commission—"enabling technologies", would there not be a greater probability of inventing something that is really new, thus increasing the return on R&D spending? In this perspective, it does seem difficult to escape the need for an extensive revision of the Union's budget.

The European Commission is right to place R&D-intensive industries—and the most competitive sectors—on a different level because of the fundamental growth-enhancing effects they can have (Aghion et al. 2011). These are industries that often need radical innovations—downright changes of paradigm—considering also that the EU is lagging behind the USA in terms of technological advancements, and in view of the new challenge coming from Asia and from the emerging countries in general—the famous BRICs but not only.

These industries require the implementation of a new industrial policy, like the one summarized by "The Jacquemin–Rodrik Synthesis".

7 Conclusions

At first glance, from 1990 through to early 2000—which at the beginning of this chapter I called a period of "suspension" of the EU's industrial policy—there were certainly some extraordinary achievements in the Union: the 1992-programme for completion of the Single Market; the convergence towards Maastricht criteria and the birth of the euro; the historic enlargement toward the East.

Since the beginning of this century, on closer inspection, it has been possible to sense a change of attitude in a significant part of European elites: a change that has touched upon the economic role of the state. Hence, it is a short step to "Industrial Policy in an Enlarged Europe"—as the first Commission's Communication (2002) stated. The reason of this change is three-fold: Europe's growth problem, which was already under way—as showed by the "Sapir Report"—when the European Commission approved the Communication in December 2002; the great economic crisis in Europe after the 2008 crash; and the pace of technological change in this twenty-first century. In fact, despite significant success at "institutional" level, the EU was not growing and introducing technological innovations in the measure that would have been needed. In some countries—beginning with the largest ones, which are those with the lowest growth rate—the idea began to emerge that attitudes of radical closure towards industrial policy were slowing down the structural transformations rather than fostering them. The European Commission, as we realized when we reviewed events, welcomed this stimulus and this was the context where the new EU industrial policy was sketched.

Whereas at the height of the 1990s there was general consensus about the capability of market forces to find in themselves the most suitable answer to the growth problem, in the last decade a (growing) consensus has emerged for the need of renewed strategic interaction between the public and the private sphere of the economy, between the State and the market. To voice the issue in other terms, the last decade of the twentieth century was one of outdated industrial policy, these decades of the new century have seen its relaunch, although the form differs from that of the past.

Certainly, there may be a rediscovery of the economic role of the state on the condition, we might add, that trade liberalization is not considered an accident of history; the single market a useless device; competition policy and state aid regulations an annoying interference from "Brussels bureaucrats" and so on. In a word: on the condition that the first two sides of the Triangle will be saved.

Of course, both for the internal market (liberalization of public utilities as well as effective opening of other services) and for trade liberalization (barriers still existing in common agricultural policy), there is much to be done and barriers to demolish if a level playing field is really to be created. In general, we can state that we cannot backtrack from what has been achieved: in other words, neither can we return to fragmentation of the single European market by building new barriers (or leaving in place those still in existence), nor can we return to protectionism,

however it may be disguised. What is more: the Union cannot return to a competition policy that is more acquiescent towards firms and states.[25]

Here we open an important page regarding the relationship that Europe has historically developed between industrial policy and competition policy.[26] In Giuliano Amato's words: "The starting point is competition policy, as European policy for building an integrated market, which is a legal and conceptual counter position to industrial policy as a national policy for creating and defending national industry. There was a phase when the two policies cohabited, mainly due to the temporary Europeanization of the latter, then in the 1980s competition policy, an integration tool, clearly prevailed" (Amato 2004). The Treaty of Maastricht arrived in 1992, amending the Treaty of Rome not only—as we well know—on the macroeconomic field (the Monetary Union), but also on the microeconomic front. At the time of the Treaty of Rome, industrial policy was considered the prerogative of a Nation-state (Bianchi 1999). With Maastricht, however, we arrived at the addition of the famous Art. 130, expressly dedicated to "Industry". Of the interpretations that immediately emerged for this new article, Amato embraced what the European Commission had always upheld, that there was no contradiction between competition itself and the policies described in the (new, at that time) Art. 130. He argued: "Basically, if the world has entered our common market, then we have to reposition and measure competitiveness in our businesses not within European boundaries, but within those of global economy. So, here the rules of competition become part of the whole, but they are not self-sufficient for development" (Amato 2004).

Summing up, at present the EU has its own ability to speak with "one voice" in *trade policy*; besides it, *competition policy* is the only other area where the EU has

[25] There would be much to be said about this, even just thinking about European antitrust events in recent years: on one hand the severe decisions taken by the Commission regarding the General Electric-Honeywell merger (not approved) and the Microsoft case (convicted of abusing a dominant position); on the other hand, three Commission decisions against three concentration operations (Airtours/First Choice, Schneider/Legrand, Tetra Laval/Sidel), then overturned by the Court of first instance. The stated aims of competition policy retain their complete validity, fully investigated by juridical doctrine and economic theory: the spreading of private economic power and protection of individual freedom and rights; protection of economic freedom of market competitors; assurance of consumer wellbeing through efficient allocation and production. On 1 May 2004 two new reforms became applicable, giving form and substance to new competition policy: (1) "Antitrust": new Council Regulation No 1/2003 for application of Articles 81 and 82 of the Treaty prohibiting restrictive practices and abuse of dominant positions, replacing a regulation dated 1962; (2) "Merger control": new Council Regulation No 139/2004 controlling concentrations of businesses, reforming the first regulation dated 1989. At that time, alongside these major legislative instruments, there was a further decision that is worth mentioning here. In fact, it is quite significant that the Commission's third Communication on new industrial policy (European Commission 2004a), issued on 20 April 2004, was flanked with another, connected Communication, by the title: "A proactive competition policy for a competitive Europe" (European Commission 2004b). It underlines how "the existence of efficient competition in the EU's internal market contributes in a decisive manner to the competitiveness of European industry since it promotes improvement of productivity and innovation".

[26] The relationship is the core of Giuliano Amato's "Jean Monnet Lecture", delivered at the University of Parma on 26 April 2004, and now published as Chap. 2 in Mosconi (2004).

exclusive competence (apart from the exchange rate of euro[27]). In this paper, a common *technology policy* has been strongly suggested; technology policy that, in turn, should be seen as the essential tool of the new European industrial policy.

In so doing, we understand that we are describing a change, above all, of attitude that is of no small significance, given how many biases still remain toward industrial policy (which until very few years ago was seen as damaging and *passé*). Those same biases, once again until very recently, even went against manufacturing itself, insofar as it was seen as an outdated economic activity that was no longer fashionable. We therefore recall our earlier quotation (see Sect. 10.6) about the "brain-brawn" binomial in manufacturing (Pisano 2011). The time is ripe for a complete re-evaluation of the role of manufacturing and industrial policy: they both matter. Europe, thanks to its traditions, has much to offer in this regard.

Appendix: The EU's Industrial Policy: An Overview

(*Brussels, 10 October 2012*)
Communication from the Commission (COM 2012, p. 582)
A Stronger European Industry for Growth and Economic Recovery—Industrial Policy Communication Update

(*Brussels, 14 October 2011*)
Communication from the Commission (COM 2011, p. 642)
Industrial Policy: Reinforcing competitiveness

(*Brussels, 28 May 2010*)
Communication from the Commission (COM 2010, p. 614)
An Integrated Industrial Policy for the Globalisation Era: Putting Competitiveness and Sustainability at Centre Stage

(*Brussels, 9 May 2010*)
Report to the President of the European Commission, by Mario Monti
A New Strategy for the Single Market (Chap. 3, § 3.7—*The single market and industrial policy*)

(*Brussels, 3 March 2010*)
Communication from the Commission (COM 2010, p. 2020)
Europe 2020. A strategy for smart, sustainable and inclusive growth

[27] When describing Europe as "*Fragmented Power*", André Sapir (2007) mentioned "External monetary affairs", like trade and competition policies, as "an exclusive competence of the Union", even if with "two important qualifications". More in general, in its Report, Bruegel's research team dealt with "the fragmented character of the governance of Europe's external economic policy", coming to this conclusion: "A common *external energy policy* and a *common migratory policy* are 'sine qua non' conditions for the EU to develop solid and healthy relationships with neighbours who possess vast energy and/or human resources that are vital to its security and well-being".

Chap. 2, Flagship Initiative: "An industrial policy for the globalisation era" (pp. 15–16)

> "(…)The Commission … will draw up a framework for a modern industrial policy, to support entrepreneurship, to guide and help industry to become fit to meet these challenges, to promote the competitiveness of Europe's primary, manufacturing and service industries and help them seize the opportunities of globalisation and of the green economy (…)".

(*Brussels, 2002–2007*)
Communication(s) from the Commission

- 2007 (July): Mid-term review of industrial policy
- 2005 (October): Implementing the community Lisbon programme: A policy framework to strengthen EU manufacturing—Towards a more integrated approach for industrial policy
- 2004 (April): Fostering structural change—An industrial policy for an enlarged Europe
- 2003 (November): Some key issues in Europe's competitiveness: Towards an integrated approach
- 2002 (December): Industrial policy in an enlarged Europe.

(*Remark: "Bangemann Communication", Brussels, European Commission 1990*)
Industrial Policy in an Open and Competitive Environment: Guidelines for a Community Approach

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Industrial Policy in a Small Open Economy: The Case of Ireland

Alan W. Gray

1 Introduction

The Irish economy is an interesting case study in the context of the challenges to policymakers given the globalization of the world economy. The country has shown both the potential successes and failures for national strategic planning and highlights the potential role of industrial policy.

To understand the achievements and failures of policies in the Irish economy it is necessary to examine different periods in recent economic history. A useful categorisation is to consider policies prior to 1958, developments up to the late 1990s, the crisis in 2008 and the current position.

2 Failure of Irish Industrial Policy in Period to 1958

In the three decades up to 1958, Ireland had attempted to isolate itself from the globalisation of the international economy and the period was characterised by an inward-looking protectionism, which attempted to support inefficient indigenous industry to focus on import substitution. The result, which could have been predicted by any economist who understood international trade, was one of abject failure. Ireland's economic performance lagged significantly behind other European countries; and rising unemployment, emigration and falling living standards over the period were associated with Ireland becoming the most highly protected economy in Europe.

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3 Success of Industrial Policy Up to the Late 1990s

1958 saw a radical change in Irish economic and industrial policies and the government published a seminal policy paper entitled *Economic Development,* which was spearheaded by a pioneering civil servant called T. K. Whitaker. This changed Irish industrial policy towards an export-oriented economy, which welcomed foreign investment and which provided the foundation for a consistent policy which has remained to this day.

This started with a legislative change in 1958 which permitted foreign investment and in the late 1960s a separate agency called the Industrial Development Authority (IDA) was established to attract external investment.

The change in policy resulted in an export-led strategy based on the attraction of foreign-owned firms and on the development of existing industry and the establishment of industry linkages. The building of backward and forward linkages has meant that while foreign-owned firms were in many cases the driver of industrial policy they also provided a foundation for the development of indigenous industry supplying intermediate goods and services. Interestingly from an academic point of view, it has been suggested by Walsh and Whelan[1] that this new industrial policy was strongly influenced by the economic theories of Hirschman (1958).

In many ways, the success of industrial policy in Ireland is due to the enthusiasm of Ireland's embrace of globalisation. In the early years of the new policy, the adjustment costs were high and many of the traditional industry sectors collapsed. These costs were more than compensated by the benefits of a strategy based on developing modern industries and becoming an export base for companies selling internationally. The positive cumulative impacts of this strategy accelerated significantly in the 1990s, and as a result the Irish economy was seen as a remarkable success.

The new policy was reinforced by a young educated population, Ireland's membership of the European Union (EU), and a growth in world trade. (The growth of an educated workforce was encouraged as early as 1967 when free secondary education was introduced in Ireland and Ireland joined the European Community in 1973.) It was, however, not a period of consistent success and inappropriate fiscal and macro-economic policies in the late 1970s resulted in a crisis in the public finances in the early 1980s. However, even during that period industrial policy was deemed a success and by the late 1990s, Ireland was seen as a poster boy for its economic achievements. Professor Jeffrey Sachs from the Harvard Institute for International Development summed this up well when he noted that:

> During the 1990s, Ireland has been the most successful economy of the European Union, and indeed the fastest growing country among the members of the Organisation for Economic Cooperation and Development (OECD), the association of advanced economies. During 1991–96, Ireland achieved average annual growth in per capital GDP (adjusted for purchasing power parity) of 5.5%, well above the average per capita growth of the other 14 countries of the European Union, 1.7% per year. In 1996, Ireland was one of the fast-

[1] See Walsh and Whelan 2010, pp. 283–299. (Walsh and Whelan also refer to the role played by Professor Louden Ryan of Trinity College, University of Dublin in the adoption of these views).

> est growing economies in the world, with a per capita growth rate of 6.6%. The ratio of employment to the total labour force (sometimes termed the employment rate) also rose, signifying the strong increase in job growth during the same years. The employment rate rose by 2.2 percentage points between 1991 and 1996, compared with an average *fall* in employment rate of 0.7 percentage points in the other 14 European Union economies[2]

The merits of Ireland following an export-focused strategy were fairly obvious given the small scale of the population with fewer than 4 million people and so attempting to build an industrial base on such a small market was never going to enable the level of differentiation and economies of scale required in a globalised world economy. Given that Ireland had a very limited indigenous industrial base, the focus on the need to attract foreign investment was also clear. For more developed countries, which had long histories of industrialisation such as Germany, the UK and the USA, the position was different. In the period up to the late 1990s, the Irish economy expanded rapidly based significantly on the fruits of the industrial policy established four decades earlier.

There have also been various attempts at wider national economic planning. In 1983, a short-lived National Planning Board was established and it published Proposals for Plan in 1984 covering policies for output and employment growth, social policies and institutional changes. However, while various governments have also published national plans, in all of these a core element included a focus on industrial policies as well as taxation and public expenditure.

4 Reasons for Success of Irish Industrial Policy

Any objective assessment of Irish industrial policy over the period post 1958 suggests that it has been very successful and this success has continued through the period of the more recent crisis in the Irish fiscal and banking sectors.

The success of the overall Irish economy in the period to the late 1990s was not solely due to the achievements of Irish industrial policy. The growth in world trade and the fact that convergence is a feature of many economies in the post-war period whereby lower income economies often grow faster than more developed economies also played their part.

The success of the Irish economy up to the 1990s was, however, influenced by the fact that Ireland attracted a high level of inward investment per capita in manufacturing especially from the USA and recorded a rapid growth in investment in internationally traded services. Ireland has managed to secure multiples of the levels of foreign investment of some other EU countries. For example, the stock of US investment in Ireland is many times the level in Greece or Scotland or in countries as diverse as India or the Czech Republic. However, other larger countries both within and outside of the EU have much greater levels of US investment, such as the UK, Switzerland, France and Germany.

[2] Sachs 1997.

In considering what lessons, if any, Irish industrial policy has for other countries, it is necessary to answer the question, raised by Paul Krugman "…why Ireland has been so successful in attracting that foreign investment. What is it about Ireland that has made it so desirable a place for foreign firms to locate?"[3]

The performance of Ireland in attracting foreign direct investment (FDI) is in part simply due to the expansion of US overseas investment in Europe but this does not explain why Ireland has increased its share of this investment so significantly. For example, as Haughton (2008) has indicated "…we still need to ask why US investors steered so much of their investment to Ireland".[4]

The evidence suggests that Ireland has comparative advantages for certain types of FDI, particularly for mobile investment in high-tech manufacturing and in internationally traded services and that a consistent strategy has been implemented. This has been possible due to Ireland's access to European markets, the country's education and skills, an attractive corporate taxation position and the ease of doing business. The demonstration effects of being an early mover are also a factor which should not be underestimated. It is useful to consider the evidence on each of these factors.[5]

5 Ireland's Access to European Markets

Market access is often the first decision made by many multinationals in deciding where to invest. For example, US firms selling into Europe may choose to locate affiliates in a European market instead of attempting to directly export from non-EU markets. This has clear advantages in overcoming tariff barriers and in improving market knowledge and being close to customers. It can reduce journey times and transport costs, although the latter factor is of declining importance.

Because of Ireland's membership of the EU, Ireland scores well on its position of access to European markets. Ireland has a long membership of the EU, which guarantees access to goods and services within the EU and also crucially free mobility of labour. This latter factor is important in ensuring firms can attract the skills they require.

The views of multinationals based in Ireland show that the majority of firms rate Ireland as having strengths or significant strengths on access to European markets. Without such market access an export-oriented industrial strategy could not succeed (Table 1).

The proximity of Ireland to the main markets within the EU has been significant and for some industries servicing markets from very long distances is simply not feasible. This point was made by Paul Krugman where he noted that:

> ….for many industries really long-range, intercontinental trade is still not an option: they still have strong incentives to serve European markets from a European location. So Ireland is not in competition with Asia or Mexico for these industries.[6]

[3] Krugman 1997, p. 43.

[4] Haughton 2008, p. 169.

[5] This analysis is based on a separate study by Gray et al. 2009.

[6] Krugman 1997, p. 47.

Table 1 Foreign firms rating of Ireland on access to markets. (Source: Indecon Survey of Foreign-Owned Companies in Ireland, Quoted in Gray et al. 2009)

	Significant strength	Strength	Neither strength nor weakness	Weakness	Significant weakness
Access to European markets	39.8	42.6	17.6	0.0	0.0

Ireland's industrial policy has in recent years also attracted inward investment in internationally traded services. These services are less dependent on transport costs or size of domestic markets. The education of the Irish labour force and Ireland's time zones, as well as the availability of professional services and English language employees has underpinned this strategy.

6 Investment in a Skilled Labour Force

A feature of Irish economic policy has been the investment made in education. The basis for the success of any country fundamentally relates to the core resources of people and labour force skills. The quality of the labour force requires what is called "absorptive capacity" and the ability to produce a wide range of products and services.

The skills of the labour force and the quality of research and development (R&D) are also components on a high-tech industrial policy. While the interaction between knowledge which is embodied in the R&D infrastructure of any country and foreign investment is indirect, it is nonetheless important. Appropriate graduate education has a special role in the comparative advantage for certain industry sectors. The ability of overseas investors to attract inward skills from other regions or counties is also important and may have been a critical factor in the success of Irish industrial policy. While countries might wish to restrict immigration in order to attempt to keep a higher percentage of jobs for the existing population, this can be counterproductive. In this context, it will be interesting to see what impact the recent restrictions on immigration have on investment in Singapore. In Ireland's case, the free mobility of labour within the European Community has meant a readily available access to a wider labour force pool. Access to an integrated European labour market of the 27 member states with a population of over 500 million and the fact that many potential employees see Ireland as an attractive place to live, mean that skill needs can be met.

Given the levels of education and access to a young and flexible labour force, it is not surprising that a majority of multinationals rate these factors as strengths of location in Ireland. The majority of multinational firms in Ireland rated labour force skills and education as strengths of location in Ireland, however ongoing reforms are needed (Table 2).

The lessons for other countries in considering pursuing a similar industrial policy are to ensure that the demographics and skills of the available labour force are sufficient to provide a basis for the type of sectors which are being targeted.

Table 2 Foreign firms rating on education, labour force skills and research and development. (Source: Indecon Survey of Foreign-Owned Companies in Ireland, Quoted in Gray et al. 2009)

	Significant strength	Strength	Neither strength nor weakness	Weakness	Significant weakness
Skilled employees	34.3	55.6	10.2	0.0	0.0
Flexible labour Force	32.4	50.0	10.2	7.4	0.0
Creativity and imagination of Irish people	13.8	59.6	24.8	1.8	0.0
Quality of universities	17.6	49.1	28.7	4.6	0.0
Quality of research and development	5.6	43.9	30.8	17.8	1.9

7 Comparative Costs

Regardless of other advantages, productivity and cost competitiveness are a core part of the evaluation of a country's comparative advantage; and in considering the role of industrial policy or national strategic planning, the issue of how to maintain cost competitiveness should be considered. This is reinforced by a review of the Irish experience.

Increases in relative costs can reduce the attractiveness of a location for foreign investment and indeed rapid cost increases are not sustainable if a country or region wishes to maintain its economic performance. This was highlighted by McAleese (2008) when in discussing the Irish economy he warned that:

> An adverse movement in a region's cost competitiveness cannot be indefinitely sustained. As regional prices increase, the region's cost structure will become more and more out of line with its competitors. It will begin to lose export markets and will become less attractive as a location for investment. Eventually growth will slow, labour demand will decline and pay pressures will ease.[7]

With the very rapid economic growth in Ireland and with inappropriate macro-economic policies in the period 2000–2008, costs escalated in Ireland and the success of fast growth undermined the sustainability of the strategy. Since then significant positive adjustments have been made but this highlights the need to ensure that industrial policy is not considered in isolation from other policy developments. The evidence indicates that reflecting the exceptionally rapid growth in the Irish economy in recent years, Ireland's unit labour costs had until recently accelerated much faster than average for the EU. This represented a deterioration in one important area of Ireland's comparative position for inward foreign investment and could have undermined the industrial strategy. However, recently this position has been reversed and Ireland has recorded significant gains in competitiveness. In Ireland, a speculative housing bubble also damaged the industrial policy objectives but with the inevitable crash in the housing sector, property prices are now low compared to many European countries.

[7] McAleese 2008, p. 52.

8 Taxation

The taxation treatment of foreign investment is an area which is currently generating major international debate and is of importance in influencing posttax financial returns. Taxation and industrial policy are of course fundamentally interlinked. Ireland has a long history of offering an attractive level of corporate tax to inward investors and currently has a low level of corporate taxation at 12.5%. Without other advantages this would not be sufficient to attract most investment projects but it would be naive to assume that a country can attract investment unless it offers competitive fiscal terms.

The corporate tax on foreign investment is a complex factor as different rates may apply to trading and non-trading income. Also relevant is the treatment of trading losses in any accounting period. The details of this can be important and include issues such as the extent to which any trading losses not used against trading income can be converted or not into credits which may be used to reduce tax on positive income and chargeable gains.

The nature and existence of any double taxation treaties impact on the after tax cost of capital. Foreign investors are not interested in reducing corporate tax in one location simply to be exposed to tax liabilities in another. The choice of location for mobile foreign investment is therefore frequently limited to tax treaty partner countries and of importance is how foreign tax credit pooling rules change any offsets against corporation tax. Ireland has comprehensive double tax agreements which are ratified with 48 countries.

Ireland is not seen by the OECD or by partner countries as a tax haven and has a corporate tax system that is transparent. Ireland also has a willingness to exchange information with tax administrations of OECD member countries. Despite this, an issue arises of whether Ireland is a tax haven.

A recent research paper[8] concluded that:

> Ireland does not meet any of the OECD criteria for being a tax haven. But because of its 12.5 per cent corporation tax rate, and strong flows of FDI, Ireland has on a few occasions been incorrectly labelled as having characteristics similar to a tax haven.

It also pointed out that:

> Ireland is on the OECD/G-20 white list of countries published in April 2009 and has since been subject to peer-review under the *Global Forum on Transparency and Exchange of Information for Tax Purposes* process to implement robust standards on exchange of information.

There have, however, been debates both internationally and in Ireland about the fairness of corporate taxes in Ireland and in other countries. In the recent 2013 Budget, the Minister for Finance indicated that the developments of global responses to corporate taxation through the OECD Base Erosion and Profit Shifting project is one in which Ireland is playing an active part. The Minister also published a new international tax strategy statement that sets out Ireland's objectives and commitments

[8] Tobin and Walsh 2013, pp. 401–424.

Table 3 Foreign firms rating of Ireland on taxation. (Source: Indecon Survey of Foreign-Owned Companies in Ireland, Quoted in Gray et al. 2009)

	Significant strength	Strength	Neither strength nor weakness	Weakness	Significant weakness
Comparative corporate tax rate	62.4	33.9	2.8	0.9	0.0
Fact that Ireland is not a tax haven	15.7	50.9	30.6	2.8	0.0

and indicated a change in the Finance Bill to ensure that Irish registered companies cannot be "stateless" in terms of their place of tax residency.

The evidence on Ireland's comparative strength in taxation is reflected in the views of foreign-owned firms where the corporate tax rate and the fact that Ireland is not a tax haven are seen as significant strengths (Table 3).

9 Ease of Doing Business

As noted earlier in this chapter, Ireland has followed an industrial policy strategy which is fundamentally based on providing a platform to export to other countries. Clearly such a strategy would fail if it was difficult to do business in the country or if it was easier to base operations in other countries.

For firms located in Europe there are three components of ease of doing business which merits particular attention, namely, the existence of an English speaking population, the availability of professional support services and the administrative ease of doing business.

The major source of direct foreign investment to Ireland is from the USA or from other English-speaking countries. This provides a frequently underestimated source of comparative advantage. An attempt to measure the significance of a common language was made in a paper by Anderson and Van Wincoop (2004) on Trade Costs. They refer to estimates from Eaton and Kortum (2002) and Hummels et al. (2001) involving language-related barriers. Both of these authors use a quantified approach to test the significance if two countries have a common language. Anderson and Van Wincoop indicate that results from both papers imply a tax equivalent cost associated with speaking different languages of about 7 %. For other countries considering pursuing an industrial strategy with a dependence on foreign investment the issue of how to compete with the advantage of an English language location may be an issue. For non-English-speaking countries it is sometimes difficult to compensate for this, however, this may depend on the targeted source markets for investment and the export markets involved.

The impact of an English speaking population as an advantage for FDI is even more significant than the direct cost benefits. For example, it has been pointed out that:

> Ireland is the only country in the European Union apart from Britain which is English speaking. Given the importance of US foreign investment and the question mark which hung over the commitment of the UK to aspects of European integration, this has placed

> Ireland in a unique position….This advantage has long been appreciated by business but may not have been given sufficient weight in economic analysis.[9]

Ireland also has a shared culture with the USA which facilitates investment to Ireland. The cultural similarities and contacts open doors to decision makers in multinationals; and from an investor's point of view, the cultural familiarity reduces risks and misunderstanding, and in general makes life easier. It also facilitates the attraction of skilled employees from other countries.

The availability of quality professional support services including accounting, taxation, legal and IT supports influence the experience of doing business in different locations. For some projects the availability of high-quality services can be a major issue and sufficient clusters of support services can be a source of comparative advantage. The availability of high-quality legal, accounting and professional support services is a strength in Ireland, although ensuring that they are cost competitive remains an issue.

The administrative ease of doing business is, in part, an issue of culture but is also determined by the levels of business freedoms, the equality of treatment of indigenous and foreign investment and the administrative ease in starting a business in the country. World Bank estimates suggest that of the 183 countries reviewed, Ireland is the seventh best country in the world in terms of ease of doing business. Within the 27 countries of EU, Ireland is rated as one of the top three countries on rankings of ease of doing business. In terms of the welcome and equality of treatment of foreign investment and indigenous investment, independent rankings rate Ireland as by far the best country within the EU27. Ireland is rated as the best EU country in terms of ease of starting a business. Ireland has the highest independent rating in Europe on the welcome given to foreign-owned investments and this is dramatically higher than in some competitor countries. On the key issue of the openness of business legislation impacting on foreign investors, independent estimates gives Ireland the best ranking of any of the 58 countries examined.

10 Early Mover Advantage

One of the factors which is sometimes underestimated in developing new industrial strategies is how long it takes to build a market position and the inherent benefits of early mover advantages. The positive effects from a track record of successfully attracting FDI represent a reputational advantage for any host country. As noted earlier, Ireland has a consistent approach to attracting foreign investment for over 50 years. To paraphrase the words of Dermot McAleese, Ireland's approach to foreign investment involved an early embracing of a policy of welcoming rather than restricting overseas investment. For example, McAleese indicated that:

> The Irish government was an early convert to the free trade and foreign investment component of the new consensus. The IDA was rolling out the red carpet to foreign investors in

[9] Gray 1997a, p. xx.

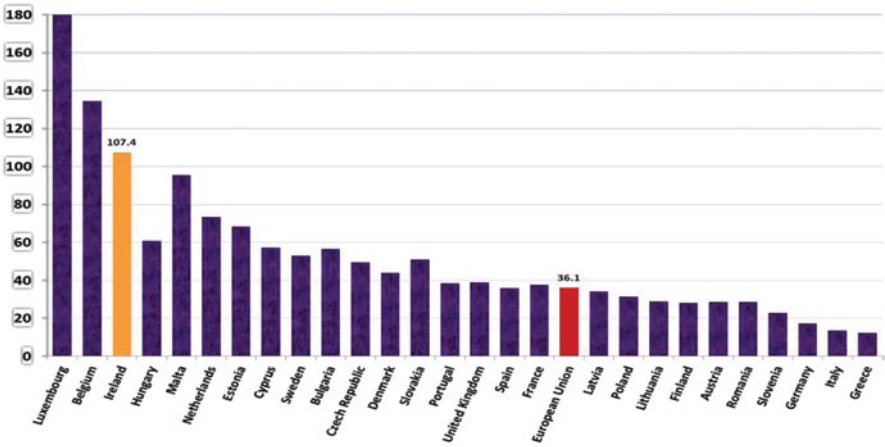

Fig. 1 Comparative role of FDI across EU economies—Inward FDI stock as % of GDP—Annual Average—1998–2012. (Source: UNCTAD, FDI statistics ©)

> the 1950s at a time when most other countries were rolling out the red tape, we have been enjoying 'first mover' advantages ever since.[10]

Ireland's positive demonstration effect may have resulted in a self-reinforcing process of building on early successes. This is consistent with work undertaken by Krugman on spatial models of economic geography. Krugman (1992) presented a model which considers multiple agglomerations and their spatial relationships. This suggests that starting with a given allocation of manufacturing workers in different locations there is what Krugman refers to as "a process of reinforcement of initial advantage".[11] This may suggest that a country such as Ireland which starts with a large share of multinational investment projects is able to attract still more projects.

Figure 1 provides evidence of the comparative importance of FDI to the Irish economy within the context of the EU. Measured over the period 1998–2012, Ireland has ranked in third position within the EU in terms of the scale of the inward FDI stock relative to gross domestic product (GDP), or in second place if one excludes Luxembourg from the comparison. In particular, Ireland's FDI stock was equivalent to 107.4% of GDP on average compared with an average among EU Member States of 36.1% over this period, highlighting the relative importance of FDI to the Irish economy. However, this refers to the levels accumulated over many years.

A more balanced view might be seen from looking at annual data. The data on job creation by FDI into Europe for this more focused group of mobile investment projects are presented in the Table 4. This suggests that Ireland secured 5.2% of the flows of new investment in 2012. Ireland's share of the high-tech sectors may be even higher. For example, some of the important sectors for FDI into Europe

[10] McAleese 1997, p. 14.

[11] Krugman 1992, p. 35.

Table 4 Job creation by FDI into Europe. (Source: Ernst & Young European Investment Monitor 2013 ©)

Rank 2012	Country	Jobs created in 2012	Market share 2012 (%)
1	United Kingdom	30,311	17.8
2	Russia	13,298	7.8
3	Poland	13,111	7.7
4	Germany	12,508	7.3
5	France	10,542	6.2
6	Serbia	10,302	6.0
7	Turkey	10,146	6.0
8	Spain	10,114	5.9
9	Ireland	8,898	5.2
10	Romania	7,114	4.2
11	Slovakia	6,299	3.7
12	Czech Republic	5,508	3.2
13	Macedonia	4,670	2.7
14	Bulgaria	4,379	2.6
15	Hungary	3,941	2.3
	Others	19,235	11.3

such as automotive, categories of machinery and equipment, agriculture, etc., may require location in countries with larger domestic markets and so may not be a relevant target markets for FDI to Ireland.

11 Crisis in Irish Economy Post 2008

The international financial crisis, which commenced in 2007 and became a fully fledged economic and financial collapse by autumn 2008, had a particularly severe impact on the small Irish economy. This exposed problems which had been building up in the previous 8–10 years. This resulted in a crisis in the public finances and a major collapse in the property market and in the banking sector. These were all interlinked as taxation in Ireland had become very dependent on revenues raised from stamp duty and value-added tax (VAT) on new house building and on property sales. When an over-inflated property market collapsed, the impact on Ireland's public finances was immediate. The Irish banking sector had also become heavily dependent on international credit markets who lent to Irish financial institutions at very low rates. When the international financial market crisis occurred this resulted in what was initially seen as a liquidity crisis for the Irish banks. However, much more damaging was that due to its dependence on the property sector, it became clear that the Irish banking sector had in fact experienced a solvency crisis which resulted ultimately in very heavy exposures for the Irish Exchequer and led to Ireland needing a bailout from the International Monetary Fund (IMF)/EU.

At its core, this crisis was due to a gross underestimation of risk by bankers, regulators and policymakers and even by many economists including the author.

The extent to which the property market was overpriced and too large for the Irish economy was not fully understood. The problems were accentuated by inappropriately based tax incentives, a rapid growth in public expenditure and a loss in the cost competitiveness of the Irish economy. Writing now at mid 2014 much progress has been made in responding to this crisis and Ireland has now exited the IMF/EU bail out at the end of this year. Cost competitiveness has been significantly improved, the budget deficit reduced, the banking sector recapitalised and structural changes made to the economy. This has, however, come at great cost and pain to the Irish people and unemployment remains at very high levels although unemployment is now starting to fall. Government and personal debt remain at unsustainable levels and there is significant validity in the view that Ireland has paid too high a price for the structural faults in the design of the Euro and in supporting the stability of the European financial sector.

However, despite the various crises which the Irish economy has experienced, industrial policy has been consistent over a very long period and this has brought with it many successes. It is therefore useful to look at current industrial strategy in more detail.

12 Current Irish Industrial Strategy

Current Irish industrial policy involves a number of new innovations and changes in sectoral priorities but remains largely the same as has been consistently pursued over five decades. Indeed, this consistency is one of the advantages of Irish policy which has resulted in exceptional success. At its core it has involved the incentivisation of export-oriented multinational companies and the development of indigenous exporting firms.

The most recent policy statement relating to the foreign-owned sector for IDA Ireland was set out in March 2010 and was referred to as Horizon 2020. The Plan set specific targets for foreign investment aspects of industrial policy over the period 2010–2014 as follows:

- 105,000 new jobs
- 640 investments
- 20 % of greenfield investments originating from energy markets by 2014
- Annual spend by overseas firms of € 1.7 billion in research and innovation by 2014.

The sectors which are the focus for current industrial policy in Ireland for overseas investment are outlined in the Table 5.

In previous periods the sectoral strategy focused on different industries. This is not surprising as many of the current leading high-tech companies in areas such as information and communications technology did not exist 30 years ago. Sectors such as financial services were also not a focus of industrial strategy until the 1980s. In the early years of Irish industrial development, the sectoral priorities included

Table 5 Sectoral focus for inward investment to Ireland. (Source: Horizon 2020 IDA Ireland Strategy)

Life sciences
Pharma and biopharma
Medical devices
Information and communications technology
Financial services
Content industry, consumer and business services
Diversified industries and engineering
Clean technologies

sectors such as textiles and clothing, which now do not figure in the sectoral priorities. In general, however, Ireland has not pursued differential incentive schemes on a sectoral basis and all international traded sectors are eligible for similar incentives.

As noted earlier, Irish industrial policy has also involved a focus on developing Irish-owned indigenous businesses. The specific policies aimed at assisting indigenous firms have included supporting via advice and financial incentives companies to internationalise and develop export markets. In recent years, there has been an emphasis on building R&D and innovation capabilities in firms by developing technology centres and providing in-company R&D supports including tax credits for R&D. Policy has also assisted start-up companies and scaling companies to achieve their potential.

The assistance to companies has involved providing equity support. This has included investing in a series of Angle, Seed and Venture Funds including Development Capital Funds which underpin the availability of private equity.

The strategy set out by the government agency Enterprise Ireland over the period 2011–2013 set specific targets as outlined in Table 6 below.

13 Conclusions and Lessons for Other Countries

Irish industry policy changed radically at the end of the 1950s and since that time the core elements of policy have been consistently applied. This has involved a combination of attracting foreign-owned exporting firms to locate in Ireland while also developing indigenous businesses focused on international markets. The policy has shown impressive results and highlights the merits of the implementation of a national strategic plan based on embracing the globalisation of the world economy and building on comparative advantages. Challenges, however, remain including how to strengthen linkages between indigenous and foreign firms and how to retain Ireland's comparative advantages.

The evidence from Ireland also demonstrates that industrial policy does not operate in a vacuum; and inappropriate macro-economic, financial or banking policies can undermine the success of an effective industrial strategy, and turn a success story into an abject failure.

It is also clear that a highly skilled labour force supported by investment in education and by an integrated large labour market is an essential building block to a successful industrial policy.

Table 6 For Irish-owned firms 2011–2013. (Source: Enterprise Ireland Strategy 2011–2013)

Key targets	By 2013
Total export sales	€ 15.5 billion
New jobs	36,000
Innovation targets	
Clients engaged in meaningful R&D (€ 100,000 spend per annum)	800
Clients engaged in significant R&D (€ 2 million spend per annum)	60
New HPSUs and scaling targets	
Innovative HPSUs	285
Clients achieving annual global sales of € 20 million	225
Competitiveness target	
Value-added per employee	+20 %

HPSUs high-potential start ups

The levels of competitiveness and the openness of an economy to the international markets are also key conditions for a successful strategy. Ireland has in certain periods not paid enough attention to competitiveness although in the past number of years noteworthy gains in competitiveness have been made.

Economies and national strategy do not operate in isolation from other aspects of society and this must not be forgotten in judging whether policies will be successful or not. As Kenneth Arrow noted:

> Comparisons of nations with very different rates of economic growth have made clear the great importance of the workings of political and economic institutions. Differences in the extent to which property rights are respected, the rule of law (permitting predictability in returns), and freedom from corruption, lead to large differences in growth rates.[12]

Does this mean that other countries if they have a sound macro-economic and fiscal policies and a large highly skilled labour force can replicate the success of Irish industrial policy? The answer is maybe, but a number of other preconditions are required. These as noted above include a competitive cost base, an openness to the world economy and the institutional preconditions for growth. Even then success is not guaranteed as appropriate incentives are required and fundamentally easy access to key markets is needed. It must also be simple to do business in the host country and Ireland's English language context is a contributor to this. Finally, "overnight success" only can be achieved after many years of consistent policy and it has taken Ireland over five decades to build its industrial base.

Recent data[13] for 2012 report that Ireland's enterprise development agencies cumulatively created nearly 9,000 net jobs in 2012. Total permanent full-time employment in agency-assisted companies operating in all sectors amounted to 294,785 in 2012, a net increase of 8,975 jobs on employment levels in 2011, and continues the trend of positive growth in employment.

Total full-time employment among Irish-owned companies amounted to 144,964 in 2012, an increase of 3,228 jobs on the previous year. Among foreign-owned

[12] Arrow 1997, p. 7.

[13] Forfás Annual Employment Survey 2012.

companies, total full-time employment amounted to 149,821 in 2012, an increase of 5,747 on the previous year. Foreign-owned part-time employment also increased, by almost 600 jobs in 2012, whilst Irish-owned part-time employment levels increased marginally.

However, despite the successes of Irish industrial policy there are vulnerabilities for Ireland and the sectoral and market focus are continually changing. Competition for foreign investment remains intense and the large developed countries retain an advantage due to market access. Ireland also faces challenges from many locations both inside and outside the EU including from countries as diverse as Israel and Switzerland.

This article, however, suggests that a consistent and well designed industrial policy can be of key importance to economic success but that countries need to continually adapt. Even the best national industrial strategies can be undermined by inappropriate macro-economic policies.

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The State and the Development of High Technology Sectors in Israel

Paul Rivlin

1 Introduction

The development of high technology (hi-tech) has been Israel's success story: it has been the main source of economic growth in the last 20 years and there is much optimism about its future. Between 1990 and 2012 hi-tech exports rose tenfold and their share in total industrial exports rose from 30 % in 1990 to 47 % in their peak year of 2011. This chapter analyses the role of the state in this achievement.

Israel has moved, since its creation in 1948, from a highly controlled economy with dominant state sector to a much more market orientated one (Rivlin 2011). Planning was used in the early years of the state in an indicative way, but this has disappeared since the 1960s (Nove 1987).

The hi-tech sector embodies this change with its reliance on foreign capital, ununionized labor, and private initiative. However, the state has played a very important role in the development of the sector (Breznitz 2011). This is also true of other countries**.**

Government support has been both direct and indirect. Direct support included a series of policies designed to encourage the civilian, private sector to develop with emphasis on research and development (R&D). In addition, emphasis placed on technology in the Israeli military.

2 Background

Israel had a number of background factors that contributed to the development of hi-tech. These included the emphasis on technological education in the Jewish community in Palestine prior to the creation of the state. Immigration from Europe,

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Table 1 Manufactured exports by technology intensity, 1990–2012 ($ millions)[a] (Source: Central Bureau of Statistics, Statistical Abstract of Israel 2011, 2012)

	Low technology	Medium low technology	Medium high technology	High technology	Total
1990	1,492	1,537	2,390	2,278	7,697
1995	1,823	2,542	3,388	4,549	12,302
2000	1,812	3,171	4,833	11,188	21,005
2005	2,087	4,751	6,962	11,767	25,566
2011	2,272	7,780	14,183	21,517	45,752
2012	2,129	7,123	14,026	20,981	44,263

[a] Industries are by the amount of capital equipment per worker and the age of the capital stock

North America, and later from the Soviet Union and its successor states brought scientifically and technologically trained manpower to Israel. The defense effort since1967 has involved close cooperation with the USA that facilitated technology transfer, learning by doing, and the fostering of business connections in hi-tech.

Hi-tech (as included in Table 1) includes office and computing equipment, electronic components, aircraft, and electronic communication equipment, equipment for control and supervision, and pharmaceuticals. Medium hi-tech industries are chemicals and petroleum refining, machinery and equipment, electronic equipment and electrical motors, and transport equipment. Medium low technology industries are mining and quarrying, rubber and plastics, nonmetallic mineral products, basic metals, ships and boats, and jewelry and silversmiths articles. Low technology industries are food products, beverages and tobacco, textiles, wearing apparel and leather, paper, printing, and wood products.

As the hi-tech sector developed in the 1990s, especially in telecommunications and computers, Israel's output and exports of these and related products expanded rapidly. Although the share of manufacturing industries in gross domestic product (GDP) declined, there was rapid structural change within that sector. Between 1995 and 2012, total manufacturing production rose by 75 % while that of hi-tech industries increased 3.33-fold.[1]

Some of the hi-tech companies that were sold to large US corporations had relatively few employees and, as was customary, payments to employees included options to buy shares. As a result of the sale of these companies, a number of employees, some of whom had been in employment for only a few years or less, received millions of dollars in shares or cash. The owners or founders of these companies did even better. This had effects on the distribution of wealth and income and thus on consumption patterns.

Employment as well as wages rose much faster in hi-tech than elsewhere in the economy. As the hi-tech labor force was more skilled than those in other sector, it was better paid, partly because the labor market for highly skilled workers is international. In periods of fast growth, there were shortages of skilled labor and hi-tech

[1] Calculated from Central Bureau of Statistics, Annual Bulletin of Statistics, Jerusalem, 2005, 2013.

firms bid workers away from each other by increasing wages. This further increased average pay in the sector and pushed it above levels paid elsewhere in the economy.

There are several explanations of Israel's technological success. The first is that it was a response to adversity. The country has experienced wars and boycotts since its foundation and has had to develop technology in order to survive. The defense relationship with the USA has given Israel access to technology from the most sophisticated economy in the world and close business links have developed as a result. Israel has a very informal culture—the Zionist socialists rebelled against the formality of life in Europe—and some say that its management culture in both the civilian and military sectors are influenced by this (Senor and Singer 2009; see section on defense below). The second is that emphasis has been put on education, including scientific and technological training at the higher level. Another is that government policy has been successful mainly because of its pragmatism. The hi-tech sector is the most globalized in the economy. It had its origins in import substitution applied to the defense sector and to government involvement more generally. It was closely connected to developments in Israeli defense policy and in government investments made in academic research and other research. In 1948, Israel Defense Forces (IDF) established the Science Corps charged with developing weapons and equipment for the IDF. In the 1950s, military industry developed to provide for the country's needs for armaments and technologies which it could not obtain from abroad. Israel had the best institutions of education and scientific research in the Middle East: two technological universities: the Technion, the Israel Institute of Technology in Haifa (founded in 1924), and the post-graduate Weizmann Institute of Science in Rehovot (founded in 1933). In addition, Israel now has five other universities and numerous degree-awarding colleges. In the early 1960s, Israel set up two nuclear research plants.

One of the most important factors in enabling Israel to develop hi-tech was the willingness to experiment. In a country that has always been at war and has experienced many years of shortages, the need to devise ad hoc solutions has become second nature. This was particularly true in the IDF and the military industries and has permeated all sectors of the economy. The "hands-on" approach is the essence of learning by doing, ultimately a significant source of economic growth (Arrow 1962).

Israel imported military and civilian equipment but seldom bought "turn-key" projects. The aim was always to learn how to operate equipment, to train Israeli personnel and often to improve what was acquired abroad, to adapt it to local conditions and needs.

3 Hi-tech and R&D Policy

By the 1960s, most R&D was carried out in the public sector. Since then, the private sector has played an increasing role. Output was concentrated first in information and communications technology (ICT) hardware and then in ICT software. The aim

of R&D was to create new products and the government saw the private sector as the main agent for carrying out these activities. It confined itself to providing funds, encouraging the diffusion of know-how from the military and the universities to the private sector.

Israel has achieved a comparative advantage in R&D based on development in defense and academic institutions. The government's focus on the enhancement of technological cutting-edge capabilities enabled firms to develop new products. This made it possible for Israeli information technology companies to supply the rest of the world initially in hardware and then in software. The government encouraged public–private sector cooperation and links with foreign firms when appropriate. All this was made possible by investments in education, the encouragement of R&D in the defense sector and policies that gave high priority to science and technology. This was partly facilitated by the informal but close links that existed between key political leaders and the scientific and technological elite.

In 1968, the Office of the Chief Scientist (OCS) the Ministry of Trade and Industry was given a budget to invest in R&D in the public and private sectors. This was a turning point in the development of the hi-tech industry.

Until the late-1960s, support was confined to National R&D laboratories, academic R&D, defense-related R&D and agricultural research. Between 1969 and 1987, as a result of the new impetus, industrial R&D expenditures grew at 14% per year. The next major development was the passing in 1984 of the Law for the Encouragement of Industrial Research and Development. This has been the main piece of legislation that has defined government policy towards industrial R&D ever since. The aims of the law were to develop science-based, export-oriented industries, which would promote employment and improve the balance of payments. In order to do this, the legislation was designed to provide the financial means to expand and exploit the country's technological and scientific infrastructure including its high-skilled human resources. In recent years government funding has declined from a peak of $520 million in 2001 to $400 million in 2011.[2]

The OCS's largest program was based on grants. Qualifying firms submitted grant applications for specific R&D projects and if they were approved (about 70% were) the applicants received a grant of up to 50% of the R&D budget for the project. Recipients had to be executed by the applying firm itself; the product(s) that emerged from the R&D project had to be manufactured in Israel and the know-how acquired in the course of the R&D could not be transferred to third parties. By the early 1990s, it became clear to policy-makers that the industrial landscape in Israel was too fragmented and the companies created were too small to be able to meet the escalating costs of developing new technologies.

In 1975, Israel and the USA signed a free-trade agreement and in 1976, the two governments set up the Bi-national Industrial Research and Development (BIRD), with an endowment of $110 million that reached $243 million in 2012.[3]

[2] see Office of the Chief Scientist, Ministry of Industry, Trade and Employment, Program to support Research and Development, 2011–2013.

[3] See Israel–US Bilateral Industrial Research and Development Foundation (BIRD) Annual Report 2012.

BIRD's aim was to encourage cooperation between Israeli and US companies to jointly develop and market new products. Over time it brought many Israeli and US firms together: by 2011 it had approved 845 projects, provided $295 million in grants, and its investments had yielded $4.5 billion in sales.[4] Israel has concluded similar agreements with a number of other countries and the government has been very active in fostering technological cooperation overseas especially with the European Union. In December 2013 was elected a full member of CERN, the European Organization for Nuclear Research, and is the only non-European full member.

Since the 1990s, an increasing volume of funds have been raised from venture capitalists in the USA and Israel. This was made possible by the maturity of the hi-tech industry, the stability of the economy, the globalization of international capital markets as well as government programs directed towards the venture capital (VC) sector.

While Israel had world-class research universities, they operated largely in isolation from industry and its needs, and hence the economic potential embedded both in the highly qualified academic manpower and research remained largely untapped. In 1993, the OCS established the "Magnet" Program, to support the formation of joint projects by industrial firms and academic institutions in order to develop generic, precompetitive technologies. These consortia were entitled to multiyear support (usually 3–5 years), consisting of grants equal to 66% the total approved R&D budget, with no recoupment requirement. The consortia had to be comprised of the widest possible group of industrial members operating in the field, along with Israeli academic institutions.

4 Inbal

The Inbal Program, launched in 1990–1991 was the first attempt to stimulate VC[5] by guaranteeing the downside of their investments. This was done by a government insurance company that provided a 70% guarantee to VC funds traded on the Tel Aviv stock exchange. Four funds were established but they and the Inbal program as a whole were not successful. Stock market fund valuations in the were low and the funds encountered bureaucratic problems. In addition, publicly traded VCs has greater difficulty in exploiting reputation earned from early exits to increase eventually all of Inbal-linked funds left the program, which were merged into other investment/holding companies. There was no mechanism for drawing professional VC agents into the program; it did not generate other investors and partners with adding value capabilities; and it was exposed to stock market weaknesses and short-term thinking. The lessons were learned: the difficulty in publicly traded VCs of having investors contribute to the operation of the fund; greater difficulty to rapidly ex-

[4] See Israel–US Bilateral Industrial Research and Development Foundation (BIRD) Annual Report 2011.

[5] Venture capital (VC) is *financial capital* provided to early-stage, high-potential, high risk startups. It makes money by owning *equity* in the companies that it invests in.

ploit the reputation earned from early successful exits in order to raise new capital, limits on decisions-making flexibility and on management compensation; and the absence of incentives for the "upside" (an important factor in attracting professional VC partners and investors). The indirect contribution of Inbal to the design and implementation of a successful VC policy was however significant and influenced Yozma's selection of limited partnership as the form of organization and the focus on the early stages of investment.

5 Yozma 1993–2000

Yozma (Hebrew for "initiative''), was a government initiative, that began in 1963, offering attractive tax incentives to foreign VC investments in Israel and promising to double any investment with funds from the government. As a result of their efforts, Israel's annual VC outlays rose nearly 60-fold, from $58 million in 1991 to $3.3 billion in 2000. The number of companies launched using Israeli venture funds rose from 100 to 800. Israel's information-technology revenues rose from $1.6 billion to $12.5 billion. By 1999, Israel ranked second only to the USA in invested private-equity capital as a share of GDP.

Four factors account for Yozma's success in becoming an effective trigger of Israel's ICT sector. The first was the favorable background including the industrial R&D support program; the restructuring of military industries (the cancellation of the Lavie jet fighter in 1987 released many skilled workers from Israel Aircraft Industries and other companies), the highly educated immigration for the former Soviet Union and new global innovation opportunities opened by the ICT revolution. These, together with a cultural shift in which entrepreneurship was increasingly considered prestigious in Israel generated a spurt of startup activity during the early 1990s. Second was policy experimentation in the period leading up to its introduction (see Inbal above). Third, was timing—the overlap between Yozma's implementation and the rising Nasdaq index and expanding market for ICT on the other hand; and last the successful design and implementation of the Yozma program.

6 Incubators

In 1991, when immigration from the former Soviet Union reached its peak, the OCS started the Technological Incubators Program. The incubators were organizations that gave new entrepreneurs a chance to develop innovative technological ideas and set up new businesses to commercialize them.

While many new immigrants were scientists and skilled professionals with valuable human capital as well as with plenty of ideas for innovative products.

They lacked most of the other skills required for commercial success—knowledge of the relevant languages, western commercial practices, and managerial skills.

They also lacked access to capital. Even though it targeted new immigrants, the program was open to all. The goal of the incubators was to support new entrepreneurs during the earliest stage, and help them implement their ideas and form new business ventures. The premise was that the technological incubator would enhance the entrepreneur's prospects of raising further capital, finding strategic partners, and emerging from the incubator with businesses that could stand on their own. The initial stage is the riskiest, and in the early 1990s there were virtually no other sources of finance in Israel for such ventures. Since then there has been a growing influx of VC, and hence it may well be that the purely risk-sharing function undertaken by this program may be less critical at present than what it was at its inception.

Each incubator was designed to handle 10–15 projects simultaneously, and provided assistance in determining technological and marketing applicability of the idea, drawing up an R&D plan and organizing the R&D team.

Between 1991 and 1998, the incubators managed nearly 700 projects, of which about 200 were still running as of December 1998 in 27 incubators across the country (Trajtenberg 2000).

Secondary goals of the program were to promote R&D activity in peripheral areas and in Israel's Arab community; to create investment opportunities for the private sector, including venture capitalists; to transfer technologies from research institutes to industry and to enhance entrepreneurship.

In 2013, there were 22 incubators, spread all across Israel including eight in peripheral areas. There are approximately 180 companies in various stages of R&D that operate in the incubators at any given time.

The incubation term of a project in a technological incubator is approximately 2 years and the total budget for the 2 years term ranges between US$ 500,000 and US$ 800,000, depending on the field of activity of the project (in addition, projects in peripheral incubators are entitled for an extra budget of US$ 125,000). 15 % of the total budget is financed by the incubator and 85 % of the total budget is financed by the government as a grant, that will be paid back only upon success. The company will pay the government 3−5 % royalties from revenue generated, until the full amount of grant (plus interest) is paid back.

Between 1991 and 2012, the government initiated over 1,700 companies with a total cumulative government investment of over $ 690 million. Over 1,500 companies had matured and left the incubators. Of these graduates, 60 % have successfully attracted private investments. By the end of 2012, 40 % of the incubators graduates were still up and running. The total cumulative private investment in graduated incubator companies reached over $ 3.5 billion. This meant that on every dollar the government invested in an incubator company, the company raised an additional $ 5–6 from the private sector.

Without the government taking the risk and making the initial investments in these initiatives, the companies would not have been established and the private investments that they have successfully raised would not materialize. The incubator program is the main generator of startups, with 70–80 new startups established annually. Between 2002 and 2010, the incubator was gradually privatized (see OCS Technological Incubators Program).

Table 2 Civilian technologies produced by military-originated Israeli firms. (Source: Dvir and Tischer (2000)

Technology transfer from defense industries to commercial use
Computerized pattern recognition defect identification in fabrics
Voice recognition and logging voice logging systems
Computer telephony integration
Frequency hopping communication cellular telephony
Speech recognition compression for telephony
Wide area protection
Satellite positioning technology vehicle positioning
Direction finding and positioning vehicle positioning
Frequency hopping communication wireless wide area paging
Nuclear radiation metal detectors for air fields
Very Small Aperture Satellite Terminals (VSAT)
Fire-walls for Internet communications
High-speed modems
Simulators, virtual studios
CAD/CAM for the automobile industry
Laser surgery equipment
Cancer diagnosis equipment
Fast prototyping machines
Data communication equipment
Speech processing devices
Two-way paging systems
Printed board inspection systems
Communication and telephone equipment
Telephone switching systems
Medical instrumentation

CAD/CAM computer-aided design and computer-aided manufacturing

7 Defense

Military R&D has been an important factor in the development of Israel's hi-tech sector. Telecommunications, computing, electronics, optical engineering as well as parts of the semi-conductor industry all had origins in defense. Crucial was a government decision to make military technology available to the civilian economy.

The military train and provide work experience in hi-tech to thousands of soldiers and this has created a cadre of technologically trained workers for the civilian economy (Getz and Segal 2008). It also provides a market for hi-tech products produced in state-owned and private sector companies. Many have emphasized the role of ad hoc and pragmatic nature of decision making in the military (and in Israel more generally) in furthering creative thinking "outside the box" that generates new ideas and methods in hi-tech.

Table 2 lists some of the civilian technologies produced by Israeli firms that had their origin in the military.

8 Theoretical Issues

Israel's knowledge and technology industry has relied on government policy guided by two principles that have been the basis for government policy regarding the development of hi-tech. The first was that government support for R&D would help to overcome market failure in this area, primarily of positive external impacts on society, that are not expressed in returns to firms or individuals.

The second was that of neutrality in government involvement, based on the recognition that the government lacked the knowledge that could give it an advantage over the market in selecting preferred sectors. In fact, criteria were adopted for R&D grant allocation, which gave clear preference to R&D projects in ICT fields, where results can be seen relatively quickly—within a few years—as opposed to the longer time periods and riskier prospects of fields such as biotechnology. Government intervention in supporting R&D will be needed in the future as well, as market failures will exist in knowledge industries, justifying an active government support policy. On the other hand, significant changes have occurred that suggest the need for a re-evaluation of the neutral support policy. Expansion of knowledge and technology industries based on government R&D policy has gained significant impetus world-wide. Many countries have entered this activity with great force, not on the basis of market preferences but rather by government selection that has led to support for targeted sectors. A US–Israeli group has asked the following question: "Targeting does not take a neutral stance but rather actively chooses sectors on which the state will focus. We must consider this policy's implications for Israel: should Israel maintain its completely neutral approach as it has done for the past thirty years or so, or should it change and vary its approach?"[6]

The changes in policy have been reflected in changes in theory. The traditional neoclassical view is the economic growth causes structural change. This results from differential rates of capital and labor accumulation that leads to changes in the structure of production which reflects the new aggregate capital-labor ration in the economy. In addition, changes in incomes and prices result in changed demands for goods and services and the economy's response is structural change. In this approach, there is no link from structural change to economic growth and innovation does not play a central role in growth.

More recent work has stressed the central role of innovation and technical change. Kusnets emphasized that radical innovations lead to the emergence of new sectors which are sources of economic growth. It has also been noted that growth is not always a smooth process and that market failures may occur because of problems of human capital formation, critical mass and discrete choice among alternative paths. As a result, for economic growth to be successful (i.e. continuous) there may be a need for industrial and technological policies.

From the 1990s, a coevolutionary approach between structural change and economic growth has developed. What has been called the evolutionary perspective considers

[6] See US–Israel Science and Technology Foundation. Israel 2028, 2008.

dynamic processes involving variation, selection, reproduction, and diffusion of technologies, firms, structures, and strategies (Rivlin 2001; Avimelech and Teubal 2008).

9 Conclusions

The government has played a major role in the development of hi tech in Israel but in recent years it has reduced its financial support significantly. In 2001, the OCS had a budget of 2.288 billion shekels while in 2011 its budget had declined to 1.447, both in 2011 prices.[7] This represented a fall of 63 % during a decade in which GDP had increased by 48 % In 2001, the OCS funded 35 % of the requests made to it; by 2011 it funded only 22 %. Largely based on programs and budgetary resources of the OCS, the role of the government was the key to the emergence and early success of the hi-tech sector.

The very success of the sector and its dynamism meant that it was a need for the periodic revision and reexamination of those policies. Moreover, tight government funding at a time of growing demand for R&D grants from the late 1990s brought to the surface basic tensions that were built into the policies, and that could no longer be ignored. These problems in different forms continued into the twenty-first century (Trajtenberg 2000).

An increasing share of funding has come from abroad and many Israeli hi-tech companies have been bought by foreign (many US) corporations. This raises the question of what will be left in Israel in terms of employment, production, and income.

Innovation is what gives Israel's high-tech industry much of its competitive edge, propelling local companies to the forefront of technology, while also attracting investment and partnership from global firms. According to Getz:

> There is an increasing trickle of know-how, intellectual property and technology in favor of the foreign companies, as reflected by a significant rise over the years in the number of unique inventions by foreign R&D centers in Israel, and the slice these inventions comprise out of overall Israeli inventive activity. (see Haaretz 8 August 2013)

Foreign R&D centers and multinationals are an asset for Israel, creating jobs, new business, and contributing to economic output. In addition, researchers and employees at these companies acquire considerable knowledge. Even if they leave the company, they do so with additional knowledge and experience in marketing, management, and organizational behavior. There are many examples of people who had worked at the multinational R&D centers establishing startups to which they applied the knowledge they accumulated.

But globalization—and the fact that intellectual property gets passed to another country—also has disadvantages. Israel has failed develop large- and medium-sized companies. Some companies already are sold at the startup stage. The fact

[7] See Chief Scientist's Support Program 2011–2012.

that Israel's hi-tech industry has no say over whether multinationals decide to keep R&D centers in the country, or move them elsewhere is a further cause for concern. Whether this justifies government intervention is also an open question.

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A New Look at Innovation Policy: Twelve Recommendations

J. G. Wissema and Julia G. Djarova

1 Stage 1. Traditional Industrial Policy

Although industry as we know it emerged in the late nineteenth century it was only in the early twentieth century that politicians started to see it as a subject that could benefit from state intervention. In contrast, agricultural policy is as old as agriculture itself. Early Greek mathematicians such as Pythagoras were driven by the need to accurately define the borders between the lands of different owners. Charlemagne introduced the 'three-tier system' in which plots of agricultural land were divided in three parts, each of which followed a rotating programme of growing crops. This system raised productivity and was the basis for later improvements. It may be the earliest instance of state intervention in economic activity except for taxes and general legislation.

Traditional industrial policy, as it emerged especially after World War I, was based on four pillars:

- Protection of the national industry by import barriers, government procurement and subsidies;
- The establishment of institutes for applied R&D from which industry and agriculture would benefit;
- Expansion of technical education at all levels;
- Establishment of extension services—intermediaries between R&D institutions and users of technology; this was first applied in agriculture and copied in the industrial sector after WWII.

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Although it was not called that way, one could say the concept of the knowledge economy was conceived a hundred years ago. Industrial policy was quite successful and all but the first of the above measures are still successfully applied today.

The stage of traditional industrial policy extended well into the post World War II economic boom, say into the early 1980s. When recession set in around 1969 and depression after the oil crisis of 1973, politicians responded by strengthening the protection part of industrial policy. Japan's Ministry of International Trade and Industry (MITI) deliberately kept prices of industrial goods high inside the country in order to allow its industry to export at low prices. Likewise, the European Union (EU) kept protecting agricultural production, even when this led to large surpluses.

Two trends put an end to protection policies. In the Netherlands, the government's subsidising policy ended in a debacle. As a naval country, Holland had a century-old tradition in shipbuilding; it was innovations in this sector that made the country the largest trader and most powerful naval nation in the world in the seventeenth century. However, in the 1960s it turned out that the country's shipbuilding could no longer compete on world markets. In the late 1960s the government forced three large shipbuilders into a merger: Rijn-Schelde-Verolme (RSV) was thus created. This company received large subsidies, the equivalent of over € 1 billion. It did not help; the company went bankrupt in 1983. A parliamentary enquiry into the use of government funds was held in 1984—the first enquiry of this kind since the post-war investigation into collaboration with the Nazis. All kinds of abuse came to light. The president of RSV had built himself a villa on an island in the Irish Sea with his wife shopping on the mainland with a (government-subsidised) company helicopter. Other European countries similarly had to abandon the policy of government subsidies. The harsh lesson was:

Lesson 1 It is better to let a business go bust than to fight global competition with subsidies.

This lesson was applied shortly afterwards. Fokker, the national aircraft manufacturer—in the 1920s the largest of its kind in the world—went bankrupt in 1996, despite substantial government support for the development of new types of aircraft. The government refused to finance a relaunch. The demise of this flagship enterprise was another trauma but a multitude of successful companies emerged out of its ashes. Although the country does no longer manufacture aircraft, today the Netherlands has a thriving aircraft and airspace sector, part of a strong industry-knowledge cluster. This led to an early lesson in cluster policy, to which we will come back later:

Lesson 2 A well-designed technology cluster can deliver more value than an enterprise on its own.

Guided by the old insight that *global trade benefits all,* institutions such as the EU, General Agreement on Tariffs and Trade (GATT) and World Trade Organisation (WTO) negotiated the opening up of borders and stimulated competition and free market conditions (the 'level playing field'). Governments were forced to abandon

the protection of their industries through subsidies, import regulations and public procurement. The failing Doha Development Round unfortunately shows there is still a wide gap between countries around the world when it comes to applying this principle.

2 Stage 2. Technology Policy

As a result of the two developments, it became clear that traditional industrial policy had to be reconsidered. In addition, government budgets had shrunk after the economic crises of 1973 and 1979. The effectiveness of the vast amounts of pubic funds spent—in blind faith—on applied and fundamental R&D became scrutinised. Analysis broadly revealed the following:

- Public and private R&D were almost completely separate worlds. In the Netherlands, public institutes for applied R&D made less than 2% of their income from industrial contracts; in other countries it was similarly small. Contracts for private R&D from state agencies were negligible, except in the USA.
- The publicly funded institutes for applied R&D had lost contact with the world they were supposed to be working for. What they did sometimes looked more like their hobby than service to industry.
- Fundamental research did not contribute to the economy at all. One could say it was designed that way as using the results of 'pure' science for something as vulgar as industry and private profit was considered inconceivable by many in the 1970s. The emergence of spinoffs from large US publicly funded research activities, however, showed that there could be substantial benefit and that the role of fundamental research had to be reconsidered.
- Large companies spent significant amounts of money on R&D while mid-sized enterprises and *small- and medium-sized enterprises* (SMEs) did very little, too little at least in the eyes of analysts and policy-makers.
- Extension services flourished in agriculture but hardly came off the ground in industry.
- Interest in technical education was waning in the post-revolutionary years of the 1970s. In addition, the school curriculum was not in sync with the demands of industry. Technical schools of large enterprises were closed in cost reduction drives.

It was obvious that new policy had to be designed and a debate emerged that is still going on today in many countries. On the one hand, there are those who argue that ad to be designed and a debate emerged that is still going on today inches of industry. Examples of general measures are: lower taxes, fiscal stimulation of investments and R&D, low labour costs, deregulation and many others. It is not surprising to find many macro-economists in this camp, as they tend to think in macro-terms anyway. On the other side, people with a background in branch-specific industrial policy, argued that general methods are not powerful enough and now that the government had stopped 'picking losers', it should 'pick winners' and stimulate them in various

ways. The two sides of the debate differ fundamentally in their view on the role of the state. The idea that the state is responsible for the economy and hence should draft an industrial development plan with priority sectors that are selected top-down, is basically Marxist. 'Picking winners' is a subjective process; there are no objective criteria. Velzing, who carried out a careful analysis of the Netherlands' innovation policy in the period 1976–2010, shows that in certain cases, 'picking winners' came down to 'picking lobbies' (Velzing 2013). This leads to our next lesson:

Lesson 3 General measures work; top-down selected branch-specific measures do not.

The 'generalists' side' came with a new approach that turned the defensive policies into offensive, future-oriented, ones. In the Netherlands, in 1982, a year before the demise of RSV, a new minister of economic affairs installed an advisory committee, which was to give recommendations for what was then called 'technology policy'. One of the present authors was a member of this committee; another member later became the minister of economic affairs who decided not to continue subsidising Fokker. In 1984, the committee came up with a comprehensive programme (Zegveld et al. 1984) to:

- Stimulate private R&D through tax incentives (the scheme is now called Wet bevordering speur- en ontwikkelingswerk; WBSO);
- Use large parts of the applied R&D budget for funding industry-initiated R&D;
- Encourage (technical) universities to work for industry;
- Support spin-offs from institutes of fundamental research;
- Give industry a greater role in the development of the curricula of technical schools;
- Improve the know-how infrastructures (see below) of the various economic activities.

This was followed later by the creation of a number of public–private partnerships for innovation (OECD 2004).

The report of the technology policy committee included a revival of the concept of innovation in the Schumpeterian sense (Schumpeter 1911). Initially, this approach did not go down well in a country where the leading economic elite were all staunch Keynesians, including several prime ministers and high-ranking civil servants. Although they did belong to the camp of the 'generalists', they still believed in the virtues of 'value-free' R&D. The technology policy report brought the concept of 'know-how infrastructure' to Holland, that is, the chain of people or organisations from fundamental research to ultimate users. This concept was already known in agriculture, especially through the work of Everett Rogers (Rogers 1962). It was adapted for industry by Christopher Freeman and his influential school at the University of Sussex in Brighton, UK (Freeman 1987). Later, Freeman developed the concept further to what he called the 'National Innovation System' (NIS), a term now common and widespread (Freeman and Soete, 1997). Freeman's definition of a NIS is *"the network of institutions in the public and private sectors whose activities and interactions initiate, import, modify and diffuse new technologies"*.

The idea of the national innovation system is that each element of the 'chain' is of equal importance; the missing of one makes the rest inoperable. The elements should not only be present, they should also be properly linked. The concept of the NIS was later to be developed into that of clusters.

Lesson 4 A full-fledged know-how infrastructure is what matters; R&D is just one component.

Despite this 'lesson', the comparison of the share of GDP devoted to R&D in different countries still has an almost sacred significance while it says actually very little about a country's potential for innovation. The reason for this may be that the percentage of gross domestic product (GDP) devoted to R&D is so easy to measure and compare between countries (Velzing 2013).

3 Stage 3. Innovation Policy

One may say that the development of traditional industrial policy into technology policy has greatly stimulated European economies. After a long absence, the subject of technology was back on the political agendas. Nevertheless, the insight emerged—we are now in the early 1990s—that, having the chain of elements of the know-how infrastructure nicely in place, does not automatically lead to an increase in economic activity. From this insight emerged a new approach: innovation policy. Innovation policy is based on five pillars:

1. Stimulate entrepreneurship by reducing red tape and costs to start an enterprise and by creating accelerators and incubators, especially near institutes of higher technical learning;
2. Bring public institutes for fundamental and applied research closer to the market;
3. Stimulate the development of clusters of economic activity;
4. Engage in pre-competitive research;
5. Follow and support entrepreneurs rather than invent all kind of programmes at government level;
6. Use universities as an essential element in the stimulation of the knowledge-based economy.

We will discuss these items below.

4 The Role of the Entrepreneur

In most books on national innovation systems or technology policy, the word 'entrepreneur' was hardly mentioned. Again Schumpeter was revisited, especially in the work of Peter Drucker (Drucker 1985). The notion of Schumpeter and Drucker that the entrepreneur is the central and crucial element in innovation, the *creative*

destructor, became mainstream. Thus, stimulating entrepreneurship turned out to be the cornerstone of innovation policy. Although most people would not go as far as Proudhon who called ownership theft, in the 1970s the entrepreneur was widely seen as a locust that feeds on society for his own benefit. Suddenly and under the influence of the success of a new generation of entrepreneurs in the USA in the 1990s, he came to be regarded as the national saviour. Cost and red tape for setting up an enterprise were brought down sharply. All kinds of facilities were created, at the national, regional and municipal levels, such as incubators, coaches and venture capital. Entrepreneurship became popular; competitions for the best ideas, start-ups and young enterprises took place and enjoyed much publicity. In 2002, there were some 300 business incubators in the UK, supporting 20,000 businesses (UN-ECE 2009). Still, the total effect on the economy was limited as many new companies were just free lancers, for instance in the IT field.

Lesson 5 Enable and stimulate entrepreneurship

The view that the role of a government is inherently limited and that one should rather 'let the market do its work', became especially popular after the demise of the model of central economic planning in 1989. Governments started supporting the work of entrepreneurs rather than inventing all kinds of programmes themselves. Many countries, starting with Finland, set up high-level National Innovation Councils to coordinate the nation's efforts in innovation. In Finland, this council is chaired by the prime minister and comprised of members from the research community and industry.

Lesson 6 The government should support but not replace the entrepreneur.

5 Stimulating Demand for R&D

There was another lesson from the collapse of the central planning system. The central planning model was entirely focussed on the development of the supply side. Markets hardly existed in the former Soviet Union and its allies, with catastrophic economic and eventually political consequences. The lesson that stimulating demand is more effective than creating supply also applies to government-sponsored R&D.

Lesson 7 Stimulating demand for R&D is more effective than stimulating supply.

As an example, the Dutch Ministry of Economic Affairs adopted a programme under which vouchers would be given to SMEs to pay (in part) for R&D activities of universities and public R&D institutes. The model was quite successful and was imitated in some other countries. In another scheme, the government would supplement investments by venture capital firms and business angels with 50% of the investment—up to a maximum. These supplements carried a higher degree of risk than the contribution of the investor. If the investment were successful, the govern-

ment would get its original amount back, plus compound interest. If it failed, the investor would have priority in receiving proceeds from the failed enterprise. The government would not evaluate the investment but follow the instinct and expertise of the investor, in other words, no red tape.

6 Cluster Policy

As for classical industrial policy, i.e. the policy not related to innovation, the work of Michael Porter (Porter 1990) demonstrated that 'clusters' play a powerful role in economic development and that these should hence be stimulated. Clusters are groups of related economic activities (manufacturing enterprises, their suppliers, their advisors) and corresponding schools and R&D institutes, preferably at one location or region. Or, in the words of Porter: A geographically proximate group of interconnected companies, suppliers, service providers and associated institutions in a particular field, linked by externalities of various types (Porter 2003). Companies compete but also collaborate; staff can move from one company to another, from R&D institutes to companies and vice versa, or staff members can start their own enterprise. In other words, a cluster is a kind of ecosystem in which all players benefit from competition and collaboration. Clusters have one or more 'drivers', such as common marketing, technology, logistics, quality standards (as in French wine) or others. If innovation is the 'driver', they are called 'smart clusters'. Since Porter's work, establishing and developing clusters became a major concern of many governments. Up till then, regional development was very much a matter of support to regional industry, ad hoc investments to stimulate employment, improving infrastructure, etc.The cluster approach proved to be more effective; even simple measures such as creating contacts between actors and establishing 'missing links' such as schools and research institutes, turned out to yield excellent results.

Lesson 8 Stimulating clusters can be an effective way to achieve economic growth.

Stimulating clusters is now at the core of EU policy with the essential notion that 'business should be in the driving seat' (European Commission 2013). A good example of a smart cluster is the horticulture sector in the Netherlands. It is comprised of a large number of growers of flowers, some with greenhouses of 100 hectares. Most of the flowers are exported through auction centres, some 12 million flowers per day; the main auction hall has a floor space of a hundred football fields, many of them climate controlled. The sector maintains its competitive advantage through the development of new seeds (by specialised enterprises) and cutting edge logistics: roses cut in Holland in the morning are on sale in New York by lunchtime. The auction halls, all of them cooperatives, have merged and they have adopted a system for remote trading through the Internet. A common—Calvinistic—culture facilitates communication. The sector has an effective marketing and PR apparatus in Holland and abroad and it has common quality standards. The lesson is:

Lesson 9 The more 'drivers' a cluster has, the more effective it is.

There have been many attempts to create clusters and many have failed. Failure often occurs when governments decide 'top-down' which clusters have potential and should hence be stimulated, another form of 'picking winners'. Most successful clusters have emerged from private initiative, 'bottom-up'. At some point in time, they need government support, in terms of fundamental R&D, infrastructure, regulation and sometimes credits for common activities and start-ups. The lesson is:

Lesson 10 Bottom-up clusters can be successful; top-down clusters often result in failure.

Clusters fail because of a mal-designed concept, lack of monitoring and evaluation, limited engagement of the firms concerned and lack of attention to trans-regional aspects.

7 Precompetitive Research

In the 1980s, innovation became a concern of the European Union. In 1983, Pehr Gyllenhammar initiated the European Round Table of Industrialists that was to become a powerful lobby group. Its meetings were attended by Etienne Davignon, member and later vice-president of the European Commission. Mr. Davignon started cooperation between European enterprises in innovation. On one occasion, he called a meeting of some six Vice-Presidents R&D of European IT companies. Naturally, they had heard of each other but they had never met. One of them said afterwards: 'During the first ten minutes we just watched each other. The silence was awesome'. The meeting led to a precompetitive research programme into ways of boosting chip technology, directed mainly against Japanese enterprises. The idea of precompetitive research is that companies can collaborate in, say, a manufacturing technology while they could still compete in the market with distinctive products; in other words, competition is not jeopardised. The model has been used in numerous smaller and larger co-operations. For instance, at Technical University of Delft (TU Delft) some ten oil companies sponsor a foundation that funds PhD research. The companies have the privilege of jointly choosing the subjects and receiving information prior to publication. Such schemes can be instrumental in fostering the innovation efforts of the group's members without violating anti-trust laws. Since the days of Davignon, the European Union has also taken a role in coordinating Member States' innovation policies (Djarova and Zegveld 2009).

Lesson 11 Precompetitive research reduces the cost and risk of innovation, especially with SMEs.

8 The Role of Universities and the Concept of the Knowledge-Based Economy

There is one specific element of entrepreneurship that we need to highlight. In the 1980s, governments became aware of the fact that in the USA many of the new IT firms were in fact spin-offs of universities. The point was made in a dramatic way by the now legendary 'BankBoston Report'. This study demonstrated that if the companies founded by MIT graduates and faculty were to form an independent nation, their total revenue would make that nation the 24th-largest economy in the world. The 4,000 MIT-related companies (located worldwide) that existed in 1997 employed 1.1 million people and their annual world sales amounted to $ 232 billion. That is roughly equal to a gross domestic product of $ 116 billion, which compares to the 1996 GDP of South Africa or Thailand. The study also showed that MIT `imports' entrepreneurs, as many companies were not spinouts of the university, but rather came to Massachusetts to benefit from its presence. These conclusions were confirmed by a report of the Kaufmann Foundation, written by MIT professor Ed Roberts, who established that up to 2009 MIT alumni founded 25,800 active companies that employ 3.3 million people and generate an annual revenue of $ 2 trillion (2 million–million), making them the 11th largest economy in the world, had they formed an independent nation—something like India, the Russian Federation or Spain (Roberts 2009). Another study concludes that between 1980 and 2004, US universities created 4,543 companies, including Genentech, Chiron and Google (Financial Times 2006).

Lesson 12 Universities can be powerful sources of new economic activity.

The story goes that the BankBoston report inspired the then British Chancellor of the Exchequer, Gordon Brown, to make funds available—on a competitive basis—to universities in order to start courses in entrepreneurship and facilities to support technostarters, that are students or academics who set up new, technology-based firms. It was the first time universities would receive public money through a channel other than the Departments of Education and Science. This support happily coincided with a change in the role that universities saw for themselves. For instance, in the 1990s at the University of Cambridge, UK, it became clear that the rising costs of front-line research could no longer be funded by public money alone. This awareness led to the development of a vast programme of collaboration with industry and facilities for technostarters. As a result, Cambridge today is not only host to the university with the largest number of Nobel prizes in the world, but also the nucleus of a thriving entrepreneurial environment, similar to the clusters around Stanford University and MIT. K.U. Leuven in Belgium started to systematically and professionally commercialise outcomes of its research efforts. The university thus earned substantial income with which it could sustain a top-level research programme, while, in addition, technoparks started mushrooming around the old city. In the Netherlands, Wageningen UR, the combination of the Agricultural University

and some 12 institutes of applied research, as well as the TU Delft likewise started activities concerning commercialisation of results of research, either by collaborating with industry or by spinning out new technology-based firms. Agriculture today is a high-tech business, at least in the Netherlands. It made this small country with a large population, much industry and an awful climate the second largest exporter of food in the world, after the USA.

Top universities owe their success to fundamental research in the first place. Universities can act as engineering bureaus, of course, and they frequently do, but fundamental research remains the source of new technology-based firms.

Lesson 13 The basis of all innovation is fundamental research.

The new role governments adopted in stimulating academic entrepreneurship and the notion of universities that cutting edge research required collaboration with industry, coincided with a trend in large technology-based enterprises to substantially reduce their efforts in fundamental research. They would rather outsource most of it to external partners. For instance, in the 1960s, Shell had a fundamental research laboratory employing 4,000 people in Amsterdam; they had a similar institute in Houston. Such facilities transformed the oil and chemical industries and were also a rich source of scientific papers and professors. When we visited the place as students, it felt like holy ground. Now this effort has been significantly reduced—certain companies even abandoned fundamental research altogether. They rather buy it from universities and other R&D institutes on a project basis, often within a framework contract. At the same time, they would sell their know-how to others, including competitors. In other words, industrial R&D had become a regular business practice with its own bottom line.

The new role of universities led to the formulation of the concept of the Third Generation University (3GU) (Wissema 2009). This needs some explanation. Medieval universities are viewed as First Generation Universities; they focussed on education while activities that we would now call R&D were carried out by scientists/inventors outside the universities. These scientists (think of Galilei) would often be opposed by the academic establishment, which would defend traditional insight. During the Renaissance, the concept of 'modern science' was developed. It was based on the observation of nature, experimentation, logical reasoning and openness of methodology and results for inspection by peers. The University of Berlin, now Humboldt University, established after the Napoleonic time, was the first to put modern science into practice. The focus was now on scientific development—the second university objective; education took place in its slipstream. The University of Berlin was also the first to use the national language rather than Latin. Thus, German became the language of science in the nineteenth century. The 3GU emerged after World War II. Just as the Humboldt type university (Second Generation University, 2GU) added scientific development to its role in education, the 3GU added know-how commercialisation and collaboration with companies and entrepreneurs as its (third) objective. In the globalised world, 3GUs compete for the

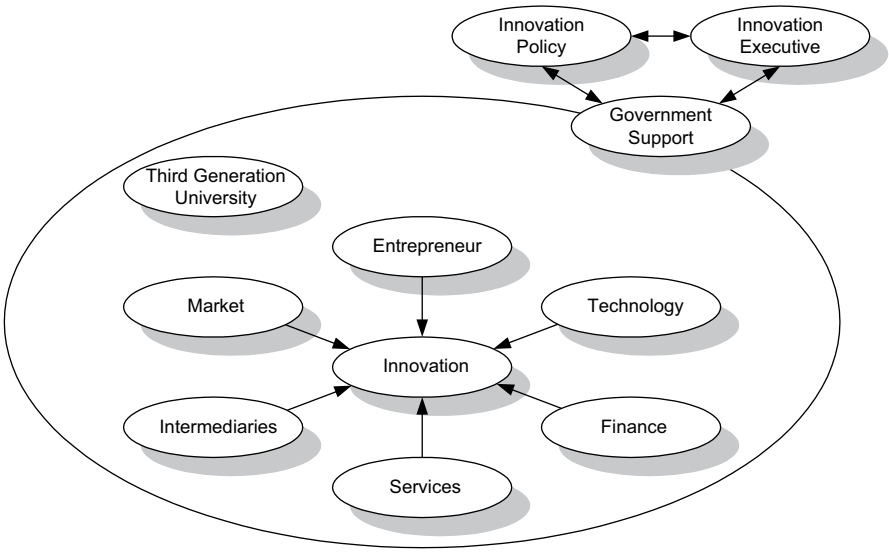

Fig. 1 A new model of the National Innovation System

best students, staff and research contracts worldwide, adopting English as the new lingua franca in science.

Lesson 14 English is the lingua franca of universities as Latin used to be in the Middle Ages.

9 A New Model for Innovation Policy

Before embarking on a discussion of the trends that will shape future innovation policy, let us come back to the concept of the NIS. NIS-models are used to analyse innovation systems, which leads to detecting their shortcomings and then to offering remedies, so all analysis starts with a good model. Freeman's NIS model is still widely used. However, as we noted above, it does not consider the role of the entrepreneur as central to innovation. In addition, the concept of the 3GU was not known in his days.

We, therefore, propose to adopt a new model and we like to present the one we have used for analysing NISs in recent years (Fig. 1).

According to this model, six elements are central to innovation, whether in an existing enterprise or a start-up:

1. The entrepreneur who brings a product to the market, or puts an innovation in marketing, manufacturing, logistics or organisation to use.

2. Technology, one of the two wings on which innovation flies. All industrial innovation is based on the application of new knowledge or insight.
3. Market, the other wing of the innovation plane. Without a receptive market, inventions cannot become innovations.
4. Intermediaries, extension services' agents that assist in the transfer of the technical and market knowledge to the entrepreneur. They are present inside any innovative corporation as well as in branch organisations.
5. Finance, the fuel of the innovation plane.
6. Services. In addition to the auditing, economic and technical services (they are mandatory in any well-functioning market economy) there are services specialised in working with start-ups and new ventures.

In addition:

- 3GUs. Although not incorporated in the traditional descriptions of an NIS, the combination of a research university with other knowledge generators, financiers, intermediaries and support institutions, usually located on the campus of the university, greatly boosts innovation.
- Government support comprised of an Innovation Policy Unit and an Innovation Executive.

Concerning the latter, innovation is greatly enhanced if a government has an active innovation policy and if it has assigned the task of implementing this policy to a single dedicated body. We would like to suggest two possible structures:

1. The Innovation Policy Unit, which defines the government objectives and programmes and makes budgets available to stimulate innovation.
2. Innovation Executive, the executor of innovation policy on behalf of the government. The Finns created Tekes, an innovation and technology centre, with an annual budget of € 600 million and a staff of 360. They also created a venture-capital fund, Finnvera and a collection of accelerators, jointly financed by the government and industry. The result is an impressive number of new enterprises; 300 were founded by former employees of Nokia alone (Northern Lights 2013).

This model has been used as the basis for analysis of the NIS in the Netherlands, Poland, Bulgaria and Kazakhstan. Depending on the result one can design an innovation policy for a particular country, region, or sector such as IT, energy and agriculture.

10 Recommendations for Future Innovation Policy

From the above, it will not be surprising that we give as our first recommendation:

Recommendation 1 Stimulate clusters, based on bottom-up initiatives.

Although we are not in favour of governments 'picking winners', it is useful if governments:

Recommendation 2 Create awareness about the potential of clusters.

Analysing the effects of promoting the growth of high-potential entrepreneurial ventures and venture capital funds, Josh Lerner notes in a recent study (Lerner 2009): 'While the pubic sector is important in stimulating these activities, I will note that far more often than not, public programs have been failures. Many of these failures could have been avoided if leaders had taken some relatively simple steps in designing and implementing their efforts'. He then analyses common misconceptions, both in the design phase of a government programme and in the phase of implementation. He also gives good recommendations.

The fact that public funds are very much under scrutiny, as part of austerity drives, will no doubt lead to more pressure on the effectiveness of innovation policy. We might therefore expect much more—and more honest—evaluations of stimulation programmes, better monitoring as they proceed and better evaluation when they are completed. Needless to say that such monitoring and evaluation should not put an additional burden on the entrepreneurs: let them do their work. Literature provides ample evidence that there is substantial experience with such monitoring and evaluation (Klein Woolthuis 2005). However, every country has to develop its own methodology (Biegelbauer and Borras 2003).

Recommendation 3 Put more intelligence into the design, implementation, monitoring and evaluation of government programmes.

The idea that governments are the greatest obstacles for innovation is clearly a myth. In a recent book, Mariana Mazzucato found that all components of computers and smart-phones emerge from state-sponsored fundamental research: the internet, wireless networks, global positioning systems (GPS), microelectronics, touch screen displays and voice activation (Mazzucato 2013). GPS and the Internet were created by the US Department of Defence—no company could have done it instead. In his review of the book, Martin Wolf concludes: 'The failure to recognise the role of the government in driving innovation may well be the greatest threat to rising prosperity' (Wolf 2013). In the discussion above, we have shown that, if governments are to stimulate innovation and create a knowledge-based economy, they should finance, in whole or in part, fundamental research. At least half of this research is to be carried out in dialogue with the business sector; the other half is to be 'value-free', as an instrument of our developing civilisation.

Recommendation 4 Continue financing fundamental research, half of it in consultation with the business sector.

In addition, in line with the analysis presented above, money given to precompetitive research is generally well spent.

Recommendation 5 Co-finance precompetitive research.

This argument can be carried a little further if one considers the monumental cost of cutting edge fundamental research. On 2 April 2013, the USA announced a US$ 3 billion research project to find out how the brain works by mapping the activity of every neuron in the human brain. This project, named Brain Research through Advancing Innovative Neurotechnologies (BRAIN for short), is also referred to as the Brain Activity Map Project. It is based on the Human Genome Project that also cost US$ 3 billion (The Economist 2013a). While European governments are cutting back on fundamental research, the USA is financing large and imaginative programmes. Fortunately, Europe, in the Conseil Européen pour la Recherche Nucléaire (CERN) and European Space Agency (ESA) projects, also carries out significant multination fundamental research. Such projects will eventually result in economic activities, even if one cannot remotely say which. Hence:

Recommendation 6 Initiate large, preferably pan-European, imaginative projects in fundamental research.

Just as important as the obvious 'discovery' that it is the entrepreneur who is the central player in innovation—whether in a start-up or as an 'internal entrepreneur' in an existing firm—is the observation that entrepreneurs flourish in an enterprising culture. Such a culture is lacking in Europe and large parts of Asia. Entrants in the labour market prefer the—perceived—security of jobs in large firms, financial institutions and government to taking risks. A notable exception is entrepreneurship in agriculture, at least in countries in which land ownership is in the hands of the actual farmers; liberalisation of land ownership, as in Colombia for instance, is often a first step in the economic development of a nation. Carl Schramm, then at the Kaufmann Foundation, notes that the ultimate competitive advantage of the USA is its entrepreneurial culture while technology and finance are widely available to anyone on the globe (Schramm 2006). In his column in the Financial Times, Luke Johnson, himself an entrepreneur and business angel, writes that 'more than anything, the vital ingredient anyone requires to reach great heights in business (or indeed any walk of life) is hunger' (Johnson 2013a). This 'vital ingredient' is lacking in Europe's and Asia's middle classes—rich kids do not have an incentive to do it the hard way and be an entrepreneur.

The question then is: how to create an entrepreneurial culture? In the Netherlands, we have government-sponsored programmes at primary and secondary school level. However, the amounts of money spent on supporting (potential) entrepreneurs stand in sharp contrast to the (limited) funds spent on awareness. In addition, it would be better to target such efforts on specific groups, for instance, second-generation immigrants who are more likely to create an enterprise than indigenous citizens. At TU Delft, we started a short mandatory course for all students in order to create awareness of entrepreneurship. Speakers are mostly young alumni-entrepreneurs who tell their story. This is more effective than lecturing as students often feel: If he can do it, so can I. Of course, only a few students will actually become entrepre-

neurs. However, our attitude is: we accept that many students will not follow the call but we do not accept that they would never be offered the opportunity. Just as fundamental research is the basis of applied research and subsequently inventions and innovations, entrepreneurial awareness is the basis of new economic activities.

Recommendation 7 Stimulate a national entrepreneurial culture.

Only few entrepreneurs create large companies; most are self-employed. It is like football: the broader the base, the higher the top. Self-employment has become popular in Europe. In the Netherlands, for example, one in eight workers is self-employed; 30 % of the workforce have higher education, 7 of the country's 13 universities are in the top-20 list of the EU. Entire sectors, as different as consulting and construction, thrive on self-employment. Such a system has many advantages. It is seen as one of the reasons why the economic crisis has hit the country less severely than others. It allows for a very dynamic, flexible and motivated labour force. It makes people proud of themselves and it fosters individual life styles. SMEs often grow out of self-employment. However, a conducive environment should be in place: adequate pension arrangements, no worse than those for workers on fixed labour contracts, health insurance—in short, all the perks that come with a government job or a job in industry. In 2009, France created more favourable conditions for entrepreneurs/self-employed. The outcome was 550,000 new start-ups in 2012 (Carnegy 2013). So, it is easy. To sum up: every nation benefits from encouraging self-employment:

Recommendation 8 Stimulate and facilitate starters and self-employment.

Women entrepreneurship is another aspect of entrepreneurship we need to address. In Europe, the percentage of women in employment is lower than that of men. The share of women entrepreneurs is far lower than male entrepreneurs, less than 10 % in the UK. In contrast, in developing countries women are responsible for half of all micro-businesses (Johnson 2013b). The interest of women in entrepreneurship is large. Recently, with Ecorys Consulting and Research, a consultancy, we were assigned to run a project for Women Entrepreneurship Support for Confederation of Turkish Tradesmen and Craftsmen (TESK), the Turkish SME organisation. The project provided awareness programmes, coaching and training—for would-be as well as established women entrepreneurs. We were supposed to train 4,000 women and did not think we would reach that target. In the end the number topped 9,500; women came in by busloads. Although contributing to the family budget was a major driver for women to attend, gaining some independence and being a role model for their daughters was equally important. Women would face different challenges than men, who have usually better connections in the business and banking world. Asked about the main obstacles to women entrepreneurship, women in the Western part of Turkey gave the usual answers: difficult to find good people, difficult to market a product, financing is too expensive and so on. In Eastern Turkey, the obstacles were first the husband, then the father, then the father-in-law.

Most likely a similar enquiry in other traditional societies in Europe would yield the same results. When men come home from work, they relax. Women take care of the family; they lead a double life. Now, the attitudes are changing. Attitudes are already different in Eastern Europe where women employment has been common and women entrepreneurship is catching up. In most countries of the world there are now more female students than male; they usually perform better as well. The call for women to participate in economic life is widespread. For instance, recently Shinzo Abe, Japan's prime minister, called for at least one woman on corporate boards. Still, entrepreneurship is a gender issue: it is different for men than for women. Creating awareness and stimulating entrepreneurship among women therefore requires specific instruments, alongside the traditional training in marketing, finance etc.

Recommendation 9 Create awareness and stimulate women entrepreneurship.

It is not only through funding of R&D that governments enable innovation. By applying stricter environmental and safety standards they create a market for innovation. Just think how the ever more stringent Californian emission standards influenced the automotive industry. Banning leaded fuel and then adopting constantly lowering emission thresholds has spurred innovation.

Recommendation 10 Initiate or continue innovative government procurement and regulation.

In the Netherlands, the Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek (TNO) is the umbrella organisation for many of the applied R&D institutes that work for the private sector. As part of some austerity programme of the 1980s, it was decided that TNO should increase its financial intake from contracts with industry, at the expense of the basic subsidy. At the time, some people feared that this would be the end of TNO but the measure has worked miracles. Both efficiency and effectiveness improved as scientists were forced to recognise the demands of the market and act accordingly. Companies went through a similar process. In the 1990s, we helped introduce business unit management (Wissema 1992) in the (then) fibre division of AkzoNobel. Service groups would serve business units just as business units would serve the market. Many shed a tear when the once mighty corporate engineering group gave presentations to business units, modestly offering its services. But here too, it worked like magic.

We believe it is still better to privatise public R&D institutes altogether (Wissema 2014). The same goes for universities. Staff would lose their secure civil servant status and salaries would depend on labour market conditions. Now, salaries follow government standards. For instance, in Holland the salary of a full professor equals that of a one-star general or the prosecutor in a court of appeal. What is the logic? Privatisation would increase efficiency and flexibility while governments could still apply quality standards, as they do in, say, the food industry. Recently Jeff Bezos,

founder of Amazon.com, bought the Washington Post. Imagine what would happen if people like him would buy universities.

Recommendation 11 Privatise R&D Institutes and universities. Stimulate the trend towards 3GUs.

Last but not least, a word on education. Even when avoiding the hyperbole of the 'knowledge-economy'—all economic activity is based on knowledge, going back to the fire and the wheel—the role of education in society is of paramount importance. While Europe is struggling with high unemployment rates, IT-specialists are in short supply and good technicians work overtime. Today, education is changing fundamentally; there are at least three prominent trends. First, there is the emergence of IBM's Watson computer. Watson (Wikipedia 2011) is an artificial intelligence computer that accepts questions and gives answers in natural language. The computer made history by winning, in 2011, the American quiz show Jeopardy, competing with two all time human winners. This was an event similar to the victory of IBM's Deep Blue computer in the chess match against Garry Kasparov in 1997, a mere 14 years earlier. Watson means that Star Wars' R2-D2 has become reality. One might say: what does this have to do with education? Watson only has a RAM memory of 16 terabyte; during the game, it was not connected to the Internet. A 4-terabyte memory is already quite common in laptop computers and back-up storage. With the ongoing miniaturisation of electronics one may wonder when Watson will be incorporated in smart phones. When it happens, the need for learning facts will disappear—Watson will know everything.

The second trend is internet-enabled distance learning. Massive Open Online Courses (MOOCs), threaten to make many schools and universities redundant. The revolution began with start-ups such as Udacity and Coursera, and many universities followed by cooperating with them. Moreover, many have put all their teaching material online to be used for free; Oxford and Cambridge are notable exceptions. Even more important than the fact that students save time and money, MOOCs make individualised education possible—the end of standard courses is nigh. It is, says Bill Gates, 'A special time in education' (The Economist 2013b). On-line courses and the availability of educational software might benefit children from deprived backgrounds, wherever they may be. Thus, technology will eradicate the last pockets of illiteracy. It seems that New York is one of the drivers of the changes. Former major Michael Bloomberg turned it into a laboratory for a multitude of educational experiments, made possible, in part, by many start-ups (Delves Broughton 2013).

Still, on-line courses and educational software do not change the basics of the process of learning as we have known it since antiquity: pupils lined up in front of a teacher who writes on the blackboard, now a computer screen. Most computer-based courses only put textbook material on the Internet. The emergence of interactive software may change that. This is a real new way of learning that will revolutionise teaching. The danger of this development is that, since interactive books require much investment, the economies of scale will do their work, resulting in

international chains of schools and universities using the same material. Diversity may become the victim of it.

Although education is not normally considered part of industrial or innovation policy; we touch upon it, as education is another basis of innovation. Governments would do wise to innovate learning in order to keep their workforce competitive.

Recommendation 12 Overhaul the educational system.

11 Conclusion

In this chapter, we have offered a review of industrial and innovation policy from a historic perspective. When economic and social conditions change, so must industrial policy. Certain instruments turn out to be timeless while others quickly become obsolete. New technologies require new government measures. We drew some lessons from past experience. An analysis of current trends and an evaluation of past achievements yielded a set of 12 recommendations, some old, some new.

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Part IV
The Ecosystem of Economic Planning: Strategic Planning, Learning Systems, Regional Development, Clusters and Sustainability

Planning for Regional Development: A General Equilibrium Analysis for Turkey

Erinç Yeldan, Ebru Voyvoda, Kamil Taşçı and Mehmet Emin Özsan

1 Introduction

That "growth and development are by no means homogenous and unidirectional" is a proposition well-known by the students of development economics. Inequalities across regions, as well as people coming from different ethnic and social backgrounds have attracted the attention of social scientists and economists alike. Aspects of regional development, even though had been studied by anthropologists and other sister disciplines; economists typically are in need of developing *formal* models to study issues such as duality, poverty traps, and the determinants of migration of labor and capital across regions.

Over a broader spectrum, economies that reached to the "middle income" status are observed to suffer from a series of structural difficulties in sustaining their growth performance. Many economists took note of the fact that as economies converge to "middle income" level, the relatively "easily-found" sources of growth

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that are based on the transfer of *unlimited supplies* of labor from rural agriculture to urban centers and towards capital-investment-led high profit sectors, lose their stimulating impact gradually; technologies grow mature and finally become worn out. After this threshold, sources of growth must be derived from productivity gains, which can only be achieved by the investments aimed at human capital, training and research-and-development (R&D), and institutional reforms. This, however, is no easy task and often countries get "trapped" at this stage of development, conceptually referred to as the *middle income trap*.

Turkey offers a typical example of a middle income country together with its recent fast, and yet very volatile and erratic patterns of growth. Accordingly, a 2012 report released by the Turkish Enterprise and Business Confederation (TURKONFED): "Escaping the Middle Income Trap: Which Turkey?" argued that Turkey has reached the middle income path from the lower end in 1955 and remained at this status for an excessively long period. Turkey has graduated to the high middle-income status in 50 years only after 2005. In contrast, this journey has taken quite short for certain countries such as China (17 years), Malaysia (27 years), or Korea (19 years).

Yet, a very critical question to be answered urgently comes to the fore at this point: *which Turkey?* In the above-referred TURKONFED report, Turkish economy is divided into three subdivisions by income brackets: With a regional income reaching to $376 billion, which also exceeds those of European economies such as Norway and Switzerland, the *high-income* Turkey that is led by Istanbul, Ankara and Izmir gives the impression that it would have relatively powerful dynamics to escape the middle income trap. This subdivision hosts Turkey's administrative, political, commercial, and financial power centers and yet its links with the rest of Turkey are weakening gradually.

Apart from the "high-income Turkey", there are two more subdivisions: the one which is exposed to the danger of being trapped in middle-income, and the one that does not *even have the opportunity to graduate to middle-income bracket* (the "Poor Turkey"). Being trapped in *the poverty trap*, the "Poor Turkey" includes 27 provinces, all of which suffer from low level of education (the average period of education is even less than 5 years; i.e. drop outs from elementary school), the lack of fixed capital investment and infrastructure, and social exclusion with its seasonal and low-skilled labor force.

The purpose of this study is to investigate and assess the sources of regional income differences in Turkey on the basis of production and capital accumulation relations and within the discipline of general equilibrium. The "new" theories of growth that emerged over the last two decades had underscored that sources of growth emanate from various paths including human capital, factors unique to geographical location, indigenous characteristics of the institutions, as well as the endowments of the factors of production. Furthermore, the literature clearly underscores that a major explanatory factor in assessments of per capita income differences across the countries and regions are based on the initial income inequalities and the dualistic patterns of accumulation of capital and of technology over the course of develop-

ment (see, e.g., Combes et al. 2008; Dicken 2003). The earlier literature has, of course, rest on the now seminal works of Frank, Amin, Dos Santos, and others.

Yet another purpose of the study is to provide a viable contribution to the general equilibrium literature addressing issues of regional development and the economics of geography with the exclusive emphasis on regional factor flows and regionally differentiated economic equilibria. The study is organized in five sections following this introduction. In the next two sections, we provide an overview of the structural characteristics of the Turkish economy across two differentiated regions (*Poor* and *Rich*) and offer a regionally differentiated macroeconomic data set (a *regionally differentiated* social accounting matrix; SAM) with a particular emphasis on their dualistic endowments and paths. The (regional) computable general equilibrium model structure is introduced in Sect. 3. In Sect. 4 we carry out a series of alternative regional development scenarios, and reserve Sect. 5 for the discussion of results and concluding comments. Algebraic structure of the model is further tabulated in an Appendix at the end of the paper.

2 Two Region Differentiation Based on Production Structures

Turkey is a typical developing market economy with wide differences across regions and social strata. Data on population censuses indicate that over the last decade population of the *rich/mid-income* regions of Turkey has expanded, while that of the relatively *poor* regions has remained almost stagnant. This fact was mainly due to the vibrant migration ongoing across the two regions. Data based on the 2010 Household Surveys of Population provided by *TurkStat* indicate that total population of Turkey is 73.7 million persons. Half of this population lives in the *Level 2 regions* encompassing the rectangle of Edirne–Bolu–Antalya and Mugla. This region covers 29 % of the total land of the whole nation.

Pertinent data of the nine *Level 2* subregions are displayed in Table 1. The municipality of Istanbul alone holds 37 % of the population while providing about 45 % of the aggregate regional gross value added (RGVA). It further yields almost 60 % of the total income tax generated across the region.

One of the main reasons of this observation is due to the fact a variety of the enterprises all over the whole country have their headquarters located in Istanbul. Further due to this reason, Istanbul region has a relatively high share of the aggregate public investments. Half of the total public investments in the rich/mid-income region are captured within the Istanbul province.

Based on our differentiation, we distinguish 17 *level-2* regions classified under the "poor region" under the threat of the "*poverty trap*". This region overall covers 79 % of the geographical land, and about half of the total population. The observed differentiation in the population densities across the two regions reflect, in many respects, the structural imbalances across the local product and labor markets. The

Table 1 Economic indicators of the rich/mid-income regions covering the TurkStat level 2 region. (Source: TurkStat)

Region	Population (Millions)	Gross regional value added (Bill. TL, 2008)	Regional exports (Bill. TL, 2009)	Regional imports (Bill. TL, 2009)	Tax revenues (Bill. TL, 2009)	Public investment (Mill. TL, 2010)
TR10	13.26	264.90	55.54	78.76	74.91	4,079.77
TR21	1.52	26.00	0.65	0.62	2.39	309.44
TR22	1.64	20.70	0.45	0.33	1.25	4,678.83
TR31	3.95	62.60	6.12	6.27	17.59	457.05
TR32	2.74	34.50	2.21	1.42	2.02	579.47
TR33	3.01	34.70	1.32	0.81	1.71	528.09
TR41	3.60	63.50	9.65	7.54	4.54	630.73
TR42	3.25	59.00	6.44	15.44	23.60	591.75
TR61	2.69	36.90	0.89	0.52	2.61	544.07

Table 2 Economic inducators of the POOR-income regions covering the TurkStat level 2 region. (Source: TurkStat)

Region	Population (Millions)	Gross regional value added (Bill. TL, 2008)	Regional exports (Bill. TL, 2009)	Regional imports (Bill. TL, 2009)	Tax revenues (Bill. TL, 2009)	Public investment (Mill. TL, 2010)
TR51	4.77	81.60	4.91	16.49	22.41	1,352.76
TR52	2.25	22.70	0.88	0.63	1.26	659.26
TR62	3.73	38.30	2.18	2.38	4.79	415.10
TR63	3.00	24.50	1.86	3.29	2.04	515.38
TR71	1.50	14.50	0.23	0.15	0.80	349.54
TR72	2.35	22.50	1.01	1.10	1.46	479.19
TR81	1.04	12.80	0.51	1.61	0.88	448.55
TR82	0.74	7.10	0.12	0.05	0.33	299.99
TR83	2.74	27.10	0.45	0.57	1.46	611.66
TR90	2.52	25.3	1.44	0.22	1.49	1093.83
TRA1	1.07	8.50	0.03	0.06	0.40	480.22
TRA2	1.13	5.90	0.13	0.05	0.23	287.47
TRB1	1.63	12.80	0.25	0.08	0.63	477.95
TRB2	2.02	9.70	0.43	0.03	0.39	369.64
TRC1	2.41	15.10	3.03	2.19	0.88	643.11
TRC2	3.19	16.20	0.24	0.22	0.83	1059.44
TRC3	1.99	10.70	1.17	0.10	0.42	775.70

relatively dispersed land and population structure of the "poor region" has direct consequences for the presence of relatively weak external spillovers, otherwise expected from public investments (Table 2).

For many years the Turkish incentives structure for investment had been questioned due to its lack of focus for regional and structural development. Structural bottlenecks range from the general inability of the "West" to mobilize its scale economies and simultaneously internalize the externalities of the "East". Insufficient/nonexisting transportation networks; poor marketing infrastructure; and a

relatively poorly educated and unskilled labor force mark the parameters of this dual structure.

The fact that about 80 % of the aggregate foreign trade is transacted within the "western regions" is a manifest that the Eastern provinces face strong difficulties in reaching marketing outlets, and are mostly restricted to the primary product space in their production activities.

Over the course of the last decade, Turkish economy experienced a vigorous expansion in its capital base in line with rapid growth. Financial assets likewise expanded at a very fast rate, wherein total deposits had reached to 500 billion TL in 2009 from the 2002 level of 300 billion (measured in fixed 2010 prices). The rate of expansion of deposits was 60 % in the East, in contrast to the 75 % score achieved in the West. The gap in asset formation follows the existing duality across the two regions.

3 Regional Macroeconomic Analysis

3.1 Construction of the Regional Social Accounting Data Base

In compilation of the regionally differentiated SAM data base, we start with the 2002 input output data of the *TurkStat*. From the official 2002 I/O data we had reconstructed a more recent data base for 2010. This data set links the 2002 I/O coefficients with macro aggregates maintaining demand and supply consistency at the sectoral level. Based on our model specification the 2010 I/O data set disaggregates the production activities into 13 sectors and distinguishes the domestic economy into two regions: *High/mid Income Turkey* and the *Low Income Turkey*.

In what follows, we distribute wage and capital income, as well as factor flows across sectors and across the two regions by utilizing production shares in RGVA. Thus, we observe that about 80 % of agricultural and nonagricultural output is produced in the *High/mid Income Turkey*, and the rest 20 % is produced in the *Poor Turkey*.

Another data disaggregation pertains to the indirect tax revenues by sectors. This is done via sectoral employment shares across the two regions. In this vein, 33 % of rural employment and 57 % of nonagricultural employment are generated in the rich/mid-income Turkey.

Tables 3 and 4 introduce the structure and the data of the regional I/O data respectively.

The remaining components of the input–output flows across the regions are the final demand aggregates. The I/O structure distinguishes the final demand vectors across sectors, but not over regions. The whole "national" demand is regarded as one single entity at the aggregate macrodemand level. We read that 93 % of aggregate

Table 3 Rich/mid-income–poor income regional I/O structure

Regional Input Output Flows, General Structure

	REGION A		REGION B										
	Intermediate flows		Intermediate flows										
	1. Rural	2. Ind & Serv	1. Rural	2. Ind & Serv	3. Sum (1+2)	4. Private Consumption	5. Gov Consumption	6. Investment	7. Exports	8. Imports	9. Tariffs	10. Net Final Demand (4+5+6+7-8-9)	Total Domestic Supply
1. Rural	I/O Flows TO Region A		I/O Flows TO Region B			C exp on Rural Good	G exp on Rural Good	I exp on Rural Good	Exports of Rural Good	Imports of Rural good	Rural good Tariffs	Rural Value added	Total Supply of Rural good
2. Urban						C exp on Urbanl Good	G exp on Urbanl Good	I exp on Urbanl Good	Exports of Rural Good	Imports of Urban good	Urban good tariffs	Urban Value Added	Total Supply of Urban good
3.Sum (1+2)													
4. Indirect Taxes	Indirect taxes paid in Region A		Indirect taxes paid in Region B										
5. Labor	Wages in Region A		Wages in Region B										
6. Capital	Profits in Region A		Profits in Region B										
7. Sum (4+5+6)	Value added in Region A		Value added in Region B										
8. Total Expenditures	Total Value of Output in Region A		Total Value of Output in Region B										

Table 4 Rich/mid income–poor income regional I/O flows (2010 Prices, Millions TL)

Regional Input Output Flows, Turkey 2010 Millions TL

	REGION High Income		REGION Low Income									
	Intermediate flows		Intermediate flows									
	1. Rural	2. Ind & Serv	1. Rural	2. Ind & Serv	3. Sum (1+2)	4. Private Consumption	5. Gov Consumption	6. Investment	7. Exports	8. Imports	9. Net Final Demand (4+5+6+7-8)	Total Domestic Supply
1. Rural	20,491.835	63,301.076	5,122.959	15,825.269	104,741.139	71,702.068	332.187	4,233.427	8,438.966	7,927.245	76,779.404	181,520.543
2. Urban	27,519.103	810,968.166	6,879.776	202,742.042	1,048,109.086	715,567.490	1579.091	215,751.307	224,637.652	286,105.142	1,026,970.397	2,075,079.483
3.Sum (1+2)	48,010.938	874,269.242	12,002.734	218,567.311	1,152,850.225							
4. Indirect Taxes	8,421.420	77,543.817	2,105.355	19,385.954	107,456.547							
5. Labor	26,886.911	297,889.223	6,721.728	74,472.306	405,970.166							
6. Capital	61,897.166	410,361.304	15,474.292	102,590.326	590,323.088							
7. Sum (4+5+6)	97,205.497	785,794.344	24,301.374	196,448.586	1,103,749.801							
8. Total Expenditures	145,216.434	1,660,063.586	36,304.109	415,015.897	2,256,600.026							

Table 5 Sectoral structure of the model and the 2002 I/O classification

	Sectors	NACE 1.1. code
1	Agriculture and animal husbandry	01, 02, 05
2	Energy	10, 11, 40
3	High technology manufacturing	30, 32, 33
4	Medium technology manufacturing	23, 24, 25, 27, 28, 29, 31
5	Cement	26
6	Food processing ind.	15, 16
7	Machinery	29
8	Textiles, clothing	17, 18, 19
9	Automatives	34, 35
10	Low technology manufacturing	13, 14, 20, 21, 22, 36
11	Construction	45
12	Technology services	64, 65, 66, 67, 72, 73, 80, 85
13	Other services	41, 51, 52, 55, 60, 61, 62, 63, 70, 71, 74, 91, 92, 93, 75, 95

final demand is met by the nonagricultural sectors and that of agriculture remains at 7 %. The sectoral structure of the economic activities is laid out in Table 5.

The *regional* SAM (R-SAM) which is based on the 2010 I/O data, is displayed in Table 6. The SAM discloses aggregate national accounts in line with the sectoral production structure across the two regions identified: the *High/mid Income Turkey* and the *Poor Turkey.* Income flows generated from the regionally differentiated activities are collected within the single private household and the central government. Expenditures, then, are carried out at the national level via the private and the public agent.

Final component of the SAM is the *rest of the world* account. This is generated at the national level for imports, but differentiated by regions as well as by sectors for the export activities. We now introduce the distinguishing features of the analytic model.

3.2 Algebraic Structure of the Applied General Equilibrium Model

The model is built on the SAM introduced above. This includes two regions (poor, rich) and 13 aggregated sectors that are constructed to represent the 2010 general equilibrium of the economy. Given the regional structure, the model initially has to account for the flows between regions. Here, we follow an approach that disaggregates the production processes in each sector at the regional level, whereas we keep the demand side aggregated at the national level. In line with this structure, the analytical construction of the model to represent the production, employment, and distribution activities at the regional level is based on the R-SAM presented in the Appendix at the end of this chapter.

Table 6 Regional SAM for Turkey—general accounts

Regional SAM for Turkey General Set Up

			REGIONA				REGION B			
			Activities Region A		Factors Region A		Activities Region B		Factors Region B	
			1. Agriculture Reg a	2. Ind & Serv Reg A	Labour in Region A	Capital Region A	1. Agriculture Reg B	2. Ind & Serv Reg B	Labor in Region B	Capital Region B
REGION A	Activities Region A	1. Agriculture								
	Factors Region A	5. Labour Region A	Agr Wages paid Reg A	Ind& serv Wages paid Reg A						
		6. Capital Region A	Agr Profits Reg A	Ind& Serv Profits Reg A						
REGION B	Activities Region B	1. Agriculture								
		2. Industry & Services								
	Factors Region B	5. Labour Region B					Agr Wages paid Reg B	Ind&Serv Wages Paid Reg B		
		6. Capital Region B					Agr Profits Reg B	Ind&Serv Profits Reg B		
	Combined Commodity Market	3. Rural	Intermediate uses of Agr sector from Rural Market Reg A	Intermediate uses of Ind&Serv sector from Rural Market Reg A			Intermediate uses of Agr sector from Rural Market Reg B	Intermediate uses of Ind&Serv sector from Rural Market Reg B		
		4. Urban	Intermediate uses of Agr sector from urban Market Reg A	Intermediate uses of Ind&Serv sector from Urban Market Reg A			Intermediate uses of Agr sector from Urban Market Reg B	Intermediate uses of Ind&Serv sector from Urban Market Reg B		
	Agents	7. Private			After tax (net) wage income from Region A	After tax (net) Profit Income from Region A			After tax (net) wage income from Region B	After tax (net) Profit Income from Region B
		8. Government	Net production taxes in Agr sector Reg A	Net production taxes in Ind&Serv sector Reg A	Taxes on Labor paid in region A	Corporate taxes paid in Region A	Net production taxes in Agr sector Reg B	Net production taxes in Ind&Serv sector Reg B	Taxes on Labor paid in region B	Corporate taxes paid in Region B
	Finance Account	9. Private Investment								
		10. Public Investment								
	ROW	11.ROW								
	TOTALS		Total expenditures on Agr Output Supplied in Reg A	Total expenditures on Ind&Serv Output Supplied in Reg A	Total gross wage income from Region A	Total gross Profit Income from Region A	Total expenditures on Agr Output Supplied in Reg B	Total expenditures on Ind&Serv Output Supplied in Reg B	Total gross wage income from Region B	Total gross Profit Income from Region B

Table 6 (continued)

			Combined Commodity Market		Agents		Finance Account			
			Agriculture	Industry & Services	7. Private	8. Government	9. Private Investment	10. Public Investment	11. ROW	SUM
REGION A	Activities Region A	1. Agriculture	Supply of Agr goog from Reg A in combined Domestic Market						Exports of Agr good from Region A	Value of Gross Production in Agr good Reg A
				Supply of Ind&Serv good from Reg A in Combined Domestic Market					Exports of Ind&Serv good from Region A	Value of Gross Production in Ind&Serv good Reg A
	Factors Region A	5. Labour Region A								Total gross wage income from Region A
		6. Capital Region A								Total gross Profit Income from Region A
REGION B	Activities Region B	1. Agriculture	Supply of Agr good from Reg B in combined Domestic Market						Exports of Agr good from Region B	Value of Gross Production in Agr good Reg B
		2. Industry & Services		Supply of Ind&Serv good from Reg B in Combined Domestic Market					Exports of Ind&Serv good from Region B	Value of Gross Production in Ind&Serv good Reg B
	Factors Region B	5. Labour Region B								Total gross wage income from Region B
		6. Capital Region B								Total gross Profit Income from Region B
	Combined Commodity Market	3. Rural			Private consumption on Agr good	Public consumption on Agr good	Private investment on Agr good	Public investment on Agr good		Total Income generated in Rural Market
		4. Urban			Private consumption on Ind&Serv good	Public consumption on Ind&Serv good	Private Investment on Ind&Serv good	Private investment on Ind&Serv good		Total Income generated in Urban (Ind&Serv) Market
	Agents	7. Private				Transfers			Remittances	Total Private Income
		8. Government	VAT and Tariffs on Agr market	VAT and Tariffs on Ind&Serv market	Household Taxes					Total public income
	Finance Account	9. Private Investment			Private Savings used for Priv. Investment					Private Investment
		10. Public Investment			Private Sav-Inv Surplus	Public Savings			Foreign Deficit (Foreign savings)	Public Investment
	ROW	11.ROW	Imports of Agr good	Imports of Ind& Serv good	Interest Payments on Private Foreign Debt	Interest Payments on Public Foreign Debt				Total foreign exchange expenditures (of Turkey)
	TOTALS		Total Absorption (Domestic supplies + Imports - Exports) of Agr good	Total Absorption (Domestic supplies + Imports -Exports) of Ind&Serv good	Total Private Expenditures	Total Public Expenditures	Private Investment	Public Investment	Total foreign exchange earnings (of Turkey)	

SAM social accounting matrix

Building on this structure, we have total supply (absorption) at the national level as the sum of the value added produced in each region of the economy. The model follows the Armingtonian system of trade where the domestic production (*DC*), coupled with the import demand (*M*) makes up the *composite commodity* at national level. Following Armington (1969), we assume that the domestic and imported commodities are imperfect substitutes through a constant elasticity of substitution (CES) function:

$$CC_i = \overline{AC}_i \left[\delta_i M_i^{-\rho_i} + (1-\delta_i) DC_i^{-\rho_i} \right]^{-1/\rho_i}. \tag{1}$$

CC in Eq. (1) represents total absorption in terms of the composite commodity; DC is the level of domestic production and M is the level of imports in each sector *i*.

$\sigma = 1/1-\rho$ is parameter of CES between domestic production and imports. Here, we assume that Eq. (1) is representing the relationship between domestic production and imports at the *national level*. Total domestic production however, is also differentiated by the region of origin, DC_r. Therefore, the substitution possibilities represented in the equation above are among the regional domestic production DC_Y, DC_Z, and imports, M, which make up total domestic absorption. Figure 1 summarizes this relationship.

Here, the factors of production, capital (*K*) and labor (*L*) in each region produce the output X of the region. The profit maximization behavior of the representative firm in each region determines the regional wages (*W*) and the regional profit rate (*rk*). Output in each region is either demanded domestically (*DC*) or exported (*E*). Total domestic absorption at the nation-wide level (*CC*), on the other hand is further decomposed into consumption (*C*), investment (*I*), government spending on commodities (*G*), and regional intermediates (INT_r). Under such a setting, the import price in each sector is set at the national level; with no further differentiation at the regional level. Yet, based on the resource availability and differences in factor prices, export price in each sector is allowed to vary at the regional level.

The price of the composite commodity then is a function of the shares' domestic commodity and imports in the composite and the prices of domestic commodity and imports in each sector *i*:

$$PC_i = P_i^D \left[\left(\frac{DC_i}{CC_i} \right) + P_i^M \left(\frac{M_i}{CC_i} \right) \right] \left[1 + saltax_i \right], \tag{2}$$

$$P_i^M = P_i^{WM} \cdot \varepsilon (1 + tm_i), \tag{3}$$

$$P_{i,r}^M = P_{i,r}^{WE} \cdot \varepsilon (1 - tx_{i,r}), \tag{4}$$

saltax in Eq. (2) represents the sales tax rate. *tm* and *te* in Eqs. (3 and 4) are tariff and export tax/subsidy rates.

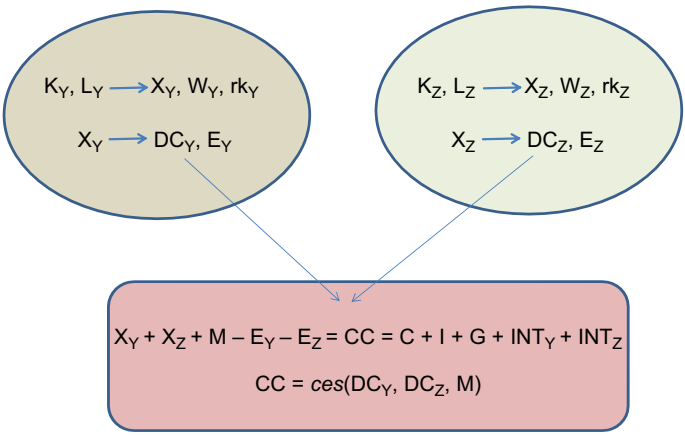

Fig. 1 Domestic production, imports, and absorption

Based on the characterization of the production technology at regional level, regional unemployment rate is defined as the difference between regional labor supply and the regional demand for labor. Likewise, total capital supply in each region is equated with total capital demand to clear the capital markets at the regional level:

$$UNEMP_r = LSUP_r - \sum_i LD_{i,r}, \tag{5}$$

$$\sum_i K_{i,r} = KSUPP_r. \tag{6}$$

Net of tax factor incomes, along with transfers from the government, interest income on domestic debt, factor income from the rest of the world net of interest payments on foreign debt are the basic sources of income for the households in each region:

$$Y_r = \sum_i (W_r WFDIST_{ir} LD_{ir} + (1 - corptax) RK_r RKDIST_{ir} K_{ir} + GOVTRANS + r^D DomDebtG + NPFI - r^F ForDebtP \tag{7}$$

In Eq. (7), W_r is the regional nominal wage rate, $WFDIST_{ir}$ is the parameter representing the difference between the regional nominal wage rates. Similarly RK_r is the profit rate differentiated at the regional level and $RKDIST_{ir}$ is the associated difference in the regional profit rates. K_{ir} represents the capital demand of each sector at the regional level. *GOVTRANS is* total public transfer to the households, $DomDebt^G$ is the stock of domestic public debt, $ForDebt^P$ is the stock of private foreign debt, and NPFI is the net factor income from abroad.

The government collects sales taxes (*TOTSALTAX*), production taxes (*TOTPRODTAX*), tariffs (*TARIFF*), corporate taxes (*TOTCORPTAX*), income taxes (*TOTHHTAX*), and export taxes (*EXTAX*):

$$GREV = TOTPRODTAX + TOTSALTAX + TARIEF + TOTSSTAX + TOTCORPTAX + TOTHHTAX + EXTAX \quad (8)$$

On the expenditures side, we assume that the government follows a predetermined primary surplus target as its fiscal policy rule. Given the public revenues, the amount of public transfers, the stock of domestic and foreign debts, it is the public investment variable that adjusts to the balance of the public sector in the model economy.[1] Accordingly, the public sector borrowing requirement is defined as:

$$PSBR = GREV - GCON - GINV - r^F ForDebt^G - r^D DomDebt^G - GOVTRANS. \quad (9)$$

PSBR is either financed by domestic borrowing $\Delta DomDebt^G$, or foreign borrowing $\Delta ForDebt^G$.

Private households save a s^p of their disposable income. The rest of the consumption demand is distributed among the products of the sectors of the economy by constant shares, $cles_i$ at the composite price PC_i:

$$CD_i = cles_i \cdot \frac{PRIVCON}{PC_i}. \quad (10)$$

Similarly, total government consumption is distributed by constant shares among the sectors of the economy:

$$GD_i = gles_i \cdot \frac{GOVCON}{PC_i}. \quad (11)$$

We assume that as part of the fiscal rule, total government consumption, *GOVCON* in Eq. (11) is determined as a constant share of total revenues:

$$GOVCON = gcr\,GREV. \quad (12)$$

3.3 Equilibrium and the Recursive Dynamic Structure of the Model

The general equilibrium of the macroeconomy is associated with the relative prices in goods and factor markets and the real exchange rate that balances the goods markets, the factor markets, and the current account. In each period, we assume that

[1] The fiscal rule of the 2010s is represented by a comprehensive primary surplus target in Eq. (9).

the formal real wage rate is constant and it is the regional unemployment levels that help the regional labor markets clear.

The equilibrium condition of the goods market implies that total demand is equal to total supply in each sector:

$$CC_i = CD_i + GD_i + IDP_i + IDG_i + INT_i. \tag{13}$$

The reflection of the goods and factor markets equilibrium at macrolevel, implies that total saving and total investments to equate:

$$PSAV + GSAV + e\ CAdef = PINV + GINV. \tag{14}$$

CAdef in Eq. (14) represents the current account deficit of the national economy in terms of foreign currency (US dollars). Here, *CAdef* is the difference between the exports and workers' remittances on the revenues side and the import bill, factor income transfers abroad, and interest payments on (private and public) foreign debt on the expenditures side:

$$\begin{aligned} CAdef &= \sum P_i^w E_i + ROWtrHH + ForBor^E + ForBor^G \\ &- \left[\sum P_i^w E_i + \left(trrow \sum (1 - t_{Corp}) rK_i \right) / e + r^F ForDebt^E + r^F ForDebt^G \right] \end{aligned} \tag{15}$$

In the model, we assume that the private and public components of the external capital inflows follow a predetermined path at a fixed level in foreign exchange terms. Therefore, it is the real exchange rate, *e* that balances the current account each period.

The model updates the annual values of the exogenously specified variables and also the policy ratios in an attempt to characterize the 2010–2025 growth trajectory of the Turkish economy. Here we first update capital stocks with new investment expenditures net of depreciation; and also increase the available labor supplies by the population growth rates. Similarly, technical factor productivity rates are specified exogenously in a *Hicks-neutral* manner.

In order to be able to represent the conditions of the labor markets at the regional level in detail, we explicitly model the migration behavior between the regions of the economy:

$$\begin{aligned} L_Y^S(t+1) &= (1 + n_Y) L_Y^S(t) - MIG(t) \\ L_Z^S(t+1) &= (1 + n_Z) L_Z^S(t) + MIG(t). \end{aligned} \tag{16}$$

Here, *MIG* represents the labor migrating between regions; based on the value of this variable, we find the total labor supply in regions *Y* (poor) and *Z* (rich), respectively. n_Y and n_Z are the population (labor supply accordingly) growth rates in regions *Y* and *Z*, respectively. We follow the traditional *Harris-Todaro* (1970) approach to model the behavior of MIG through successive time periods. Given the elasticity parameter *migres* to represent the sensitivity of the migration behavior to

the difference between the expected wage rate in the rich region (Z) and the actual wage rate in the poor region (Y), we take on that migration of labor from poor region to rich region is a function of this difference and the labor stock of the poor region:

$$MIG(t) = migres \cdot \left[\frac{E[W_Z] - W_Y}{W_Y} \right] L_Y^S(t). \tag{17}$$

We assume that the public and private sectors differ in terms of their investment behavior. In the public sector, the distribution of total investments, GINV at the regional and at the sectoral level (*investment by destination*) is determined exogenously to represent its relevance as a policy tool. On the other hand, the sectoral distribution of private investments in each region is formulated as a function of the profit rates of the production sectors of the economy. Such a formulation is based on the Tobin-q model of investment and helps one to determine the distribution of private investments first at the regional and then, based on the difference between the sectoral and (regional) average profit rates, at the sectoral level. Accordingly, in each region we calculate the sectoral profit rates as the ratio of total value-added net of wage payments to the value of installed capital stock of sector i:

$$r_{i,Y} = \frac{PVA_{i,Y} \cdot X_{i,Y}^S - W_Y \cdot L_{i,Y}^D}{PC_i K_{i,Y}}. \tag{18}$$

Once average profit rate (r_{AVG}) in each region is determined, it becomes straightforward to regulate sectoral investment demands through the difference between the profit rate of the specific sector i ($r_{i,R}$) and the average profit rate of the region:

$$DK_{i,R}(t+1) = SP_{i,R} + \mu SP_{i,R} \left[\frac{r_{i,R} - r_{AVG}}{r_{AVG}} \right]. \tag{19}$$

$DK_{i,R}$ in Eq. (19) is the share of private investment of sector i in region R in total regional private investment, $SP_{i,R}$ is the share of profits of the same sector in total regional profits. Accordingly, if the profit rate of sector i is higher (lower) than the average profit rate among the sectors of the region, the share that sector gets from the regional total investment increases (decreases) through time.

The sensitivity parameter μ in Eq. (19) is designed to reflect the effect of expectations and future uncertainty on the distribution of total regional investment among the sectors. Even though as mechanical as it may seem, the system designed in Eq. (19) emphasizes the "profit drive" as one of the main determinants of the private investments.

Finally, in this stage we account for the evolution of debt stocks. First note that government's foreign borrowing is taken as a ratio of aggregate PSBR:

$$e\ ForBor^G = (gfborrat) PSBR, \tag{20}$$

thus,

$$DomBor = (1 - gfborrat)\, PSBR. \tag{21}$$

Consequently, government domestic debt accumulates via:

$$DomDebt_{t+1} = DomDebt_t + DomBor_t. \tag{22}$$

Government foreign debt, on the other hand, becomes:

$$ForDebt^G{}_{t+1} = ForDebt^G{}_t + ForBor^G{}_t. \tag{23}$$

Similarly private foreign debt is found as:

$$ForDebt^P{}_{t+1} = ForDebt^P{}_t + ForBor^E{}_t. \tag{24}$$

This completes the algebraic specification of the general equilibrium model. We now turn to its use as an economic laboratory device to analyze various policy environments over the 2010–2025 macroeconomic path.

4 Policy Analysis

4.1 Base Path

Now we will utilize our analytical structure to investigate alternative policy scenarios at the regional/sectoral level. To this end, we first start with the task of generating a *business-as-usual* scenario, which we refer as the *base path*. This path yields the historical trends of the Turkish economy, if segmented into the medium future without any changes in the policy variables, nor the structural parameters. Then, at the second stage we introduce alternative policy environments and contrast the model's solution paths with those of the *base path* to answer questions of the "*what if?*" type. This exercise enables us to provide a cost-benefit analysis of the policies distinguished and allows us to establish an objective ranking of the alternative policy environments that could be envisaged from such an analysis.

We extend our time horizon over 2010–2025. Over this path, we maintain our *business-as-usual* stance and keep the policy variables intact without any change. Also, we kept the structural parameters and their trends at their current levels. Wherever possible we have incorporated the official programmed values (especially with respect to components of final demand) into our trends estimates. Sure enough, there had to be further hypotheses to be incurred regarding various exogenous flows and parametric values. To this end we have adhered to the following specifications:

- Total factor productivity rates are assumed to continue at 0.5 % in agriculture and 1.5 % in nonagricultural sectors of the *high/mid-income Turkey*. These are taken at 0 % in agriculture and 0.1 % in nonagriculture at the *Poor Turkey*;
- Public investments *by destination* shares are kept constant at their current levels with 48 % in *high/mid-income Turkey* and 52 % in the *Poor Turkey*.
- Population (labor supply) growth is set at 1 % in the *high/mid-income Turkey*, and 1.6 % in the *Poor Turkey*. The migration elasticity parameter is set 0.05.

The model solves the *equilibrium* real exchange rate endogenously to maintain consistency at the balance of payments constraint; and sets the interest rate at 5 % (roughly at par with the trend growth rate of the gross domestic product (GDP). The model generates the regional as well as sectoral flows via Walrasian principles of general equilibrium in response to the (endogenously solved) relative prices, wage rate, and the exchange rate, all in fixed 2010 prices.

All along the base path, the fiscal policy is conducted under the implicit constraint of the "fiscal rule" so as to maintain a falling rate of public debt ratio. To this end the primary budget balance is set at 3 % as a ratio to the GDP over the base path. To achieve the fiscal rule, public consumption expenditure is resolved as the balancing variable in the public accounts, given the tax revenues and other sources of public income.

The base path "solution" of the model reveals that national income increases to 2,100 billion TL in 2025 (in 2010 fixed prices) from its level of 1,200 billion TL in 2010. Yet, a closer look at the *regional* differentiation of the aggregate income suggests that the existing gap across the *High/mid Income Turkey* and the *Poor Turkey*, continues to widen. In other words, the *Poor Turkey* remains trapped in the poverty trap. The end result of this divergence is the overall slowdown of the national economy. The workings of the poverty trap, thus, constitute an important attribute of the overall *middle-income trap* for the national economy as a whole. Figure 2 portrays the evolution of this hypothesis over the modeling horizon.

We further read that, under the quite optimistic assumptions of the base path, aggregate export revenues reach to US$ 443 billion, with about two-thirds of this sum being generated by the *High/mid Income Turkey* (Fig. 3).

The base path indicates that the current account deficit is stabilized at a ratio of 4 % to the GDP; and thus, the aggregate saving-investment balance remains at that level by 2025 (Fig. 4). Public debt as a ratio to the GDP falls secularly to reach 19 % as a ratio to the GDP by 2025 (Fig. 5).

4.2 Alternative Policies of Regional Development

The first scenario encompasses the analysis of a regional economic promotion exercise by way of increasing production and investment subsidies (in the model's technical language *reduction* of indirect *net* production taxes) to the poor region. This scenario in its essence tries to capture the essential elements of the incentive system introduced in June 2012 to promote regional development. The program

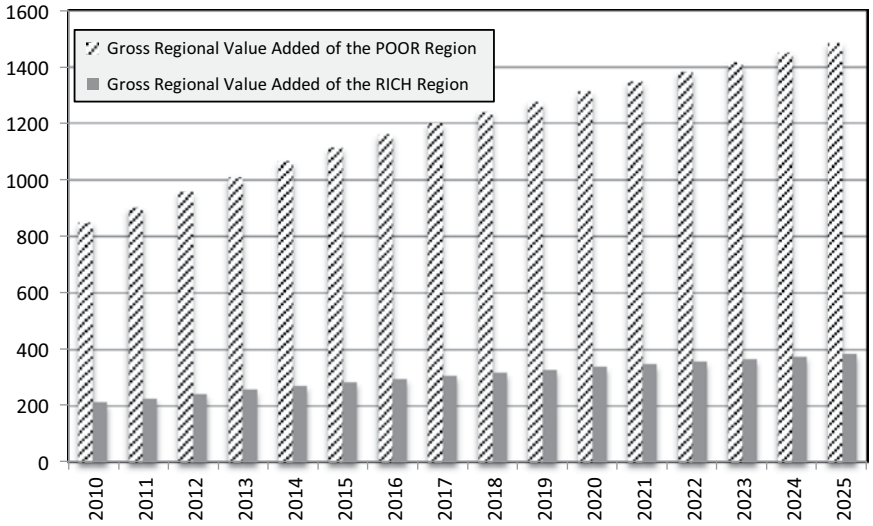

Fig. 2 BAU (Business-As-Usual) path–GDP and regional value added (billions TL, 2010 prices)

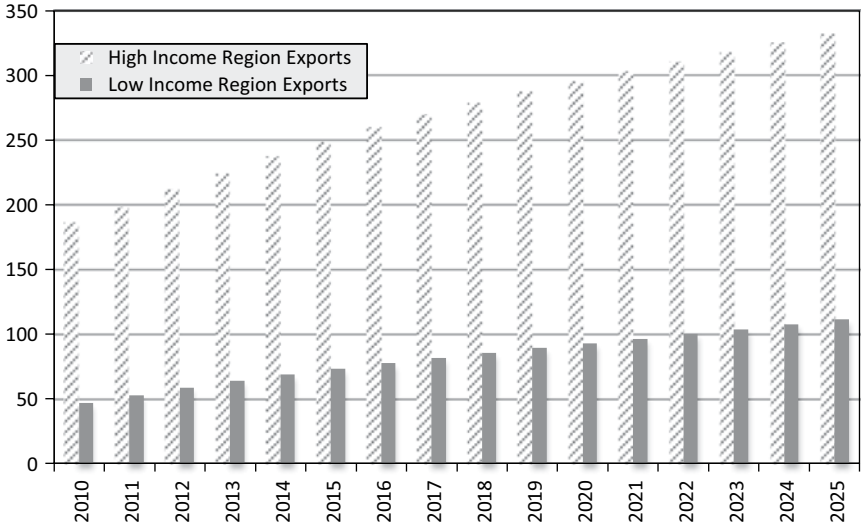

Fig. 3 BAU (Business-As-Usual) path–exports (billion US$)

entailed six groups of regions across the whole Turkey and introduced differentiated sets of subsidies and tax concessions.

In addition, we do not envisage any further changes in the structural parameters, nor in the other policy decisions regarding the public sector: the fiscal rule is maintained; the division of public investments is not perturbed; and the *direct income* tax rates are not changed.

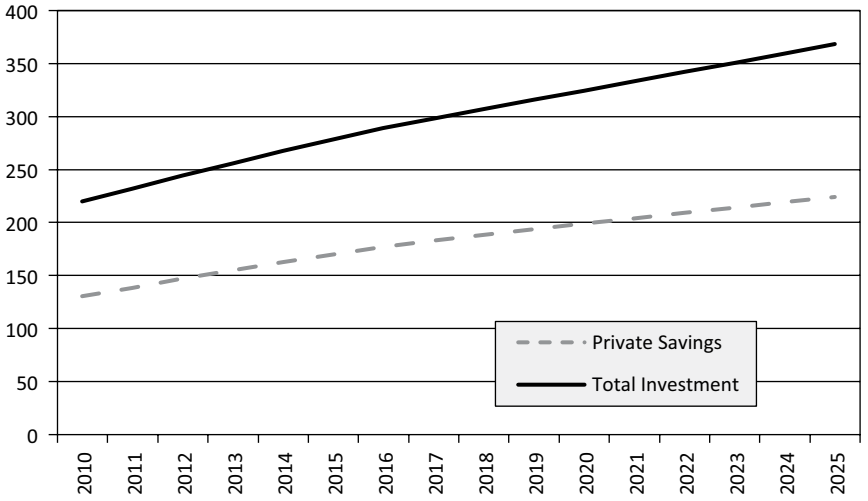

Fig. 4 BAU (Business-As-Usual) path–private savings and total investment expenditures

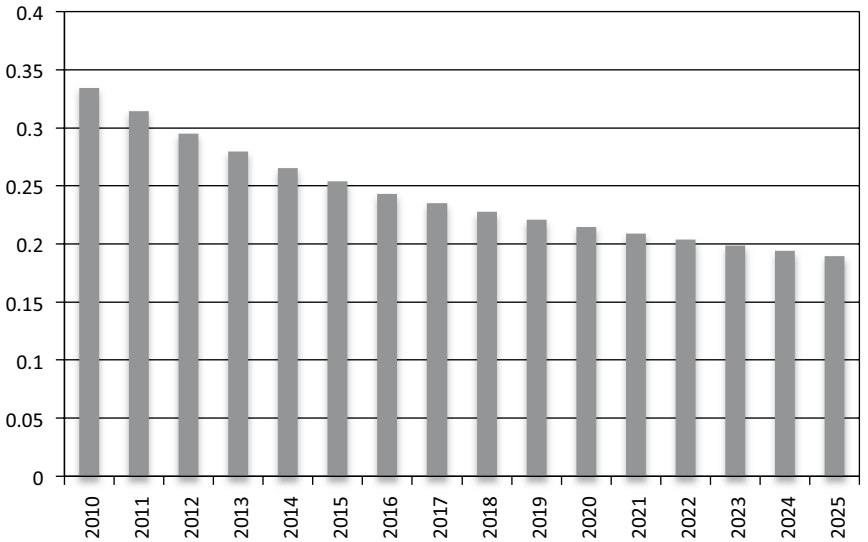

Fig. 5 BAU (Business-As-Usual) path–public domestic debt/GDP

The scenario results disclose many interesting results that for long captured the development agenda of Turkey. First is the observation that even though the level of regional value added rises in the Poor Turkey, its stimulus proves short-lived, given the lack of structural changes that would boost productivity gains. If limited to price incentives alone, the early gains from factor reallocation and income transfer soon

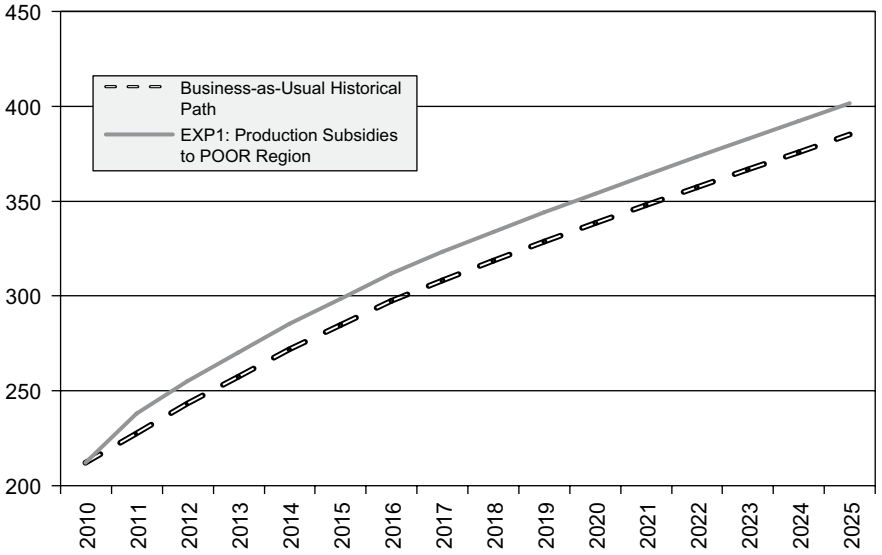

Fig. 6 Low income region value added

taper off, as the law of diminishing returns hit the logic of regional capital accumulation. This leads to our second observation: the reallocation of factors to the Poor Turkey region relatively deprives the *High/Mid Income Turkey* from the resources that would otherwise accrue to the region. As the Rich Turkey region stumbles, aggregate national income could not be invigorated at any significant sense. The drag of the Poor Turkey continues to squander the aggregate national economy within the middle income trap, in spite of the early progress in its regional income. These results are portrayed in Fig. 6 and summarized in Tables 7, 8, 9, and 10 below.

Many mechanisms are at work for this dismal result, to be understood only within the discipline of general equilibrium. The most obvious mechanism is the slowing down of migration (of not only of labor, but also of capital, as well) from the Poor Turkey to the *High/Mid Income Turkey*. The Poor Turkey, relatively reducing its role as the supplier of *unlimited supplies of cheap labor*, now deprives the *High/Mid Income Turkey* from a significant source of cost reduction. Furthermore, as income is indirectly transferred back to the Poor region, aggregate private income relatively declines as labor remunerations generated from the backward technologies generate lower wage income. Thus aggregate savings dwindle, pulling down the rate of capital accumulation as a whole.

These results signify the presence of duality drags reducing the rate of growth for the whole national economy. The poverty of the region together with poor infrastructure, limited linkages, widespread informalization, and low skills lead to failures in internalizing the spillovers and other externalities that would otherwise characterize episodes of sustained growth. In the absence of a productivity-driven program aimed at structurally transforming Poor Turkey as a region, the drag of the duality trap continues to haunt the national economy.

Table 7 Regional SAM for Turkey, 2010, million TL

			ACTIVITIES - HIGH INCOME													FACTORS - HIGH INCOME		
			AGL	ENG	HTE	MTE	CEM	FOO	MAC	TEX	AUT	LTE	CON	HSE	OSE	LF	LI	KP
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
ACTIVITIES-HIGH INCOME	AGL	1																
	ENG	2																
	HTE	3																
	MTE	4																
	CEM	5																
	FOO	6																
	MAC	7																
	TEX	8																
	AUT	9																
	LTE	10																
	CON	11																
	HSE	12																
	OSE	13																
FACTORS-HIGH INCOME	LF	14	11,412.6	5,425.4	1,199.6	13,630.9	3,122.8	8,302.3	3,928.5	13,829.9	3,823.3	5,401.6	9,656.3	38,312.8	88,665.5			
	LI	15	15,474.3	2,842.5	361.3	4,984.1	1,252.1	4,837.1	1,411.1	5,047.5	736.0	2,268.0	5,417.1	10,327.6	63,105.9			
	KP	16	61,897.2	11,369.9	1,445.0	19,936.4	5,008.5	19,348.5	5,644.3	20,190.1	2,944.1	9,072.1	21,668.5	41,310.3	2,52,423.6			
ACTIVITIES-LOW INCOME	AGL	17																
	ENG	18																
	HTE	19																
	MTE	20																
	CEM	21																
	FOO	22																
	MAC	23																
	TEX	24																
	AUT	25																
	LTE	26																
	CON	27																
	HSE	28																
	OSE	29																
FACTORS-LOW INCOME	LF	30																
	LI	31																
	KP	32																
COMMODITIES	AGL	33	20,491.8	75.5	1.6	1,161.4	12.5	49,263.6	62.8	4,079.9	8.2	1,499.6	25.7	484.5	6,625.7			
	ENG	34	699.0	30,959.7	58.2	17,203.1	1,562.3	1,235.4	521.5	2,285.1	297.2	1,679.1	266.5	2,435.8	10,844.0			
	HTE	35	54.3	99.6	5,567.0	556.7	11.7	69.7	443.4	40.9	73.4	94.6	72.7	2,368.8	1,671.7			
	MTE	36	8,000.1	2,404.5	1,998.1	60,638.7	2,517.7	6,854.9	8,988.4	16,800.2	9,401.4	13,062.3	19,464.1	5,186.5	33,579.6			
	CEM	37	159.8	24.5	61.6	2,415.6	4,010.2	920.0	436.2	529.2	478.5	270.5	9,066.8	1,121.7	5,860.1			
	FOO	38	4,246.0	7.6	3.0	470.6	7.4	19,390.3	41.9	1,627.2	6.5	131.4	30.0	502.8	9,391.8			
	MAC	39	1,505.6	700.8	100.8	1,801.0	518.3	542.4	3,540.9	715.7	350.8	686.0	1,553.1	182.8	4,080.6			
	TEX	40	129.9	52.9	148.5	884.8	32.3	301.5	148.7	64,169.7	261.2	1,683.5	166.6	636.8	5,179.8			
	AUT	41	347.3	80.3	7.0	209.7	51.2	67.3	174.9	53.5	6,756.1	82.1	130.3	282.9	9,499.9			
	LTE	42	304.1	79.9	248.9	7,088.2	4,079.3	2,847.6	525.7	1,697.1	192.5	10,279.5	3,606.5	2,682.9	12,248.1			
	CON	43	379.3	32.2	4.9	36.6	5.2	44.3	19.8	24.4	6.7	34.1	1,514.6	572.6	4,658.7			
	HSE	44	3,522.6	757.9	629.5	5,198.6	1,103.3	1,359.5	799.4	4,294.4	569.9	1,353.0	1,871.0	16,467.1	29,244.1			
	OSE	45	8,170.9	2,717.7	2,440.1	25,077.9	4,028.1	18,170.1	4,430.9	21,301.5	5,117.1	9,924.2	11,512.6	27,101.2	1,39,013.9			
HOUSEHOLDS		46														2,06,711.5	1,18,064.6	
ENTERPRISES		47																4,72,258.5
SOC SEC INST.		48	2,853.2	1,356.3	299.9	3,407.7	780.7	2,075.6	982.1	3,457.5	955.8	1,350.4	2,414.1	9,578.2	22,166.4			
GOVERNMENT		49	5,568.3	335.2	112.6	3,346.4	463.3	1,082.8	277.7	1,799.3	183.0	753.0	2,248.6	2,181.3	15,935.9			
VAT		50																
IMPTAX		51																
PROTAX		52	5,568.3	335.2	112.6	3,346.4	463.3	1,082.8	277.7	1,799.3	183.0	753.0	2,248.6	2,181.3	15,935.9			
HHINCTAX		53																
FACINC		54																
ENTTAX		55																
CAPITAL Acc	Total Sav	56																
REST OF THE WORLD		57																
Total Expenditures			1,45,216.4	59,322.4	14,687.6	1,68,048.4	28,567.0	1,36,713.0	32,378.4	1,61,943.1	32,161.9	59,624.9	90,685.1	1,61,736.7	7,14,195.3	2,06,711.5	1,18,064.6	4,72,258.5
CHECK (Exp-Rec)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 7 (continued)

Social Accounting Matrix, Turkey, 2010, Millions TL

			ACTIVITIES-LOW INCOME													FACTORS-LOW INCOME		
			AGL	ENG	HTE	MTE	CEM	FOO	MAC	TEX	AUT	LTE	CON	HSE	OSE	LF	LI	KP
			17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
ACTIVITIES-HIGH INCOME	AGL	1																
	ENG	2																
	HTE	3																
	MTE	4																
	CEM	5																
	FOO	6																
	MAC	7																
	TEX	8																
	AUT	9																
	LTE	10																
	CON	11																
	HSE	12																
	OSE	13																
FACTORS-HIGH INCOME	LF	14																
	LI	15																
	KP	16																
ACTIVITIES-LOW INCOME	AGL	17																
	ENG	18																
	HTE	19																
	MTE	20																
	CEM	21																
	FOO	22																
	MAC	23																
	TEX	24																
	AUT	25																
	LTE	26																
	CON	27																
	HSE	28																
	OSE	29																
FACTORS-LOW INCOME	LF	30	2,853.2	1,356.3	299.9	3,407.7	780.7	2,075.6	982.1	3,457.5	955.8	1,350.4	2,414.1	9,578.2	22,166.4			
	LI	31	3,868.6	710.6	90.3	1,246.0	313.0	1,209.3	352.8	1,261.9	184.0	567.0	1,354.3	2,581.9	15,776.5			
	KP	32	15,474.3	2,842.5	361.3	4,984.1	1,252.1	4,837.1	1,411.1	5,047.5	736.0	2,268.0	5,417.1	10,327.6	63,105.9			
COMMODITIES	AGL	33	5,123.0	18.9	0.4	290.3	3.1	12,315.9	15.7	1,020.0	2.0	374.9	6.4	121.1	1,656.4			
	ENG	34	174.8	7,739.9	14.6	4,300.8	390.6	308.9	130.4	571.3	74.3	419.8	66.6	608.9	2,711.0			
	HTE	35	13.6	24.9	1,391.7	139.2	2.9	17.4	110.8	10.2	18.4	23.7	18.2	592.2	417.9			
	MTE	36	2,000.0	601.1	499.5	15,159.7	629.4	1,713.7	2,247.1	4,200.1	2,350.4	3,265.6	4,866.0	1,296.6	8,394.9			
	CEM	37	39.9	6.1	15.4	603.9	1,002.5	230.0	109.0	132.3	119.6	67.6	2,266.7	280.4	1,465.0			
	FOO	38	1,061.5	1.9	0.7	117.6	1.9	4,847.6	10.5	406.8	1.6	32.8	7.5	125.7	2,347.9			
	MAC	39	376.4	175.2	25.2	450.3	129.6	135.6	885.2	178.9	87.7	171.5	388.3	45.7	1,020.1			
	TEX	40	32.5	13.2	37.1	221.2	8.1	75.4	37.2	16,042.4	65.3	420.9	41.6	159.2	1,294.9			
	AUT	41	86.8	20.1	1.8	52.4	12.8	16.8	43.7	13.4	1,689.0	20.5	32.6	70.7	2,375.0			
	LTE	42	76.0	20.0	62.2	1,772.1	1,019.8	711.9	131.4	424.3	48.1	2,569.9	901.6	670.7	3,062.0			
	CON	43	94.8	8.1	1.2	9.2	1.3	11.1	4.9	6.1	1.7	8.5	378.6	143.2	1,164.7			
	HSE	44	880.7	189.5	157.4	1,299.6	275.8	339.9	199.9	1,073.6	142.5	338.2	467.7	4,116.8	7,311.0			
	OSE	45	2,042.7	679.4	610.0	6,269.5	1,007.0	4,542.5	1,107.7	5,325.4	1,279.3	2,481.1	2,878.1	6,775.3	34,753.5			
HOUSEHOLDS		46														51,677.9	29,516.2	
ENTERPRISES		47																1,18,064.6
SOC SEC INST.		48	713.3	339.1	75.0	851.9	195.2	518.9	245.5	864.4	239.0	337.6	603.5	2,394.6	5,541.6			
GOVERNMENT		49	1,392.1	83.8	28.2	836.6	115.8	270.7	69.4	449.8	45.8	188.2	562.2	545.3	3,984.0			
VAT		50																
IMPTAX		51																
PROTAX		52	1,392.1	83.8	28.2	836.6	115.8	270.7	69.4	449.8	45.8	188.2	562.2	545.3	3,984.0			
HHINCTAX		53																
FACINC		54																
ENTTAX		55																
CAPITAL Acc	Total Sav	56																
REST OF THE WORLD		57																
Total Expenditures			36,304.1	14,830.6	3,671.9	42,012.1	7,141.7	34,178.3	8,094.6	40,485.8	8,040.5	14,906.2	22,671.3	40,434.2	1,78,548.8	51,677.9	29,516.2	1,18,064.6
CHECK (Exp-Rec)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 7 (continued)

Social Accounting Matrix, Turkey, 2010, Millions TL

			COMMODITIES												
			AGL	*ENG*	*HTE*	*MTE*	*CEM*	*FOO*	*MAC*	*TEX*	*AUT*	*LTE*	*CON*	*HSE*	*OSE*
			33	*34*	*35*	*36*	*37*	*38*	*39*	*40*	*41*	*42*	*43*	*44*	*45*
ACTIVITIES-HIGH INCOME	*AGL*	*1*	1,38,465.3												
	ENG	*2*		59,237.4											
	HTE	*3*			8,663.8										
	MTE	*4*				1,38,078.1									
	CEM	*5*					23,309.1								
	FOO	*6*						1,29,183.2							
	MAC	*7*							25,150.3						
	TEX	*8*								1,16,950.7					
	AUT	*9*									17,481.3				
	LTE	*10*										51,789.7			
	CON	*11*											87,048.2		
	HSE	*12*												1,56,290.3	
	OSE	*13*													6,67,171.4
FACTORS-HIGH INCOME	LF	*14*													
	LI	*15*													
	KP	*16*													
ACTIVITIES-LOW INCOME	*AGL*	*17*	34,616.3												
	ENG	*18*		14,809.3											
	HTE	*19*			2,166.0										
	MTE	*20*				34,519.5									
	CEM	*21*					5,827.3								
	FOO	*22*						32,295.8							
	MAC	*23*							6,287.6						
	TEX	*24*								29,237.7					
	AUT	*25*									4,370.3				
	LTE	*26*										12,947.4			
	CON	*27*											21,762.1		
	HSE	*28*												39,072.6	
	OSE	*29*													1,66,792.8
FACTORS-LOW INCOME	LF	*30*													
	LI	*31*													
	KP	*32*													
COMMODITIES	*AGL*	*33*													
	ENG	*34*													
	HTE	*35*													
	MTE	*36*													
	CEM	*37*													
	FOO	*38*													
	MAC	*39*													
	TEX	*40*													
	AUT	*41*													
	LTE	*42*													
	CON	*43*													
	HSE	*44*													
	OSE	*45*													
HOUSEHOLDS		*46*													
ENTERPRISES		*47*													
SOC SEC INST.		*48*													
GOVERNMENT		*49*													
VAT		*50*													
IMPTAX		*51*													
PROTAX		*52*													
HHINCTAX		*53*													
FACINC		*54*													
ENTTAX		*55*													
CAPITAL Acc	Total Sav	*56*													
REST OF THE WORLD		*57*	7,927.2	34,071.8	23,191.4	1,11,559.8	4,050.5	7,164.2	32,462.7	15,313.7	19,256.8	17,981.6	0.0	5,190.2	15,862.3
Total Expenditures			**1,81,008.8**	**1,08,118.5**	**34,021.1**	**2,84,157.4**	**33,186.9**	**1,68,643.2**	**63,900.5**	**1,61,502.1**	**41,108.4**	**82,718.8**	**1,08,810.3**	**2,00,553.1**	**8,49,826.5**
CHECK (Exp-Rec)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 7 (continued)

Social Accounting Matrix, Turkey, 2010, Millions TL

			HOUSEHOLDS	ENTERPRISES	SOCIAL SECURITY INST.	GOVERNMENT	PUBCONS	HHTRA	PROSUB	DOMINT	FORINT	SSITRA	PUBSAV	CAPITAL Account	REST OF THE WORLD	Row SUMS
														Total Investment		
			46	47	48	49	50	51	52	53	54	55	56	57	58	
ACTIVITIES-HIGH INCOME	AGL	1													6,751.2	1,45,216.4
	ENG	2													85.0	59,322.4
	HTE	3													6,023.8	14,687.6
	MTE	4													29,970.2	1,68,048.4
	CEM	5													5,257.9	28,567.0
	FOO	6													7,529.8	1,36,713.0
	MAC	7													7,228.1	32,378.4
	TEX	8													44,992.4	1,61,943.1
	AUT	9													14,680.6	32,161.9
	LTE	10													7,835.2	59,624.9
	CON	11													3,636.9	90,685.1
	HSE	12													5,446.4	1,61,736.7
	OSE	13													47,023.9	7,14,195.3
FACTORS-HIGH INCOME	LF	14														2,06,711.5
	LI	15														1,18,064.6
	KP	16														4,72,258.5
ACTIVITIES-LOW INCOME	AGL	17													1,687.8	36,304.1
	ENG	18													21.2	14,830.6
	HTE	19													1,505.9	3,671.9
	MTE	20													7,492.6	42,012.1
	CEM	21													1,314.5	7,141.7
	FOO	22													1,882.4	34,178.3
	MAC	23													1,807.0	8,094.6
	TEX	24													11,248.1	40,485.8
	AUT	25													3,670.2	8,040.5
	LTE	26													1,958.8	14,906.2
	CON	27													909.2	22,671.3
	HSE	28													1,361.6	40,434.2
	OSE	29													11,756.0	1,78,548.8
FACTORS-LOW INCOME	LF	30														51,677.9
	LI	31														29,516.2
	KP	32														1,18,064.6
COMMODITIES	AGL	33	71,702.1			332.2	332.2							4,233.4		1,81,008.8
	ENG	34	14,910.4			241.2	241.2							5,408.2		1,08,118.5
	HTE	35	9,347.7			281.2	281.2							10,486.4		34,021.1
	MTE	36	33,043.2			2,541.3	2,541.3							12,452.4		2,84,157.4
	CEM	37	1,490.2			0.0	0.0							3.5		33,186.9
	FOO	38	1,11,732.9			2,092.9	2,092.9							9,996.7		1,68,643.2
	MAC	39	8,876.2			0.0	0.0							34,675.6		63,900.5
	TEX	40	55,955.3			1,851.4	1,851.4							11,450.4		1,61,502.1
	AUT	41	9,613.5			2.4	2.4							9,314.2		41,108.4
	LTE	42	22,823.2			30.5	30.5							2,514.5		82,718.8
	CON	43	7,827.7			0.0	0.0							91,815.7		1,08,810.3
	HSE	44	62,495.5			53,631.7	53,631.7							463.0		2,00,553.1
	OSE	45	3,77,451.6			96,446.4	96,446.4							27,170.8		8,49,826.5
HOUSEHOLDS		46		5,55,683.3		44,864.9		44,864.9								10,06,518.4
ENTERPRISES		47				44,150.0				44,150.0					20,573.9	6,55,047.0
SOC SEC INST.		48				0.0										64,597.3
GOVERNMENT		49	88,300.0	88,300.0	64,597.3											2,84,056.5
VAT		50														
IMPTAX		51														
PROTAX		52														42,859.2
HHINCTAX		53	88,300.0													
FACINC		54														
ENTTAX		55		88,300.0												
CAPITAL Acc	Total Sav	56	1,30,948.9			37,590.3							37,590.3		51,445.6	2,19,984.7
REST OF THE WORLD		57		11,063.7												3,05,096.1
Total Expenditures			10,06,518.4	6,55,047.0	64,597.3	2,84,056.5								2,19,984.7	3,05,096.1	
CHECK (Exp-Rec)			0.00	0.00	0.00	0.00								0.00	0.00	

Table 8 Macro results

Regional Economies Macro Results

		Business As Usual Historical Path				EXP1: Production Subsidies Towards the POOR Region				EXP2: EXP1 + Productivity Gains			
	2010	2011	2015	2020	2025	2011	2015	2020	2025	2011	2015	2020	2025
High Income Regional Value Added	848.7	901.7	1,113.5	1,313.0	1,484.8	905.0	1,114.9	1,309.9	1,475.1	902.0	1,114.4	1,378.8	1,646.6
Low Income Regional Value Added	212.2	227.6	284.7	338.3	385.2	238.0	298.5	354.0	401.7	241.1	306.9	380.5	455.4
Aggregate GDP	1,103.7	1,184.2	1,491.9	1,782.2	2,029.1	1,187.7	1,493.9	1,778.6	2,016.5	1,187.0	1,499.1	1,878.6	2,258.9
High Income Region Exports (Billions USD)	186.5	198.2	248.8	295.3	332.2	198.3	246.8	291.2	325.8	193.8	237.7	300.8	362.3
Low Income Region Exports (Billions USD)	46.6	52.9	73.1	92.9	111.4	54.1	76.3	97.1	116.0	58.8	88.1	112.8	138.5
Aggregate Exports (Billions USD)	233.1	251.1	321.9	388.2	443.6	252.4	323.1	388.3	441.8	252.5	325.8	413.6	500.8
High Income Region Formal Employment	7,823.7	7,823.0	8,601.5	9,125.3	9,592.2	7,848.0	8,581.5	9,030.8	9,409.5	7,790.5	8,474.6	9,325.5	10,292.7
High Income Region Informal Employment	7,084.0	7,502.9	8,912.4	10,106.3	11,207.6	7,502.9	8,839.8	9,994.3	11,070.8	7,502.9	8,798.6	9,926.4	10,996.5
High Income Region Total Employment	14,907.7	15,326.0	17,513.8	19,231.6	20,799.8	15,350.9	17,421.3	19,025.1	20,480.3	15,293.4	17,273.2	19,251.8	21,289.2
Low Income Region Formal Employment	3,181.5	3,218.6	3,688.2	4,222.0	4,786.7	3,364.4	3,850.8	4,378.0	4,923.0	3,397.9	3,859.6	4,370.3	5,051.2
Low Income Region Informal Employment	4,506.7	4,203.7	3,759.3	3,639.8	3,695.0	4,203.7	3,831.8	3,754.1	3,837.5	4,203.7	3,873.1	3,823.5	3,915.2
Low Income Region Total Employment	7,688.3	7,422.3	7,447.5	7,861.8	8,481.7	7,568.1	7,682.7	8,132.2	8,760.5	7,601.6	7,732.7	8,193.8	8,966.3

Aggregate Domestic Economy Macro Results

		Business As Usual Historical Path				EXP1: Production Subsidies Towards the POOR Region				EXP2: EXP1 + Productivity Gains			
	2010	2011	2015	2020	2025	2011	2015	2020	2025	2011	2015	2020	2025
Aggregate Private Disposable Income	918.2	973.7	1,191.8	1,395.9	1,570.9	982.3	1,200.9	1,402.1	1,571.7	981.9	1,206.4	1,479.6	1,756.1
Private Consumption	787.3	841.4	1,048.3	1,242.3	1,406.0	848.2	1,055.3	1,246.8	1,405.4	847.6	1,058.5	1,314.7	1,570.8
Private Savings	130.9	138.9	170.0	199.1	224.0	140.1	171.3	200.0	224.1	140.0	172.0	211.0	250.4
Aggregate Investment Expenditures	220.0	231.8	278.4	324.5	368.6	232.2	278.6	323.8	366.6	232.2	279.7	338.8	402.0
Aggregate Imports	294.0	312.2	383.6	451.6	511.6	313.5	384.9	451.7	509.8	313.6	387.5	477.0	568.8
Aggregate Exports	233.1	251.1	321.9	388.2	443.6	252.4	323.1	388.3	441.8	252.5	325.8	413.6	500.8
Income Taxes	88.3	93.6	114.6	134.2	151.1	94.5	115.5	134.8	151.1	94.4	116.0	142.3	168.9
Aggregate Public Expenditures	284.1	302.3	373.6	440.5	498.3	297.1	366.4	430.5	484.8	297.3	368.7	455.3	542.9
Public Consumption	157.5	169.4	216.2	260.1	298.1	166.0	211.5	253.5	289.2	166.1	213.0	269.8	327.3
Public Savings	37.6	40.5	51.6	62.1	71.2	39.6	50.5	60.5	69.0	39.7	50.9	64.4	78.1
Public Domestic Debt Stock	368.9	368.9	368.9	368.9	368.9	368.9	368.9	368.9	368.9	368.9	368.9	368.9	368.9
Public Domestic Debt / GDP	0.33	0.31	0.25	0.21	0.19	0.31	0.25	0.21	0.19	0.31	0.25	0.20	0.17

Table 9 Region sectorial production

High Income Region Sectorial Production (Billions 2010 TL)

		Business As Usual Historical Path				EXP1: Production Subsidies Towards the POOR Region				EXP2: EXP1 + Productivity Gains			
	2010	2011	2015	2020	2025	2011	2015	2020	2025	2011	2015	2020	2025
Agriculture and Animal Husbandry	145.2	155.0	194.6	233.3	265.6	155.3	193.6	231.2	262.1	151.9	186.6	235.2	283.7
Energy	59.3	63.2	79.1	93.9	106.3	63.5	79.1	93.6	105.5	63.0	78.3	98.0	117.7
High Technology Manufacturing	14.7	15.5	18.9	22.0	24.5	15.5	18.8	21.7	24.1	15.3	18.5	22.8	27.2
Medium Technology Manufacturing	168.0	178.8	223.0	263.8	297.8	179.1	222.4	261.9	294.2	177.5	220.1	275.3	330.0
Cement	28.6	30.3	37.4	44.1	49.8	30.3	37.3	43.7	49.2	30.0	36.7	45.7	54.7
Food Processing Ind.	136.7	146.5	183.8	219.2	248.9	147.5	184.5	219.3	248.0	146.4	182.8	229.1	275.1
Machinery	32.4	34.1	41.4	48.2	54.1	34.2	41.3	47.9	53.4	33.7	40.5	49.9	59.3
Textiles, Clothing	161.9	172.0	214.2	252.5	283.5	172.8	214.1	251.0	280.3	170.8	210.6	263.4	315.3
Automatives	32.2	33.4	39.7	45.1	49.4	33.5	39.6	44.6	48.5	33.0	39.0	47.5	55.8
Low Technology Manufacturing	59.6	63.5	79.0	93.5	105.6	63.7	79.0	93.1	104.6	63.1	78.1	97.6	116.9
Construction	90.7	95.5	115.6	135.2	153.1	95.4	114.9	133.9	151.0	94.3	112.9	138.3	164.8
High Technology Services	161.7	170.9	210.1	245.3	274.1	170.5	208.5	242.3	269.3	168.3	205.5	255.4	304.5
Other Services	714.2	758.9	944.5	1,120.9	1,267.4	759.5	939.3	1,109.7	1,249.1	745.6	912.5	1,143.8	1,374.0

Low Income Region Sectorial Production (Billions 2010 TL)

		Business As Usual Historical Path				EXP1: Production Subsidies Towards the POOR Region				EXP2: EXP1 + Productivity Gains			
	2010	2011	2015	2020	2025	2011	2015	2020	2025	2011	2015	2020	2025
Agriculture and Animal Husbandry	36.3	41.3	55.9	69.1	80.6	42.7	59.0	73.1	85.2	46.3	68.7	87.3	105.5
Energy	14.8	16.2	21.0	25.5	29.5	16.1	21.0	25.5	29.4	16.6	22.3	27.9	33.7
High Technology Manufacturing	3.7	4.0	5.2	6.3	7.4	4.0	5.3	6.4	7.5	4.2	5.6	7.0	8.5
Medium Technology Manufacturing	42.0	45.8	59.3	72.3	83.9	47.6	62.1	75.6	87.5	49.1	65.4	82.1	99.4
Cement	7.1	7.8	10.2	12.6	14.8	8.0	10.5	12.9	15.2	8.4	11.4	14.3	17.3
Food Processing Ind.	34.2	37.4	48.3	58.7	67.8	37.6	48.9	59.4	68.4	38.7	51.4	64.6	78.0
Machinery	8.1	8.8	11.4	14.0	16.4	8.8	11.5	14.1	16.5	9.3	12.5	15.5	18.7
Textiles, Clothing	40.5	44.3	58.0	71.2	83.1	45.2	59.6	73.1	84.9	46.9	63.6	80.2	97.3
Automatives	8.0	8.6	11.1	13.6	16.0	8.7	11.2	13.7	16.1	9.1	11.9	14.6	17.7
Low Technology Manufacturing	14.9	16.3	21.1	25.8	30.0	16.5	21.6	26.3	30.5	17.1	23.0	28.8	34.8
Construction	22.7	24.7	31.4	37.9	44.1	25.3	32.5	39.2	45.5	26.5	35.1	43.2	51.8
High Technology Services	40.4	44.4	58.4	72.6	86.2	44.2	58.7	72.8	86.1	46.4	63.5	79.5	96.8
Other Services	178.5	200.3	268.0	331.2	388.5	201.5	274.1	339.1	396.7	216.0	311.2	392.7	475.8

Table 10 Region sectorial formal employment

High Income Region Sectorial Formal Employment (1,000 persons)

		Business As Usual Historical Path				EXP1: Production Subsidies Towards the POOR Region				EXP2: EXP1 + Productivity Gains			
	2010	2011	2015	2020	2025	2011	2015	2020	2025	2011	2015	2020	2025
Agriculture and Animal Husbandry	371.8	367.8	396.3	414.8	432.1	369.5	395.4	410.3	423.5	365.1	387.1	420.5	460.4
Energy	181.6	182.1	201.3	214.1	225.7	183.4	201.9	213.1	222.6	183.1	201.4	221.8	245.0
High Technology Manufacturing	115.7	115.9	128.1	136.1	143.2	116.2	127.7	134.5	140.1	115.4	125.9	139.0	153.7
Medium Technology Manufacturing	523.5	527.9	590.5	633.9	671.3	529.7	590.0	628.5	659.9	528.4	587.2	652.1	723.9
Cement	149.0	149.4	164.9	175.8	185.8	149.9	164.6	174.1	182.5	149.1	163.2	179.8	198.9
Food Processing Ind.	303.5	305.2	337.1	359.0	378.4	308.0	339.2	358.7	375.0	308.1	339.5	373.0	411.2
Machinery	119.4	119.1	129.9	137.4	144.8	119.6	129.7	136.1	142.2	118.7	127.9	140.0	154.3
Textiles, Clothing	611.4	615.4	687.4	735.3	774.6	619.6	688.4	730.3	762.3	616.3	681.0	756.5	838.3
Automatives	126.8	126.4	139.0	146.5	153.1	127.0	138.6	144.8	149.8	125.8	136.4	150.3	165.6
Low Technology Manufacturing	333.1	335.0	372.0	397.4	419.7	337.0	372.7	395.2	413.8	336.1	371.0	409.9	453.6
Construction	546.0	540.3	576.3	602.5	633.8	541.0	574.4	596.0	621.8	538.4	569.6	612.6	670.6
High Technology Services	1,675.5	1,689.3	1,887.5	2,023.2	2,136.8	1,688.2	1,876.4	1,995.8	2,090.1	1,675.2	1,853.2	2,064.0	2,292.4
Other Services	2,766.4	2,749.3	2,991.3	3,149.3	3,293.0	2,758.9	2,982.5	3,113.4	3,225.8	2,730.9	2,931.1	3,205.9	3,524.7

'Low Income Region Sectorial Formal Employment (1,000 persons)

		Business As Usual Historical Path				EXP1: Production Subsidies Towards the POOR Region				EXP2: EXP1 + Productivity Gains			
	2010	2011	2015	2020	2025	2011	2015	2020	2025	2011	2015	2020	2025
Agriculture and Animal Husbandry	2,670.8	2,491.5	2,219.9	2,137.9	2,161.8	2,528.0	2,300.3	2,243.2	2,284.7	2,541.5	2,349.3	2,309.3	2,356.0
Energy	9.9	9.1	8.0	7.7	7.7	8.8	7.8	7.6	7.7	8.5	7.5	7.4	7.6
High Technology Manufacturing	14.7	13.7	12.3	12.0	12.2	13.4	12.2	12.0	12.3	13.1	11.9	11.9	12.3
Medium Technology Manufacturing	66.6	61.6	54.9	53.2	53.7	62.1	56.1	54.9	55.8	60.3	53.7	53.7	55.4
Cement	18.9	17.6	15.8	15.4	15.7	17.4	15.8	15.6	16.0	17.1	15.5	15.4	15.9
Food Processing Ind.	38.6	35.3	30.8	29.5	29.6	34.7	30.5	29.5	29.8	33.3	28.7	28.4	29.1
Machinery	15.2	14.1	12.5	12.2	12.5	13.6	12.3	12.1	12.5	13.5	12.1	12.0	12.4
Textiles, Clothing	77.7	72.3	65.1	63.5	64.4	71.4	65.2	64.3	65.6	69.8	63.3	63.6	65.7
Automatives	16.1	15.0	13.6	13.4	13.8	14.5	13.4	13.3	13.8	14.4	13.3	13.2	13.7
Low Technology Manufacturing	42.4	39.1	34.8	33.6	34.0	38.6	34.7	33.9	34.4	37.5	33.3	33.2	34.1
Construction	169.5	154.9	133.1	126.5	127.9	154.5	134.5	129.3	131.6	151.1	130.3	126.3	128.6
High Technology Services	515.4	485.2	445.7	442.8	457.4	466.4	435.5	437.6	455.3	463.1	433.2	436.0	453.1
Other Services	850.9	794.3	712.8	692.1	704.3	780.3	713.4	700.8	718.0	780.4	720.9	712.9	731.4

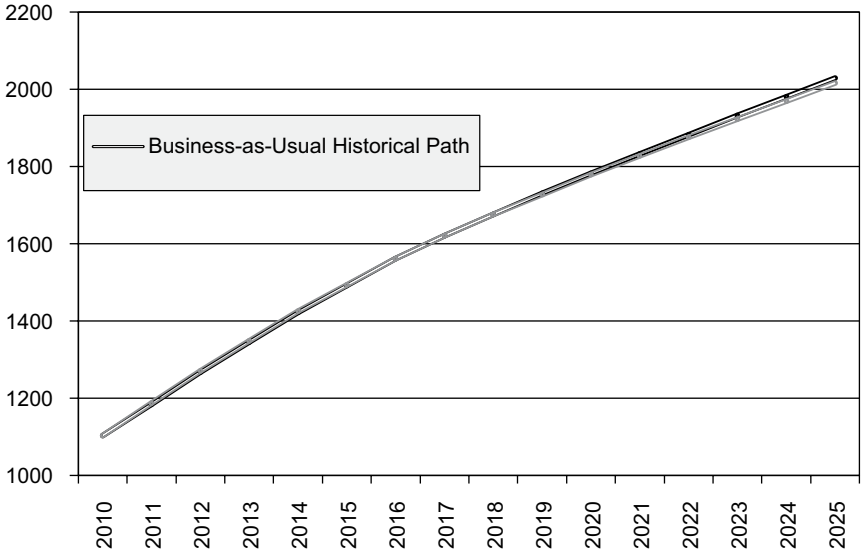

Fig. 7 Aggregate GDP (billions TL, 2010 Prices)

Thus, as diminishing returns culminate, the weak spurts of growth achieved in the Poor Turkey region leads only to a modest gain in GRVA of 4% over the 2025 base path GDP (Fig. 7). This fails to be enough for pulling the national economy from the middle income trap.

The main binding constraint faced in this scenario is that as the generous production and investment incentives provided for the Poor Region induces an expansion of the economic activity in the region; this relative repositioning of the incentives, nevertheless, divert resources away from the more productive *High/Mid Income Turkey* and reduce factor utilization there. The relative slow down in the *High/Mid Income Turkey* leads to proportionate decline of the aggregate economy as a whole. Soon after when the early gains of capital accumulation in the Poor region starts to falter as the diminishing returns to capital sink in, the national economy remains bound to the middle-income trap.

Given the lessons of this scenario, we deduce that the ongoing investment subsidization program destined to the poor regions of Turkey, if not supplemented by interventions to boost productivity and capture the spillover effects of the regional disparities, will not be sufficient to invigorate overall growth in the long run. This leads us to conceptualize a second scenario, one that complements the first one with productivity enhancing reforms in the *Poor Turkey*. To do so, we first intervene with the destination of public investments by way of increasing the share of the Poor region to 95% (from its base path value of 52%). The rest of the public investments are directed to the *High/Mid Income Turkey*. In addition, we hypothesize that the public investment program in education, social capital and infrastructure in

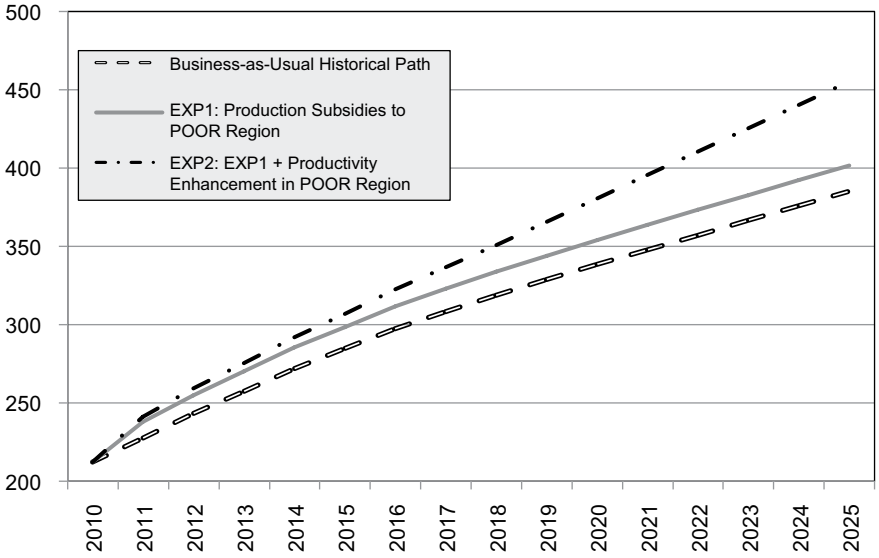

Fig. 8 Low income region value added (billions TL, 2010 prices)

transport and communications will yield an annual productivity gain of 0.5 % in the nonagricultural sectors and 0.75 % in the agriculture of the *Poor Turkey*. Thus, the productivity enhancement program is hypothesized to yield gains only in the Poor regions, without any perturbations envisaged in the West. As such the interventions of the scenario should be scaled quite modest, in comparison to the calculated historical path of the aggregate TFP gains for Turkey, ranging from 0.5–2.5 % (see, e.g. Yeldan 2012; Kolsuz and Yeldan 2013; Taymaz et al. 2008; Saygılı et al. 2005).

Thus, this second scenario aims at refurbishing the production-subsidization program with additional productivity inducement mechanisms at the regional level. The comparative results of this scenario are displayed in Figs. 8, 9, and 10, and its sectoral results are tabulated in Tables 9 and 10.

The most important finding of the new policy scenario is that as the production subsidization program is supported via a productivity enhancement program, the regional value added in the Poor Turkey reaches to 18 % above the base path value by 2025. In the meantime, this enhancement further stimulates value-added growth in the *High/Mid Income Turkey* as well. Thus, the productivity-enhancement in the poor region provides spillover effects over the *High/Mid Income Turkey*, creating a more balanced growth path for the whole aggregate GDP. As a result, we obtain an aggregate gain of 11 % over the base path GDP.

Addition of the productivity enhancing measures to the production subsidies interventions leads to higher factor demands in both regions and reduce pressures of factor reallocation away from the poor regions towards the *High/Mid Income Turkey*. As this historical realignment is reduced, poor region is placed on a more vigorous

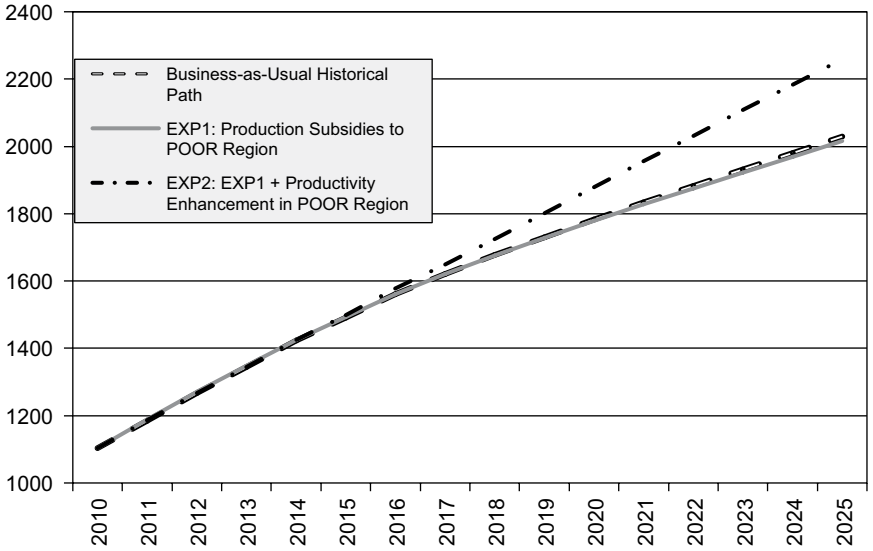

Fig. 9 Aggregate GDP (billions TL, 2010 prices)

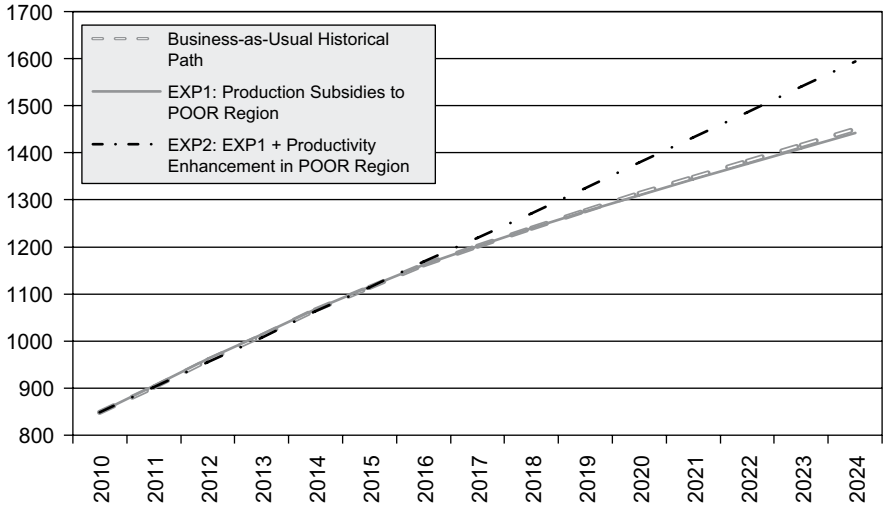

Fig. 10 High income region value added (billions TL, 2010 prices)

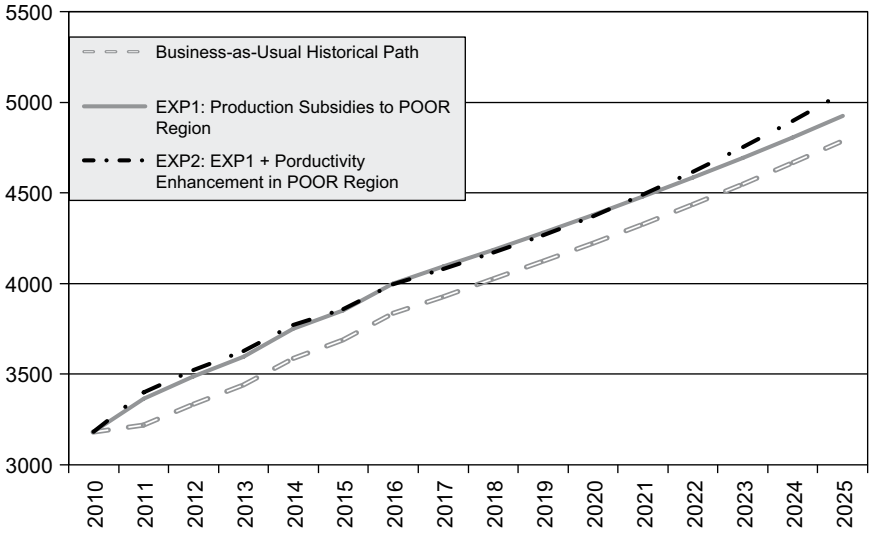

Fig. 11 Low income region employment (1,000 persons)

and sustained growth path, pushing the aggregate income to a higher plateau. In this manner, we observe that *formal employment* expands by 5% over the base path. Per contra, under the previous scenario such employment gains were virtually stagnant. More employment demand for both regions (Fig. 11) leads to higher wage income, and enables an expansion in savings destined for capital accumulation.

In comparison to both the base path and the first policy scenarios, the second policy environment means higher volume of trade. Based on the general equilibrium effects reflected by the relative price changes, exports of the *High/Med Income Turkey* follow a path that is 3.4% above the base path in the first half of the policy horizon, with a reduction to 1.4% gain over the second half. Yet, given the fact that we do not intervene in any manner to the trade policy instruments, the overall effect of this on the current account balance remain modest across both policy scenarios.

Sectoral effects of these policy interventions depend, naturally, on the input–output flows and characteristics of the regional production technologies as well as the specifics of the labor markets across regions. We read, for instance, that under the first scenario sectors that have a higher share in the poor regional value added—Agriculture and Animal Husbandry, Medium Technology Manufacturing and Other Services—enjoy relatively high production and employment gains; while Energy and High Technology Manufacturing virtually remain stagnant with respect to the base path.

In the poor region production and employment levels rise by 5.7% and 5.7% in Agriculture; by 4.2% and 3.9% in Medium Technology Manufacturing Industries;

and by 3.2% and 2.9% in Construction, respectively. In what follows, the ongoing transfer of labor and capital flows across regions produce asymmetric effects within the *High/Med Income Turkey* region. The region suffers production and employment losses in Agriculture and Medium Technology industries. Yet, the sharpest losses in the production levels in the *High/Med Income Turkey* are observed in Automative by 1.8% and in the High Technology Industries by 1.7%. These results underscore the importance of regionally differentiated productivity enhancing measures in accommodating growth targets with regional incomes policies.

5 Concluding Comments

IMF Staff Paper by Aiyar et al. (2013) reveals that problems such as infrastructural bottlenecks, limited trade openness and lack of regional integration count among the main constraints reducing the rate of economic activity and trapping them into the middle income stagnation. Aiyar and his colleagues suggest that, despite differences in design, basic policy instruments such as openness in trade and rehabilitating infrastructure investments towards a more balanced capital accumulation across regions are important.

In this study, we have investigated the macroeconomic effects of two complementary policy environments to invigorate growth, employment, and income equality across two broadly differentiated regions in Turkey: poor and high/mid-income. With the aid of a regional computable general equilibrium model that disaggregate the production structure into 13 sectoral activities, we first study the long run dynamic effects of a regional production and investment subsidization program. Second, we supplement this environment by a productivity enhancement program in the poor region.

Our results reveal that regionally differentiated productivity enhancing measures coupled with a subsidized investment program to facilitate capital accumulation and reduce the outflow of factors out of the poor region are of utmost importance in designing a sustained growth path to pull the aggregate economy from the dual traps of middle income and of poverty.

Acknowledgments Support for this paper has been generously provided by the Turkish Enterprise and Business Confederation (TURKONFED). Authors acknowledge their indebtedness to Süleyman Onat, Arzu Turhan, Ümit Özmen, Haluk Tükel, and the colleagues at the research department of TURKONFED for their invaluable comments and suggestions in earlier phases of the study. All caveats apply; in particular, we note that the views expressed herewith are solely those of the authors, and do not implicate the institutions that the authors are affiliated with.

Appendices

Appendix 1: List of Equations of the Regional General Equilibrium Model

Price System

Import price: $P_i^M = P_i^{WM} \cdot \varepsilon(1+tm_i)$.

Export price: $P_{i,r}^E = P_{i,r}^{WE} \cdot \varepsilon(1-tx_{i,r})$.

Price of the composite commodity: $PC_i = \left[P_i^D \left(\frac{DC_i}{CC_i} \right) + P_i^M \left(\frac{M_i}{CC_i} \right) \right] . \left[1 + saltax_i \right]$.

Domestic price: $PDC_i = \sum_r P^D{}_{i,r} DC_{i,r} / DCC_i$.

Regional output price: $PX_{i,r} = \left[P_{i,r}^D \left(\frac{DC_{i,r}}{XS_{i,r}} \right) + P_{i,r}^E \left(\frac{E_{i,r}}{XS_{i,r}} \right) \right]$.

Regional value-added price (poor region (y)):

$PVA_{i,ry} = (1 - protax_{i,ry}) \cdot (PX_{i,ry}) - \sum_j PC_j IORY_{j,i}$.

Regional value-added price (rich region (z)):

$PVA_{i,rz} = (1 - protax_{i,rz}) \cdot (PX_{i,rz}) - \sum_j PC_j IORZ_{j,i}$

Price index: $PINDEX = \sum_i PWTS_i PC_i$

Goods and Factor Markets

Regional production: $XS_{i,r} = (A_{xxr} K_{i,r})^{B_{xir} ld_{i,r}^{(1-B_{xir})}}$

Regional wage rate: $W_r = \frac{(1 - B_{xir}) \cdot PVA_{i,r} \cdot XS_{i,r}}{WDIST_{i,r} \cdot LD_{i,r} \cdot (1 + sstax_r)}$

Regional profit rate: $RK_r = \frac{B_{xir} \cdot PVA_{i,r} \cdot XS_{i,r}}{RKDIST_{i,r} \cdot K_{i,r}}$

Balance in formal labor markets: $UNEMP_r = LSUP_R - \sum_i LD_{i,r}$

Balance in capital markets: $\sum_i K_{i,r} = KSUPP_r$

Trade Block

Constant elasticity of production technology:

$$XS_{i,r} = A_{tir}\left[\beta_{tir}E_{ir}^{\rho tir} + (1-\beta_{tir})DC_{ir}^{\rho tir}\right]^{\frac{1}{\rho tir}}$$

Armington composite commodity: $CC_{ir} = A_{cir}\left[\beta_{cir}M_{ir}^{-\rho cir} + (1-\beta_{cir})DC_{ir}^{-\rho cir}\right]^{-\frac{1}{\rho cir}}$

Revenue maximization, export function:

$$\frac{E_{ir}}{DC_{ir}} = \left[\frac{P_{ir}^{E}}{P_{ir}^{D}}\cdot\frac{(1-\beta_{tir})}{\beta_{tir}}\right]^{\frac{1}{\rho tir-1}}$$

Expenditure minimization, import function:

$$\frac{M_{ir}}{DC_{ir}} = \left[\frac{P_{ir}^{D}}{P_{ir}^{M}}\cdot\frac{\beta_{cir}}{(1-\beta_{cir})}\right]^{\frac{1}{\rho cir+1}}$$

Nonexporting sectors domestic production: $DC_{ir} = XS_{ir}$

Nonimporting sectors domestic demand: $CC_{ir} = DC_{ir}\cdot(1+salt_{ir})$

Income Generation

Private household income:

$$Y = \sum_{i}\left[W_r\cdot WFDIST_{ir}LD_{ir} + (1-corprtax_r)\cdot RK_r\cdot RKDIST_{i,r}\cdot K_{i,r}\right] + GOVTRANS$$

$$+ INTDOM * GDOMDEBT + NPFI - INTFORP * PFORDEBT$$

Government Budget–Revenues:

$$GREV = TOTPROTAX + TOTSALTAX + TARIFF + TOTSSTAX$$
$$+ TOTCORPTAX + TOTHHTAX + EXTAX$$

Fiscal Block

Total Production Tax Revenues: $TOTPROTAX = \sum_{i} prot_i\cdot PX_i\cdot XS_i$

Total Sales Tax Revenues: $TOTSALTAX = \sum_{i} salt_i\left(P_i^{D}\cdot DC_i + P_i^{M}\cdot M_i\right)$

Total Import Tax Revenues: $TARIFF = \sum_{i} tm_i\cdot P_i^{WM}\cdot\varepsilon\cdot M_i$

Total Corporate Tax Revenues: $TOTCORPTAX = \sum_{i} corpt\cdot(PROFP_i + PROFG_i)$

Total Income Tax Revenues: $TOTHHTAX = htax\cdot YHH$

Total Export Tax Revenues: $EXTAX = \sum_{i} te_i\cdot P_i^{WE}\cdot\varepsilon\cdot E_i$

Government Expenditures–Consumption: $GOVCON = gcr \cdot GDP$

Government Expenditures–Investment: $GINV = GCTRINV + GRINV$

Government Expenditures–Transfers to Enterprises: $GtrEE = rtGtrEE \cdot GREV$

Government Expenditures–Total Transfers:

$GOVTRANS = GtrSSI + GtrHH + GtrEE$

Savings-Investment Balance

Private Savings: $PRSAV = mps \cdot YHH \cdot (1 - htax)$

Public Savings:

$GSAV = GREV - GOVCON - GOVTRAN - Sir_{FG} \cdot \varepsilon \cdot GFD - ir_{DOM} \cdot GDD$

Public Saving-Investment Balance: $PISB = GINV - GSAV$

Public Sector Borrowing Requirement: $PSBR = PISB - rtPSBR \cdot GDP$

Financing of the PSBR: $PSBR = DOMBOR + \varepsilon \cdot FORBOR^G$

Government Foreign Borrowing: $\varepsilon \cdot FORBOR^G = rtFORBOR \cdot PSBR$

National Saving-Investment Balance:

$PRSAV + GSAV + \varepsilon \cdot FSAV = PRINV + GINV$

Demand Factors

Sectoral Public Consumption: $GD_i = \dfrac{gles_i \cdot GOVCON}{PC_i}$

Sectoral Private Consumption: $CD_i = \dfrac{cles_i \cdot (1 - mps) \cdot YHH \cdot (1 - htax)}{PC_i}$

Sectoral Intermediate Flows: $INT_i = \sum_j a_{ij} \cdot XS_j$

Domestic Interest Rate: $ir_{DOM} = rtir_{DOM} \dfrac{GFD + GDD}{GDP}$

Sectoral Private Investments: $ID_i = \dfrac{idles_i \cdot PRINV}{PC_i}$

Sectoral Public Investments: $GID_i = \dfrac{gidles_i \cdot GINV}{PC_i}$

GDP: $GDP = \sum_i \left[PC_i (CD_i + GD_i + GID_i + ID_i) + P_i^{WE} \cdot \varepsilon \cdot E_i - P_i^{WM} \cdot \varepsilon \cdot M_i \right]$

Equilibrium

Goods Market Equilibrium: $CC_i = INT_i + CD_i + GD_i + ID_i + GID_i$

$$\text{Current Account Balance: } \sum_i P_i^{WM} M_i + ir_{FP} \cdot PFD + ir_{FG} \cdot GFD + \frac{EERPtrROW}{\varepsilon} = \sum_i P_t^{WE} E_i + ROWtrEE + ROWtrHH + FSAV$$

Appendix 2: Model Variables

Price Sytem

PINDEX	Price Index
PC_i	Price of composite commodity
P_i^D	Domestic price
$P_{i,r}^D$	Regional domestic price
$P_{i,r}^E$	Regional export price
P_i^M	Import Price
$PVA_{i,r}$	Regional value-added price
$PX_{i,r}$	Regional output price

Production Block

CC_i	Composite commodity (domestic absorption)
DC_i	Domestic commodity in domestic markets
$DC_{i,r}$	Regional domestic commodity
$E_{i,r}$	Regional exports
M_i	Imports
$XS_{i,r}$	Regional supply
GDP	Gross domestic product

Production Factors Block

$LD_{i,r}$	Regional labor demand at the sectoral level
$LSUP_r$	Regional labor supply
$K_{i,r}$	Regional capital demand at the sectoral level
$KSUP_r$	Regional capital stock
W_r	Regional nominal wage rate
$WFDIST_{i,r}$	Regional wage rate differentiation parameter at the sectoral level

$RKDIST_{i,r}$	Regional profit rate differentiation parameter at the sectoral level
RK_r	Regional profit rate
$UNEMP_r$	Regional unemployment rate

Demand Factors

CD_i	Private consumption
GD_i	Public consumption
ID_i	Sectoral investment demand
$INT_{i,r}$	Sectoral intermediate good demand

Macroeconomic Equilibrium

EXTAX	Export tax revenues
TOTPROTAX	Production tax revenues
TOTSALTAX	Sales tax revenues
TOTPCORPTAX	Corporate tax revenues
TARIFF	Import tax revenues
TOTHHTAX	Income tax revenues
GREV	Government budget revenues
GOVCON	Government consumption
GOVTRANS	Government transfers
GSAV	Government savings
FSAV	Foreign savings

Borrowing

GFORDEBT	Public foreign debt stock
GDOMDEBT	Public domestic debt stock
PFORDEBT	Private foreign debt stock
INTEFORP	Interest payments on private foreign debt
INTFORG	Interest payments on public foreign debt
INTDOM	Domestic interest rate
GOVFBOR	Public foreign borrowing

Private Households

Y	Private income
NPFI	Net factor income from abroad
MPS	Private saving rate
PRSAV	Total private savings
TOTINV	Total Investment

Appendix 3: Model Parameters

A_{ci}	Armington function shift parameter
Ad_{ci}	Domestic good aggregation function shift parameter
A_{tir}	CET function shift parameter
A_{xir}	Production function shift
B_{ci}	Armington function share parameter
B_{dci}	Domestic good aggregation function share parameter
B_{tir}	CET function share parameter
B_{xir}	Cobb–Douglas production function share parameter
$cles_i$	Sectoral private consumption shares
$gles_i$	Sectoral public consumption shares
$idles_i$	Sectoral investment shares
$P_{i,r}^{WE}$	World price of exports
P_i^{WM}	World price of imports
$rhoc_i$	Armington function elasticity parameter
$rhot_{i,r}$	CET unction elasticity parameter
$rhodc_i$	Domestic good aggregation parameter
$rrp_{i,r}$	Sectoral profit rate at the regional level
$shrp_{i,r}$	Share of sectoral profits at the regional level
$dk_{i,r}$	Sectoral shares of total private investment
$protax_{i,r}$	Production tax rate
$saltax_i$	Sales tax rate
tm_i	Tariff rate
$te_{i,r}$	Export tax rate
$corptaxp_r$	Regional corporate tax rate

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Cluster as a Development Policy Tool: The Turkish Experience

Melih Bulu and Murat Yalçıntaş

1 Clusters and Their Use as a Development Policy Tool

Clusters are geographic and sectoral concentrations of interconnected companies, enterprises, and institutions in a particular field (Porter 1998). The cluster concept is a powerful metaphor used by policymakers throughout the world. Cluster-based development approaches are gaining popularity, for designing the economic development policies of regional and national economies. The European Union (EU) funds cluster-based development projects. According to the Institute for Strategy and Competitiveness and the US Economic Development Administration (2014) there are various cluster development projects going on in the USA. China promotes a growing number of industrial clusters, defined as "specialized towns," characterized by a high spatial concentration of firms producing one specific item or a limited range of similar products (Barbieri et al. 2012; Yang et al. 2013). The Ministry of Economy, Trade and Industry (METI) launched an industrial cluster development project in Japan (METI 2005). Even some developing countries use cluster-based development policies (Ishmael 2008). Also clusters are being used for attracting foreign direct investment (Yehoue 2009). Similar initiatives can be seen in all emerging and developed world economies as a development policy tool.

The variety of policy initiatives that were launched to take advantage of the economic potential of clusters can be summarized in three groups: leveraging clusters, strengthening clusters, and creating clusters. "Many government agencies have leveraged clusters to improve the efficiency of economic policies aimed at regional

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development and economic diversification. Other cluster initiatives focused more directly on strengthening clusters by improving the underlying competitiveness of agglomeration economies for creating value. A more appropriate approach towards entirely new clusters is a strategy to improve overall business environment conditions, by upgrading skills and access to finance and infrastructure, by streamlining government rules and regulations, supporting sophisticated local demand, and opening to foreign investment and competition" (Ketels and Memedovic 2008, pp. 383–385).

There are two main approaches used for cluster development projects: top-down and bottom-up approaches. If the cluster development project is led and funded by a regional or national government authority, the approach can be accepted as a top-down approach (Nishimura and Okamuro 2011). If the cluster development project is led by the private sector, mostly being members of the cluster, this project can be accepted as a bottom-up approach. In these approaches, a cluster development project can be financed by the government or by the members of the cluster. Central and local governments mostly prefer the top-down approach because policy makers like to control the projects. They do not only fund these projects but also assign the cluster managers as well. Thus regional or national authorities also control the leadership of the cluster development project. However, cluster policy implementation requires careful management if the different actors are to be properly engaged and committed (MacNeill and Steiner 2010).

Cluster-based development policies were being used for the last decade. Researchers analyze the results of these policies. There are some successful (Falck et al. 2010) and unsuccessful (Martin et al. 2011) applications. According to Kamarulzaman and Norhashim (2008) there are no ideal cluster policies. Every policy is created taking into account the unique strength of the locality as well as the desired outcomes. They summarize the cluster policies' approaches into five groups:

1. Broker policies—these policies aim at strengthening the framework for dialogue and alliance building for the cluster actors, without favoring any particular actor;
2. Demand-side policies—these policies geared toward the creation of culture that is open to new innovative ideas and solutions;
3. Training policies—such policies target the talent pool within the cluster. It is to ensure skills and competencies are developed and enhanced in order to always ensure effective clustering;
4. Promotions of international linkages—the policies are designed to enhance the creation and sustaining linkages between cluster actors with international parties;
5. Framework policies—this type of policy is formulated to provide a clearly defined playing field with effective and consistent rules for inter-actor transactions (Kamarulzaman and Norhashim 2008, p. 363).

In this study, we mainly analyzed the cluster development projects in Turkey and tried to understand their policy-related criteria of success and failure. In the following section, Turkey's economic development policies are reviewed. Then major cluster development projects in Turkey are outlined. Section 4 describes the methodology and Sect. 5 analyses the cluster development projects in Turkey. Section 6 summarizes the

results and proposes recommendations not only to Turkish policy makers but also to the other world policy makers who are involved in cluster-based development projects.

2 A Review of Development Policies in Turkey

After the World War I, the Turkish Republic was founded as the continuum of the Ottoman Empire in 1920. Since the Ottoman Empire's economy was based mainly on agriculture and craft, the New Republic needed to have industrial production facilities. In the beginning, Turkey tried to use a liberal economic model as if in the USA. This model was widely accepted among economic policy makers at the Izmir Economy Congress held in 1923. According to this system, industrial facilities would have been founded by entrepreneurs. Private companies would have been the leaders of the Turkish economy. However, this model did not work because Turkish entrepreneurs did not have sufficient capital to make the necessary industrial investments. Therefore policy makers decided to apply a new model. This new model was the creation of the state-owned enterprises (SOES) by the state in order to invest in large industrial facilities. In this model, the capital needed for the investment was solely provided by state. With this model, the very first iron and steel plants of Turkey (Ereğli, Iskenderun, and Karabük) were commissioned. At the same time, private entrepreneurs were also permitted to continue their ventures. Thus, a hybrid economic system was established in Turkey. However, SOEs covered most of the Turkish economy.

Turkey liked the hybrid model so policy makers applied this model not only in the areas that needed capital investments but also in different areas as well. TEKEL (Turkish Tobacco and Alcoholic Beverages Company) became the producer of alcoholic drinks and cigarettes as another SOE; Sümerbank was manufacturing textile products, Türkiye Şeker Fabrikaları was responsible for sugar production, etc. As a result, the hybrid economic development model was used for several years as the development policy model for the new Turkish Republic.

State Planning Organization (DPT) was established in 1960. Thus, the era of a central planned economy has institutionalized. Turkey started to make 5-year economic development plans. These 5-year plans were not an obligation but rather they were development guidelines for policy makers.

SOEs were quite unproductive compared to the private sector. Most of them operated at a loss mainly due to poor management. At the beginning of the 1980s, Turkey decided to decrease the weight of SOEs in the economy. Therefore, a privatization program was started. Nearly all of the SOEs including infrastructural investments such as airports, highways, etc. were privatized. The Turkish economy became a private sector-led liberal economy. The state assumed a regulatory role and the private sector became the main investor.

Today, Turkey is the 17th largest economy in the world with a gross national product (GNP) per capita of $ 18,114[1] and a population of 76.4 million in 2013

[1] GNP Per Capita PPP 2012 value.

(Turkish Statistical Institute 2014). Turkey is a member of various international political, social, economic, cultural, and military organizations including the Council of Europe, UN, World Bank, International Monetary Fund (IMF), Organisation for Economic Co-operation and Development (OECD), World Trade Organization (WTO), and North Atlantic Treaty Organization (NATO). The private sector is quite dynamic and growing. The DPT still continues to prepare 5-year development plans, however, they are only considered as basic guidelines. The main objective of the state has become to improve the private sector's competitiveness in the global arena. The Turkish Prime Minister announced Turkey's 2023 target as to be among the ten biggest economies in the world. Turkish Exporters Association (TIM) announced Turkey was aiming for a $ 500 billion export value in 2023. The Ministry of Economy, the Ministry of Development, and the Ministry of Science, Industry, and Technology designed different incentive mechanisms to achieve this target. Principally, two policy items proved to be very effective in the last decade: one of them is the investment incentive and the other is cluster-based development support.

The Ministry of Economy defined six regions in Turkey according to their respective development levels. Incentives are given in order to promote investments in the least developed areas. Furthermore, larger investments receive tax exemptions and other kinds of incentives all over Turkey (Ministry of Economy 2014).

The Ministry of Development provides incentives via Regional Development Agencies (RDAs) established in 26 different regions in Turkey. These agencies analyze their regions and support projects in order to create a more competitive economic environment. The Ministry of Science, Industry, and Technology gives incentives to promote innovation and technological developments via The Scientific and Technological Research Council of Turkey (TUBITAK) and the Small and Medium Enterprises Development Organization (KOSGEB).

The second important policy item, cluster-based incentives, is being given by the subdivisions of these three ministries. KOSGEB, a subsidiary of Ministry of Science, Industry, and Technology is supporting cluster development projects. RDAs within the Ministry of Development support clusters in their regions. Small and medium-sized enterprise (SME) and Clustering Branch of Ministry of Economy also give incentives to clustering projects. Cluster-based incentives became one of the main support policies in the Turkish economy together with investment incentives (Gezici et al. 2009). We will analyze the history of Turkey's cluster policy in the next section.

3 Cluster Development Experience in Turkey

The first planned cluster development project of Turkey was initiated by the Competitive Advantage of Turkey (CAT). CAT is established as a non-governmental organization (NGO) by the private sector leaders of Turkey together with Michael Porter's intellectual support in 1999. CAT defined the potential sectors and related

clusters where Turkey might have competitive advantage in the global market. These sectors were textiles, construction, food, automobile, and tourism. CAT attempted its first cluster development project in Sultanahmet District for tourism cluster. The project was started in 1999 and was completed in 2001. Today hotel room rates in this cluster increased more than ten times compared to 1999 (Competitive Advantage of Turkey 2014).

In 2004, the CAT team decided to establish a local organization in Turkey. The International Competitiveness Research Institute (URAK) was founded by Turkey's main private sector leaders. Also there were bureaucrats on the board of the Institute. The first cluster development project of URAK was initiated in Bartın. There were two cluster development projects initiated in this small Turkish city. One was Amasra Tourism Cluster Development Project and the other was Kurucaşile Yatch Cluster Development Project. The DPT and Small and Medium Enterprises Development Organization (KOSGEB) were active supporters and partners of these two projects. URAK also participated in another tourism cluster development project in Bolu. The leader of this project was the Bolu Chamber of Commerce and Industry (URAK 2014).

Another organization leading cluster development projects in Turkey was the United Nations Development Programme (UNDP). The UNDP preferred to analyze and develop clusters in the rural areas of Turkey. They analyzed three cities in the South Eastern part of Turkey and recommended cluster development projects for Diyarbakır, Adıyaman, and Şanlı Urfa. UNDP recommended to develop a marble cluster in Diyarbakır, a ready wear cluster in Adıyaman, and an organic agriculture cluster in Şanlı Urfa. The pilot cluster development project was launched in Adıyaman for the ready wear sector in 2005. The project was successful. Seventy new factories with 5,500 new jobs were created in a year period. The support of Turkish Clothing Manufacturers Association (TGSD) was especially useful for this project.

The OSTIM (Organized Industrial Region) founded in 1967 in Ankara, is one the first organized industrial regions in Turkey. The OSTIM aimed to keep its competitiveness by using cluster initiatives. They analyzed the potential clusters in their region and launched cluster development projects in 2007. Especially the Medical Cluster and the Defense and Aviation Cluster development projects were successful (OSTIM 2014).

Cluster-based development projects were one of the main development policy tools also in the EU. The EU funds were used for some cluster development projects in Turkey. The Istanbul Textile and Apparel Exporter Associations (ITKIB) Fashion and Textile cluster development project was the first cluster development project funded by EU in Turkey (ITKIB 2013). The EU funded ten selected cluster development projects between 2007 and 2009 in Turkey. These clusters were the Konya Automotive Suppliers, Mersin Processed Food, Ankara Software, Ankara Machinery, Denizli-Uşak Home Textile, Muğla Yatch Manufacturing and Tourism, Eskişehir-Bilecik-Kütahya Ceramics, Izmir Organic Food, Manisa Electric-Electronic Equipment, and Marmara Automotive (Ada Engineering 2013). Today most of these projects are unfortunately not very successful. It seems the EU funded

cluster development projects have a sustainability problem. Our analysis showed most of the EU funded cluster development projects could not continue after the EU funding's end.

The Izmir Development Agency (IZKA) together with the Mersin Development Agency were the first RDAs founded in Turkey. They launched wedding dress, heating, ventilation, air conditioning and refrigeration (HVAC-R), and Aerospace clusters development projects (IZKA 2013). Initial outcomes of these projects were not satisfactory. Therefore most of the other RDA including IZKA preferred to not be the leader of cluster development projects after this experience. The Trakya Development Agency prepared an analysis of the clusters that have development potential in its region and supported private sector projects, which were in line with the development of the selected clusters. The Istanbul Regional Development Agency (ISTKA) also followed a similar method to the Trakya Regional Development Agency. Furthermore, ISTKA provided information to entrepreneurs regarding cluster trends in Istanbul and they opened support programs for these growing clusters (ISTKA 2013).

The Ministry of Economy is another governmental organization supporting cluster development projects. The ministry was the local partner of ITKIB's textile cluster development project funded by EU in 2007. Unfortunately, this project was not a big success as mentioned above, also the SME and the Clustering Division of the Ministry of Economy supports selected cluster projects. The Ministry funds training, consultancy, and international marketing projects for potential clusters. Principally, the OSTIMs and Sectorial NGOs use these incentives. These incentives do not aim to develop clusters but increase the exports of the clusters. Therefore we did not cover these projects in our analysis.

4 Methodology and Scope of the Study

The scope of the study is the cluster development projects carried out in Turkey. We aim to understand whether these projects were successful or not. It is not easy to define whether a cluster development project is successful or not. Therefore we asked questions to cluster experts in Turkey and analyzed their opinions. The outcome of the interviews with cluster experts was summarized in the analysis section.

At the beginning of the study, secondary data analysis was made in order to find the cluster development projects and related experts. To do this, documents of public organizations that support cluster development projects were examined. Additionally, the web sites of these cluster development projects and their outputs were also analyzed.

As per the interviews and secondary data analysis most of the cluster development projects were stopped during the initial stage. The main reason behind this is conflict between cluster members. Moreover insufficient budgeting is another problem especially at the beginning of the 2000s. We did not include these projects into the analysis. Also the cluster development projects, which were initiated but

later discontinued, are not taken into account. We also omitted a cluster development project if the project did not have a budget or if the project did not have a management organization. Furthermore, we also did not consider the cluster development project if it could not have been activated more than a year after the official launch. We preferred to analyze the ones that continued and reached some results. Expert opinions and web sites of these projects proved very useful to understand the projects.

We used two main sources for our analysis of cluster development projects in Turkey. These are secondary and primary data sources. We used reports, articles in popular journals, and the web sites of the related organizations and projects for the secondary data source. We tried to study all cluster development projects initiated in Turkey via reports and web research. The primary data were collected from the cluster development experts. Table 1 gives the details of these experts. The interviewed cluster experts are either on the leadership team of a cluster development project or a consultant to one of them. During the in-depth interviews, we asked whether they consider the cluster development project they were in as successful or not. Also we asked for the reasons of success or failure. Additionally, we tried to define the government and private sector-related variables in the project. We have also asked them to cite all the cluster development projects they are aware of and finalized the cluster development project list accordingly (Table 2).

5 Analysis of Cluster Development Projects in Turkey

The analysis has shown the RDAs, the EU, OSTIMs, Chambers of Commerce and Industry, and NGOs are institutions lead the cluster development projects in Turkey.

The RDAs, under the Ministry of Development, are the main organizations, which supports cluster development. There are 26 RDAs in Turkey. The Regional Development Agency of Izmir (IZKA) provided funds and also managed the cluster development projects. IZKA was the pioneer RDA supporting cluster development projects. According to our analysis IZKA's initial approach did not work very well. The wedding dress cluster development is an example of such a failing project. On the other hand, the HVAC-R cluster development project, which was mainly led by the private sector, was successful. The Association of the Aegean Industrialist Businessmen of Refrigeration (ESSIAD) was leading this project. According to the interviews, the leadership of ESSIAD was the major factor behind the success of this project. The Trakya Regional Development Agency followed another strategy. They analyzed the cluster formations in their region and decided on which clusters to support. Then they gave priority to support demands coming from preferred cluster members. The ISTKA had a similar strategy. Moreover, ISTKA shared the cluster priority knowledge with the concerned parties and provided incentives to these clusters.

The EU-supported projects proved to be generally unsuccessful in Turkey. As can be seen in Table 2, the EU funded various cluster development projects. The

Table 1 Interview list

Interviewees	Affiliations	Positions	Cluster development experience
Interviewee #1	KOSGEB	Ex-president	KOSGEB was the partner of the first cluster development project launched in Bartın
Interviewee #2	KOSGEB	President	Currently KOSGEB has various cluster development incentives. The SMEs get various cluster related support from KOSGEB
Interviewee #3	Mekay Makina	Owner	Cluster member in the IMES cluster development project financed by the Ministry of Economy
Interviewee #4	Eastern Black Sea Regional Development Agency (DOKA)	Investment Support Expert	DOKA is supporting mainly agricultural clusters in its region
Interviewee #5	East Marmara Development Agency (MARKA)	Program Management Expert	Leader of the IntraRegio project that is a logistics cluster development project financed by EU
Interviewee #6	IMES	President	The President of IMES, which is newly founded by using the principles of cluster development approach
Interviewee #7	Istanbul Regional Development Agency (ISTKA)	General Secretary	Top decision maker of cluster development projects in Istanbul
Interviewee #8	Lesartsturcs	Owner	Cluster member in the Sultanahmet Cluster Development Project
Interviewee #9	OSTIM	President	The President of OSTIM. OSB, which is the first OSTIM that launched cluster development projects in Turkey
Interviewee #10	Trakya Development Agency	Ex-General Secretary	The Trakya Development Agency with the leadership of its ex-president analyzed all potential clusters in the region and supported the ones that had competitive potential
Interviewee #11	UNDP GIDEM	Project Director of South Eastern Turkey Cluster Development Project	The UNDP GIDEM south eastern cluster development project coordinator
Interviewee #12	UNDP GIDEM	Adıyaman Ready Wear Cluster Development Manager	The Adıyaman cluster development project cluster manager
Interviewee #13	URAK	Amasra Tourism Cluster Development Manager	The Amasra tourism cluster development project cluster manager

KOSGEB Small and Medium Enterprises Development Organization, *SME* Small- and Medium-sized Enterprises, *DOKA* Eastern Black Sea Regional Development Agency, *MARKA* East Marmara Development Agency, *EU* European Union, *ISTKA* Istanbul Regional Development Agency, *OSTIM* Organized Industrial Region, *URAK* International Competitiveness Research Institute, *OSB* Organized Industrial Zone, *IMES* Istanbul Metal Goods Producers Industrial Zone, *UNDP GIDEM* United Nations Development Program Entrepreneurship Support Centers

Table 2 Outline of cluster development projects in Turkey

Project name	Location	Year	Leading organization(s)	Outcome and analysis
Sultanahmet Tourism Cluster	Istanbul	1999–2000	CAT	Successful. The members of the cluster believed in the project and participated to the events
Amasra Tourism Cluster	Bartın	2003	URAK, KOSGEB, DPT	Successful due to the harmony among local players. Besides the mayor supported the project
Kurucaşile Yatch Cluster	Bartın	2003	URAK, KOSGEB, DPT	Failed. The DPT did not honor its commitment
Adıyaman Ready Wear Cluster	Adıyaman	2004–2005	UNDP	Successful. The support of TGSD to local manufacturers ensured the success
Bolu Tourism Cluster	Bolu		Bolu Chamber of Commerce and Industry, URAK	Failed, because of the conflict between the municipality and the Chamber of Commerce
Ankara Defense Cluster	Ankara		OSTIM	Successful. OSTIM has good connections with state defense industry decision makers
Ankara Medical Industry Cluster	Ankara		OSTIM	Successful. Leadership and network of OSTIM brought success
Wedding Dress Cluster	Izmir		IZKA	Failed. IZKA's leadership was not accepted by the local players
Izmir HVAC-R Cluster	Izmir		IZKA	Successful. Local players had the leadership in the project
Fashion and Textile	Istanbul	2005–2007	ITKIB, EU, Ada Engineering	Failed. The project did not continued after the EU funding
Konya Automotive Suppliers		2007–2009	Undersecretariat for Foreign Trade, EU, Ada Engineering	Failed. The project did not continued after the EU funding
Eskişehir-Bilecik-Kütahya Ceramics		2007–2009	Undersecretariat for Foreign Trade, EU, Ada Engineering	Successful. The project is active today
Mersin Processed Food, Ankara Software, Ankara Machinery, Denizli-Uşak Home Textile, Muğla Yatch Production and Tourism, Izmir Organic Food, Manisa Electric-Electronic Equipment, Marmara Automotive		2007–2009	Undersecretariat for Foreign Trade, EU, Ada Engineering	Failed. These projects did not continued after the EU funding

Table 2 (continued)

Project name	Location	Year	Leading organization(s)	Outcome and analysis
TRaceM	East Marmara		MARKA, EU	Successful. The synchronization of private companies with MARKA brings success
IMES Machinery Cluster	Gebze	2013-	IMES	Successful. The strong leadership of IMES and advantages of Specialized Organized Industry Region

CAT Competitive Advantage of Turkey, *URAK* International Competitiveness Research Institute, *KOSGEB* Small and Medium Enterprises Development Organization, *DPT* State Planning Organization, *TGSD* Turkish Clothing Manufacturers Association, *IZKA* Izmir Development Agency, *ITKIB* Istanbul Textile and Apparel Exporter Associations, *EU* European Union, *MARKA* East Marmara Development Agency, *IMES* Istanbul Metal Goods Producers Industrial Zone

main reason of their failure seemed to be the inappropriate project formulation mechanism of the EU. The interviewed experts claimed the inflexibility of the EU bureaucracy hindered the projects from time to time. Furthermore, the European consultants lacked local knowledge and could not provide enough assistance.

The Organized Industry Regions are another entity leading cluster development projects. Especially the Specialized OSTIMs such as IMES in Gebze are more inclined to realize these kinds of projects. Strong leadership and advantages of being a Specialized OSTIM brought success to the cluster development projects. Similarly the Organized Industry Region in Ankara (OSTIM) launched various cluster development projects. The Ankara Defense Cluster and Medical Cluster are two successful projects of OSTIM. The strong network of OSTIM provided marketing advantages to these clusters. Besides OSTIM's strong links with state organizations were very helpful for the cluster development projects.

The Chambers of Commerce and Industry are another player of cluster development in Turkey. These organizations generally initiate cluster development projects for their members by using state or EU funds. The study shows such cluster development projects have not been successful. The main reason of this failure is the lack of project management experience in the Turkish Chambers. Also leadership deficiencies in the Chambers can be another point creating conflict among the cluster members.

Last but not least, NGOs also launch and support cluster development projects in Turkey. CAT and URAK, two NGOs founded by Turkeys' leasing businessmen were the most popular ones. Employing skillful staff and enjoying all the support they need from the private sector, CAT and URAK managed many successful cluster development projects.

In our analysis, we defined four main problems regarding cluster development projects made in Turkey. These are lack of coordination among cluster-related governmental organizations, cluster development selection system, management

problems of cluster development projects, and scarcity of skilled cluster development experts. Let us now discuss these one at a time:

Coordination Problem Among Governmental Organizations According our analysis, we found the Ministry of Economy, Ministry of Development and, Ministry of Science, Industry, and Technology supported cluster development projects in Turkey. There is no structured coordination mechanism regarding to cluster development among these three ministries. Therefore, dummy projects can be made due to lack of coordination. Moreover, transfer of knowledge among ministries is not possible under the current system.

Selection Problem of Cluster Development Projects Turkey is an emerging economy. Resources of the country are limited. Therefore cluster selection to be supported is very important. Every failing cluster development project means undue use of scarce resources. Our analysis show there are two types of selection process of clusters to be developed: Top-down and bottom-up approaches. In the top-down approach a central authority, regional or central government, selects the clusters to be developed. In the bottom-up approach, members of the clusters were involved in the selection process, they even make lobby to be selected. In Turkey, the selection process was top-down at the beginning, however, the bottom-up approach is becoming popular as the initial cluster development projects selected with the top-down approach fail.

According to our analysis the first critical question is who is selecting the cluster to be developed or which kind of methodology is being used for selection. If the cluster to be developed was selected with a top-down approach, the methodology of selection becomes very important, because local politicians and leaders lobby with respect to their interest during the selection process. If they are successful, the best solution could not be reached most of the time. Additionally, members of the cluster may not attend the project. Therefore, obtaining full participation becomes impossible. Thus the probability of success decreases. If an independent research team made a scientific analysis, the cluster development projects are generally successful. However, if the clusters to be developed are decided with respect to politicians' priorities, most probably, the cluster development projects fail.

Management Problem of Cluster Development Projects One of the critical points in cluster development projects are which kind of management mechanism is being used. Government organizations that fund most of the cluster development projects want to be in on the management structure of the project. They are doing this mainly to tightly control all the spending. Even they assign the cluster manager in some cases. The government representatives want every detail of the project at the beginning. However, most of the time the plans require change according to new developments. Yet, it is quite difficult the change the initial plan. This strategy decreases the success probability of the project. The cluster development projects funded by government loose their flexibility. On the other hand, cluster development project funded by the private sector or sectorial NGOs can act more flexibly. They can change the plans immediately if they face an unforeseen problem.

Another critical question is who is leading the cluster development project. If the leading mechanism is mainly composed of state representatives, the possibility of failure increases. On the other hand, the possibility of success increases in the cluster development projects led by the private sector. Particularly sectoral NGOs have quite strong networks in their sector, this provides an advantage for the project. Sectoral NGOs know the problems and solutions for developing their own cluster.

Scarcity of Skilled Cluster Development Experts Problem There are not enough skilled people who have cluster development experience in Turkey. Additionally, there is not a training/educating mechanism for developing such experts. Most of the current cluster developers do not have the sufficient expertise. Therefore they are learning by doing and this is a great risk for cluster development projects in Turkey.

6 Conclusions and Recommendations

Turkey, as an emerging economy between the east and the west, is one of the interesting research areas for development economists. Turkey applied central planning policies as a neighbor of communist Russia. Subsequently after some years, more liberal economic policies were used as the strategic ally of the USA. Today Turkey is trying to establish its own economic development policies. This study can be seen as an analysis of this process in the cluster development policy area.

We analyzed most of the cluster development projects made in Turkey for this study. Then we defined some problems in the Turkish case. These are lack of coordination among cluster-related governmental organizations, cluster development selection system, management problem of cluster development projects, and scarcity of skilled cluster development experts. Some aspects of these problems can be solved easily, however, some parts need to be worked on over a longer time horizon. Table 3 summarizes the problems and our recommendations.

According to our analysis, a coordination mechanism would be very useful among the three ministries who give incentives to the cluster development projects. This mechanism can be periodic meetings of the related sides. During these meetings all the sides should present their cluster-related projects and future plans. Thus dummy projects can be prevented. Moreover, the mistakes of a project can be shared to expand the experience of the others.

The selection process is very important for the clusters to be supported. Since the resources are limited, it is recommended to select the cluster development project with the highest probability of success by using an objective methodology. However, if a cluster is believed to have strategic importance, it can be selected for support even if its success probability is low. Lobbies of local players should be noted if requests come from potential cluster members. Moreover, other cluster development projects in Turkey and in the world should be considered. It is recommended to the three ministries, who have cluster development programs, not to take direct leadership in cluster development projects. The better way is for the members of the

Table 3 Turkey's cluster development policy problems and recommendations

Problems	Recommendations
Coordination problem among governmental organizations	A coordination mechanism should be established among ministries. This mechanism can be periodic meetings of the related sides. During the meetings all the sides should present their cluster-related projects and future plans. Thus dummy projects can be prevented. Moreover the mistakes of a case can be shared to expand the experience of the other ministries
Selection Problem of Cluster Development Projects	Cluster development projects to be supported by government organizations should be selected with an objective methodology. Lobbies of local players should be noted if requests come from potential cluster members. Moreover other cluster development projects in Turkey and in the world should be considered
Management problem of cluster development projects	Participation of cluster members in cluster development projects should be high as possible. Even if the project is fully financed by government, leadership should be from the private sector. Obviously bureaucrats will control the spending and other critical success factors, however, this should not decrease the flexibility of the cluster management team
Scarcity of skilled cluster development experts problem	The three ministries, who are interested in cluster development projects, may establish a joint project in order to support the training of skilled cluster experts. A pool of these people can be found. These people can be rated by their past cluster project members. Thus a reference mechanism will be very useful for new cluster development projects needing cluster development experts

clusters development projects and the related divisions of the ministries can select and support the most likely successful cluster projects.

The probability of success will increase if the participation rate of the cluster members is high in the cluster development project. Even the project is fully financed by government, leadership should be from the private sector. Obviously bureaucrats will control the spending and other critical success factors, however, this should not decrease the flexibility of the cluster management team. Another critical factor is the leadership of the cluster development project. If strong figure(s) take the leadership, the probability of success goes higher. Therefore, it is recommended to include leading sectoral NGOs of related cluster development project in the leadership. Moreover leading companies of the sector can provide a motivation to the project.

The need for skilled human resources for cluster projects is evident. The three ministries, who have interest in cluster development projects, should establish a joint project in order to support the training of skilled cluster experts. A pool for these people can be found. These people can be rated by their past cluster project members. Thus a reference mechanism will be very useful for the new cluster development projects that need cluster development experts.

According to our findings, most of the time the cluster development projects led by state organizations were not successful in Turkey. On the other, hand cluster projects led by the private sector have the better outcomes. Therefore, the Turkish

experience shows it is better to give leadership to the private sector in cluster development projects even if government is the main financier of the project. We believe this recommendation should not only be used by Turkish policy makers, but the decision makers from other countries with similar characteristics to Turkey.

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Development Planning in Twenty-First Century: The Case of Green Growth Strategy in South Korea

Seyithan Ahmet Ateş

1 Global Trend: Green Development Strategy

In the last decade, with an aim to stimulate economic growth, to place the growth on strong bases, and to improve the competitiveness, countries began the quest towards the appropriate development strategy. Considering the global challenges such as economic turmoil, water, and food supply crises, rising greenhouse gas (GHG) emissions, developing countries can be seen as more vulnerable to all of these risks. The concept of green growth strategy proposes a new paradigm for the countries to make the transition to a sustainable economy. This relatively new development strategy approach involves promoting growth and development while reducing pollution, GHG emissions, minimizing waste and inefficient use of natural resources, maintaining biodiversity, and strengthening energy security (OECD 2010). Particularly for the developing countries, Green Growth can be seen as a smart, sustainable, and reasonable way of long-term development planning. One of the pioneer of the Green Growth concept is the Organization of Economic Cooperation and Development (OECD) which declared in June 2009 a Green Growth agreement signed by 30 country members. Other international organizations such as United Nations Environment Programme (UNEP), World Bank, and International Energy Agency (IEA) have also welcomed and advocated the Green Growth initiative (Lee et al. 2011; Jänicke 2012).

South Korea was the first country integrating prominently the Green Growth into its national strategy. This article outlines the key milestones of the Green Growth strategy by highlighting the Green Growth as a contemporary way of development planning, and investigates the Korean Green Growth experience from various aspects including embedding the Green Growth into development strategy and governmental role of pursuing such an ambitious strategy. Thus, we believe that the case of South Korea can provide a reference for other developing countries planning to apply the Green Growth strategy for their domestic development planning and policy development.

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2 Rationales of the Green Growth Strategy

Crucial challenges such as climate change, sustainable development, and global economic turmoil have led to countries around the world pursuing new strategies to give an appropriate response to those of unprecedented obstacles. The Green Growth appeared as a "new age" response to above-mentioned challenges recently. As outlined in the previous part, growing number of countries, including Brazil, Cambodia, Ethiopia, Indonesia, Kazakhstan, Thailand, and Korea are keen to use the Green Growth as a mean of "contemporary guide" since implementing the Green Growth strategy enables countries to overcome current global challenges and to give new momentum to development efforts at the same time. Among others, main rationales of the Green Growth strategy are climate change, sustainable development, economic benefits, and environmental sustainability.

Climate Change and associated challenges such as mitigating GHG emissions and climate adaptation activities force governments around the world to reevaluate the development path they have been following over decades. Climate change causes unpredictable and irreversible damage worldwide (Jones and Yoo 2010). In this respect, the Green Growth can be seen as a response by those countries with the Green Growth strategy in their development planning agenda. From the global perspective, the Green Growth policies are expected to help to fill the gap and bring the countries fighting against the climate change some steps closer to the necessarily binding global commitment (Sterner and Damon 2011). In the context of fighting climate change, the Green Growth enables countries to shift to a low carbon society by reducing GHG emissions and transforming the industry towards employment of clean production technologies.

Sustainable development constitutes one of the main pillars of the Green Growth. According to the OECD, the Green Growth should not be conceived as a replacement for sustainable development, but rather should be considered as a means to achieve it (OECD 2011). By encouraging industries to employ clean technologies, generating appropriate environment for innovation and investment, the Green Growth is capable of increasing the competitiveness of the respective country on the one side and providing new momentum to new sources of economic growth, in line with the resilient ecosystems. In addition to that, the Green Growth is also expected to provide other economic benefits such as new job opportunities, utilization of national renewable energy sources, and emergence of new industrial sectors such as clean production tools, energy efficiency consulting and related technologies, GHG emission reduction technologies, and so on.

Another rationale of pursuing the Green Growth is the environmental sustainability. Environmental sustainability may be defined as maintaining nature's services at a suitable level (HÁK and VESELÁ).

In the example of Korea, pursuing the Green Growth strategy has mainly three objectives as follow (Jones and Yoo 2010);

1. Promote a synergistic relationship between economic growth and environmental protection.

2. Improve people's quality of life and promote a green revolution in their lifestyles.
3. Contribute to international efforts to fight climate change and other environmental threats.

The outlined objectives are associated with a low-carbon society and energy security; new engines of industrial growth; and enhanced quality of life combined with international leadership (Mathews 2012). On the other hand, as the world's 11th largest GHG emitter, Korea is heavily dependent on fossil fuel and many carbon-intensive industries such as steel, automotive, petrochemical, and cement (Lee 2010; Mathews 2012; Seliger 2012). Thus, according to some considerations, there was an obvious need for Korea to pursue a new path to tackle the outlined challenges and the Green Growth strategy has arisen from this need. In the coming sections, we will analyze the Korean Green Growth initiative from various aspects including embedding the Green Growth into the national planning, rationales of the Korean Green Growth, measures taken by Korea in the context of the Green Growth, future prospects, and achievements of the Korean Green Growth.

3 Korea's Green Growth Strategy

South Korea's gross domestic product (GDP) is currently ranked the 15th in the world. After 1960s, Korea was able to transform itself from one of the poorest agrarian countries in the world to one of the most industrialized (Zelenovskaya 2012). As a consequence of remarkable economic growth over 60 years, Korea's GHG emissions almost doubled between the years 1990 and 2005. On the other hand, according to some scholars, this remarkable economic development is by no means fully satisfactory since neither social development nor environmental development has occurred in tandem with economic development (Lee 2010). Considering these facts, Korea's decision to pursue the Green Growth strategy can be seen as an instrumental approach to drive "inclusive" economic growth covering social and environmental aspects.

Officially, the then-President Lee Myung-bak announced on 15 August 2008 that his country will pursue the Green Growth as a national strategy and "low carbon, green growth" will be the pillar of Korea's vision (Scarlatoiu 2012). In order to achieve this goal, the Korean Government took a strategic approach in which the government played an active role as it pursued the similar strategies to achieve rapid economic development in the 1960s and 1970s (Choi 2012). South Korea was the first country which integrated the Green Growth into its national strategy.

In the context of the Green Growth strategy, Korea has put ambitious targets such as becoming a global leader among low carbon societies, becoming the seventh Green World Power in 2020, and the fifth by 2050. Korea's policymakers have initiated to pursue the Green Growth strategy in a comprehensive, systematic, and vigorous way by establishment of the Presidential Committee for the Green Growth that includes the Prime Minister and 13 Ministers in addition to the 36 prominent private experts (Young 2011).

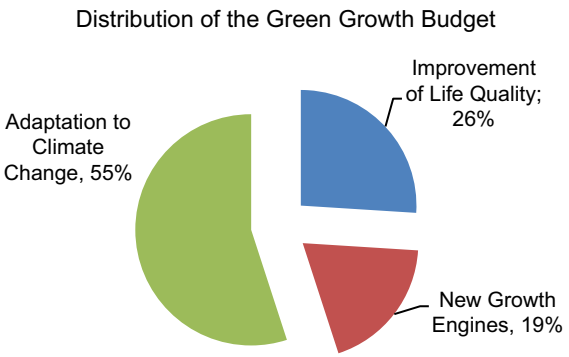

Fig. 1 Distribution of the green growth budget (2009–2013). (Rhee et al. 2012)

Korea's Green Growth strategy differs from other countries in some aspects. For instance, Korea's Green Growth strategy is quite comprehensive and addresses not only to the GHG challenges but also to the other environmental problems. Korean Green Growth strategy is also unique in government's active participation in the process by enacting necessary laws and establishment of presidential committee.

Coordination activities and fiscal adjustments are believed to have had substantial effect on the success of the Korean Green Growth. In this respect, four noteworthy points are highlighted as follows (Choi 2012):

i. The Green Growth needed to be monetized in the form of a budget policy;
ii. The central finance and planning agency had to play a leading role;
iii. The Green Growth budget increase should not necessarily require a decrease in health and education budgets; and
iv. Reallocation of budget resources for the Green Growth was needed in some expenditure sectors.

With an aim to coordinate the proposed objectives of the Korean Green Growth strategy and implement the necessary policies in an effective and systematic manner, the Korean Government generated a 5-year plan for the Green Growth strategy covering the years from 2009 to 2013. The 5-year plan allocates budgets to each strategic pillar with total amount of US$ 99 billion projected over the 5-year period (Jones and Yoo 2011). Figure 1 illustrates the distribution of the Green Growth budget over the period of 2009–2013.

4 Embedding the Green Growth into National Planning

Following the establishment of the presidential Green Growth committee, with the aim to accomplish the ambitious goals the Korean Government declared a "Framework Act on Low Carbon Green Growth" in 2009, which highlights the pillars of the National Green Growth Strategy of the Korea. In the case of Korea's Green

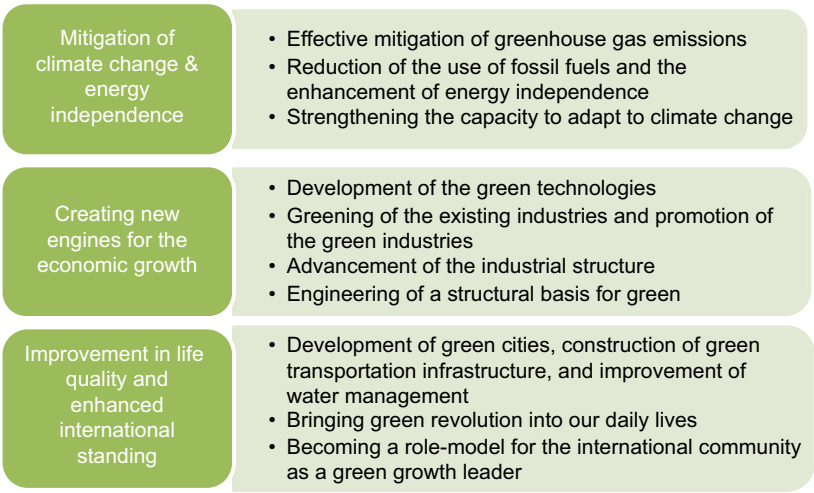

Fig. 2 Key strategies, policy directions. (Source: Korean Presidential Commission for the Green Growth)

Growth strategy, effective governance was important to make the national vision a reality. In line with that of effective governance ambition, three key institutional arrangements have been made by the government (Choi 2012):

i. A strategy and an action plan;
ii. High-level visibility for the Green Growth policy; and
iii. The involvement of all related ministries, with particular emphasis on the private sector as a core contributor.

A strategy and an action plan were developed and adopted as "National Strategy for the Green Growth" by the Korean Government. In addition to the central government's plan for the Green Growth which covers the years from 2009 up to 2050, a 5-year plan for the Green Growth was also adopted. To implement the National Strategy for the Green Growth, the Five-year Plan identifies specific policies, quantifiable objectives, and concrete projects to help to achieve the Green Growth (Won-Dong 2009). The National Green Growth strategy proposed three main objectives with ten specific policy directions.

As illustrated in the Fig. 2, the National Green Growth strategy of Korea proposed three main objectives, namely "Mitigation of climate change & energy independence", "Creating new engines for economic growth," and "Improvement in quality of life and enhanced international standing". The first objective regarding the climate change and energy independence includes the actions such as "setting medium- to long-term mitigation goals, increasing the use of new and renewable energy sources, and strengthening the nation's adaptation capacities to counter the adverse impacts of climate change" (Choi 2012).

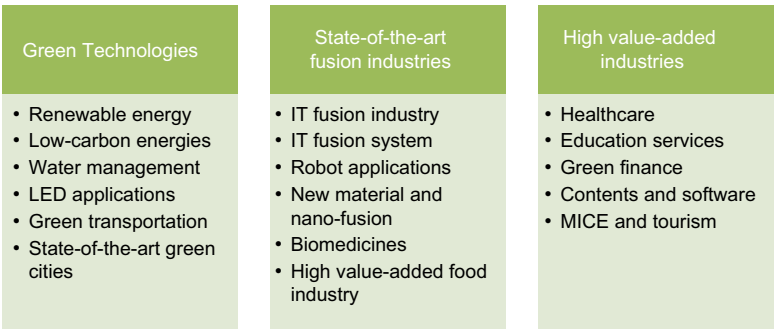

Fig. 3 Industries identified as new growth engines for the Korean economy. (Won-Dong 2009). *LED* light-emitting diode, *MICE* meetings, incentives, conferences, and exhibitions

Second objective of National Green Growth Strategy is "creating new engines for economic growth". The Korean Government put significant emphasis on research and development of green technologies, enhancing green financing instruments, and introducing fiscal policy measures such as tax incentives. In the context of second objective, four strategic axes are identified in the National 5-year Plan to foster future economic growth (Kamal-Chaoui et al. 2011):

- The development of green technology as "new growth engines,"
- The greening of traditional industries through more efficient use of resources, improved waste management, and targeted support to emerging green small- and medium-sized enterprises (SMEs),
- Investments in high value-added industries, such as health care, education, and telecommunication, and
- The establishment of policy infrastructure to support the Green Growth.

For each strategic axe, various measures have been identified and introduced by the government. For instance, wide range of industries which are regarded as the new growth engines for the Korean economy were selected (see the Fig. 3).

In addition to the selection of those technologies, quantitative objectives have been placed such as "increase share of Korean green technological firms in the global market from 2% in 2009 to 10% by 2020" and "increase number of foreign experts in green technologies working in Korea from 25 in 2009 to 250 by 2020" (Kamal-Chaoui et al. 2011). Related projects have been also proposed by the government to help achieving the government's Green Growth objectives (see the Fig. 4).

The third objective of the National Green Growth Strategy aims at "Improvement in life quality and enhanced international standing". In order to accomplish that, the Korean Government proposed various measures including "Development of the green cities", "Bringing the green revolution into our daily lives" and "Becoming a role-model for the international community as the green growth leader" (Jung and Ahn 2010). In line with that, wide range of actions are planned and imple-

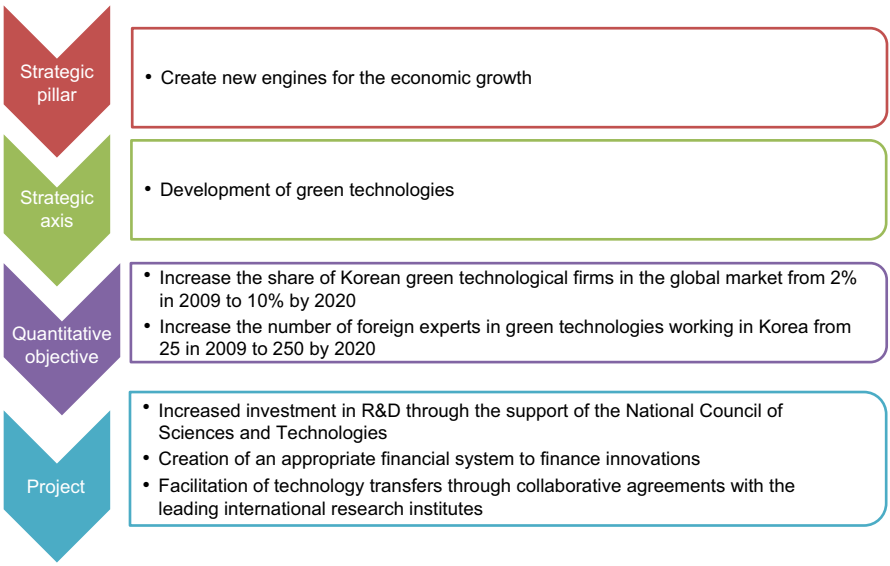

Fig. 4 Some of the strategic objectives of Korea's 5-year plan for low-carbon, green growth (2009–2013). (PCGG 2009)

mented including "greening infrastructure" initiative which prioritizes the construction of rail roads and discourages the automobile usage.

The third objective of the National Green Growth Strategy also proposes action plans to facilitate "bringing the green revolution into daily life". In this context, a wide range of actions are introduced including promotion of the Green Growth in the regular school curricula and education for adults, implementation of a voluntary low-carbon smart village movement and development of eco-tourism sites and practices (Kamal-Chaoui et al. 2011).

Korea's Green Growth strategy has also had comprehensive effect on the local governances. At the local level, the National Strategy for the Green Growth introduced legal and institutional framework consisting (1) the Framework Act for Low-carbon, Green Growth enacted in 2010 and (2) the 5-year Green Growth Implementation Plan. The so-called Framework Act articulates the role of each level of the government, the private sector and the citizens (Kamal-Chaoui et al. 2011).

On the other hand, as an "experienced" country, Korea gained the "pioneer" role in the field of the Green Growth policies. Korea's "best practice" in the field of the Green Growth strategy includes also valuable lessons for the developing countries. As Choi (2012) argues, Korea's Green Growth experience so far provided numerous lessons including:

1. Environmental awareness and economic development are not mutually exclusive and can be balanced.
2. Participation in a global drive to mitigate climate change can prove beneficial to a country's domestic interests.

3. Effective institutional arrangements are critical to the success of a national green growth vision.
4. The likelihood of success is greater when the central finance and planning agency plays an active role.

After 5 years of launching Korea's Green Growth strategy, some outcomes became evident. Firstly, Korea's strategy towards the Green Growth has given a significant impulse to the endeavor to proliferate green technologies and green industries. Secondly, Korea's Green Growth strategy resulted in better life quality. Thirdly, with the help of various means such as greening the industry, putting emphasize on rail roads, the Green Growth assisted the government to fight against climate change at the local and international level. In addition to that, statistics show the Green Growth strategy contributed to the growth of export and created new job opportunities thus strengthened the Korea's competitiveness.

5 Conclusion

In recent years, particularly after the financial crisis of 2007–2008, it became visible that there should be a shift from growth-oriented economy towards green and sustainable development. In this respect, the Green Growth has been one of the key development strategies in recent years. The concept of the Green Growth strategy proposes a new paradigm for the countries to make the transition to a sustainable economy.

During the second half of the twentieth century, Korea has been one of the fastest growing countries thanks to its growth-oriented economic policies and associated strategies pursued by the government. However, Korea realized that achieving sustainable growth and improvement of life quality of the Korean people entail a new paradigm of a development policy to be pursued. Big number of energy intensive industries, challenges of climate change, need for a new economic development engine, Korea's bad track record on environmental issues, and necessity of better integration of economic and environmental objectives can be considered as some of the essential factors which led the Korean Government to implement a nation-wide Green Growth strategy.

By embedding the multiple dimensions of the Green Growth into a single, coherent policy framework, Korea has been one of the leading countries in the world. Quite comprehensive and addressing not only the GHG challenges but also to the other environmental problems, government's active participation in the process by enacting necessary laws and establishment of the presidential committee, Korea's green growth strategy differs from other countries.

With an aim to accomplish to ambitious targets set by the government, a strategy and an action plan has been developed and adopted as the "National Strategy for the Green Growth". A 5-year plan for the Green Growth that identifies specific policies,

quantifiable objectives, and concrete projects has been adopted based on the central government's plan for the Green Growth.

On the other hand, the Korean experience made it clear that a strong leadership is vital for the success of the Green Growth strategy. Thus, the governments should play a key role to overcome unprecedented challenges including shifting to a new way of thinking, reshaping the market towards green production and green consumption, orchestrating wide-range of institutions in a way to work in coherence, demonstrating strong leadership, and allocation appropriate budget for the Green Growth objectives.

As mentioned, Korea's Green Growth experience is not the first and the only attempt. However, considering its scope, budget, and achievements so far, Korea's Green Growth strategy can be seen as the largest and the most organized policy approach among the countries that pursued the Green Growth strategy. With its featured characteristics, Korea's Green Growth strategy has proved that the Green Growth policy can be successfully implemented with appropriate policies, action plans, strong governmental commitment, comprehensive structural changes, and legal and regulatory frameworks.

Compared to developed countries, developing countries are more vulnerable to today's challenges such as economic turmoil, water and food supply crises, scarcity of natural resources, and rising GHG emissions. Keeping in mind those challenges, Korea's Green Growth strategy provides a new paradigm for the countries to make the transition to sustainable and green economy. Particularly for the developing countries, the Green Growth can be seen as a smart, sustainable, and reasonable way of long-term development planning.

Ackowledgement I am grateful to Hong Jong Ho and Murat Yülek for their valuable comments and suggestions.

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Post-Crisis Shifts in Macroeconomic Management and Central Banking: Could Consumption Planning Emerge as a Macro-Prudential Tool?

Ahmet Faruk Aysan, Mehmet Fatih Ulu and Sadık Ünay

1 Introduction

Retrospectively speaking, it would not be a gross exaggeration to state that the "long twentieth century" witnessed profound developments that radically shattered trust in global financial architecture as a stable system of resource allocation, as well as the capacity of the interstate system to provide it with a robust administrative framework. Systemic shocks illustrated by the First and the Second World Wars, the Wall Street Crash, the Great Depression, the ascendancy of socialism and fascism in Europe and the inception of the decolonization process leading to the emergence of the so-called Third World triggered a radical questioning of the conventional propositions of mainstream economic liberalism. Meanwhile, the neo-Keynesian consensus provided the ideational basis for macro-economic policy making in the post-war global order, justifying the presumption that nation states have a normative responsibility to get involved in systematic initiatives in order to promote economic growth, social development and increased employment. The continued dominance of this consensus led certain authors to conclude that "the shadow of Keynes" (Preston 1996; Toye 1987) kept hanging over mainstream approaches to macro-economic management and development thinking throughout the golden age of post-war era.

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From another angle, the global institutional framework created by the Bretton Woods regime substantially facilitated the consolidation of a mentality of "*strategic planning*" by allowing national policy makers to promote growth and employment through proactive macro-economic policies and financial regimes characterized by various national controls. In this context, structural restrictions on international capital movements were tolerated to enable national authorities to determine domestic interest rates, fix exchange rates and pursue national developmental objectives through appropriate taxation and public spending policies in relative isolation from international pressures. Thus, strategic economic planning to coordinate developmental efforts quickly became conventional wisdom both in Western Europe (i.e. France, Scandinavia) and the bulk of the then developing world (i.e. Japan, South Korea, India) striving to realize structural transformation projects through import-substitution-industrialization policies. The taken-for-granted presuppositions of development economics as it evolved under these conditions were: "the goal of development is economic growth; the agent of development is the nation state, and the chief means of development are macroeconomic policy instruments" (Leys 1996).

In this context, Albert Hirschman made a crucial theoretical contribution to the literature on proactive planning by suggesting that "the *perception* of investment opportunities and their transformation into actual investments, rather than the actual scarcity of capital, have been the missing ingredients of industrialization in the 'late late' developers of the Third World". He argued that the state was perfectly placed to provide private capital with disequilibrating incentives that would alter prevalent balances in the markets and encourage induced decision-making in line with long-term developmental objectives (Hirschman 1958). Likewise, Alexander Gerschenkron (1962) formulated an elaborate analytical framework which focused on the critical role of strategically coordinated industrial finance in the speedy creation of modern production technologies in late developing countries. By referring to fierce competition with the industrialized world and the inability of local entrepreneurs to sponsor massive catch-up projects, he depicted the state as a potential "investment banker" that could provide incentives and financial resources for productive investments, and closely monitor their employment for industrial transformation.

Over the course of the 1960s and the 1970s the protagonists of structuralism were prevalent around World Bank circles and they maintained that economic structures and markets in developing countries were "less perfect" than their counterparts in the industrialized North (Chenery 1974; Myrdal 1957; Rosenstein-Rodan 1943, 1957; Prebisch 1950; Singer 1950; Tinbergen 1958). As these markets were not deemed efficient in allocating goods and services; it was claimed that strong, rational and interventionist state apparatuses were required to help, support and stand-in for the market to promote higher economic growth and equitable distribution (Colclough and Manor 2000). Although these approaches principally focused on non-western contexts in their policy prescriptions, the interventionist zeal in their fundamental prognoses contributed to the maintenance of the theme of pro-activism and strategic planning in macro-economic management in the Western world.

A parallel reflection of the dialectical history of paradigmatic shifts in macro-economic policy-making depicted above that Ilene Grabel called "productive

incoherence" (2013) could also be discerned in the historical trajectory of central banking. In this context, Goodhart (2010) separated the historical trajectory of central banking into three distinct epochs which in chronological order, are the Victorian era (from 1840s to 1914), the decades of government control (from the 1930s to the 1960s) and the triumph of markets (from the 1980s to 2007). Each historical era was followed by a puzzled meantime, seeking for a new systematic framework. With hindsight, we could also add a fourth era in the aftermath of the global crisis (from 2008 till today) during which central banking has clearly been experiencing drastic changes in its objectives and the tools used for accomplishing these objectives.

In retrospect, following global instability in the aftermath of the World War I and fluctuations created by the Great Depression, there were intense debates concerning the main parameters of policy-making and the proper function of central banking in macro-economic policy. Meanwhile, the liberal financial orthodoxy in Europe and the USA was pushing for the restoration of the Gold Standard at par with pre-war rates, while Keynes and accompanying experts warned about the potentially destructive consequences of such an approach. Instead, they stressed the need for an alternative macro-economic paradigm based upon more intensive public guidance and coordination of investment decisions. In this new paradigm, central banks were to focus more on the objectives of increasing aggregate demand and employment with a developmental mentality by utilizing strategic capital controls, rather than focusing on the protection of the national gold stocks and stability of domestic prices.

In this vein, the Great Depression and the collapse of the Gold Standard accompanied by the break-up of the Second World War led to a radical rethinking of central banking, with Keynesian ideas at the forefront of the transformation. Governments gained a great deal of control on monetary policy, and they acted both pragmatically and strategically during the pre-war and post-war eras. In the post-war period, central banks played the role of fiscal agents of most governments and two leading Central Bank Governors, Eccles of the USA and Prebisch of Argentina, set the main examples of the new approach to central banking in the 1930s. In his 1933 Senate Testimony, Marriner S. Eccles (Chairman of the Federal Reserve; FED) called for a "National Planning Board, similar to the Industries Board during the war (World War I), necessary to the proper coordination of public and private activities of the economic world" (Caldentey and Vernengo 2012). In the 1930s, during the formative years of the Central Bank of Argentina, the proposal for the foundation of the Bank stated that "The Bank will have as objective: a) The concentration of sufficient reserves to moderate the consequences of fluctuations in exports and the investments of foreign capital on money, credit and commercial activities, in order to maintain the value of money" (Caldentey and Vernengo 2012). According to the Central Bank reports of the day, the objective of the bank was not only to avoid credit expansions that could accentuate the intensity of unwanted movements but also go further and limit amplitude of the fluctuations and reduce the variation of purchasing power during economic oscillations to abate severity of the damage on economic activity. The founding chairman of the Central Bank of Argentina Raul Prebisch was also the designer of the "Plan for National Reactivation"

which introduced the idea of planned industrialization as a key to Argentinean development. For both Eccles and Prebisch controlling inflation was not the only role of a central bank, instead higher growth rates and full employment conditions of a country were more in the centre of their conduct of policy.

The vision depicted above represented an alternative paradigm on the management of macro-economic policy and within that the proper roles of the central banks and fiscal authorities as the chief governing institutions of the financial realm. It was a paradigm which assigned a much stronger developmental role to the financial institutions, including the central banks, as crucial investment bankers holding the pulse of national investment decisions compared to the rather limited laissez-faire vision associated with the control of inflation and preservation of price stability (Kindleberger 1986). Following the acute destruction of the Second World War and the urgency of post-war reconstruction, the developmental vision of both central banking and wider macro-economic policy necessarily became the norm in both the developed and the developing worlds. In this context, crucial success stories from the developing world such as South Korea, Taiwan, Brazil, India and China all followed various forms of this proactive paradigm that gave the responsibility of "strategic planning" to public authorities and central banks.

Along with the material shocks and changes in the balances of power in the world economy, however, the tide started to turn in the late 1970s against those approaches that endorsed various forms of state interventionism to induce structural transformation. So much so that the early 1980s witnessed a spectacular upsurge of the neoliberal paradigm in economics, political economy and development studies, advocating individualism, market liberalism and state contraction. The neoliberal counter-revolutionaries not only argued against specific interventionist strategies such as import-substitution industrialization and financial repression, but also strived to create an entirely new political economy the organizing principle of which was the notion that the state cannot play an effective developmental role except in the areas of law and order and physical infrastructure (Colclough and Manor 2000; Preston 2000). The rise of neoliberalism and the Washington Consensus in development policy embodied by International Monetary Fund (IMF)/World Bank packages stimulated the ongoing turn against developmental central banking. Consequently, "inflation targeting" and "inflation targeting lite" gradually became the dominant priorities in central banking (Epstein and Yeldan 2008), and there emerged a one-sided academic environment in which it became almost impossible to challenge this quasi-orthodoxy.

In more general terms, the pioneers of neoliberalism were radical and revisionist in terms of their diagnoses concerning the causes of development problems, as well as their proposed solutions which stressed the primacy of economic growth at the expense of employment creation, poverty alleviation and distributional measures among macro-economic policy objectives. In policy terms, they identified pervasive and excessive government intervention as the main reason for slow economic progress. It was claimed that development was blocked across developing countries by inflated public sectors, distorting economic controls and overemphasis on capital formation Bauer (1984). Therefore, the universal policy proposal was to pursue a

systematic program of decreasing state involvement in the economy through privatization, reduced public spending, elimination of exchange rate controls and the like and letting the impersonal forces of the markets determine prices. Their weighing of the relative costs of economic interventionism (i.e. rent-seeking, price distortions) versus market imperfections (i.e. imperfect competition, monopolies, poor infrastructure) led to the unwarranted conclusion that imperfect markets were preferable to imperfect states in settling critical matters of resource allocation Lal (1983).

In its policy implications, the neoliberal counter-revolution has reversed the priorities identified by Schumpeter (1970), cited in Cammack (2000) with reference to the post-war political economy: state-managed stabilization policies to prevent economic recession were replaced by internationally managed policies of restructuring under the aegis of the IMF and the World Bank; redistributive taxation aimed at greater income equality was abandoned in favour of fiscal reform that rewards entrepreneurship and accentuates real inequality; all kinds of price regulations have been dropped; public control over financial and labour markets were systematically minimized and social security legislation has been restructured to promote rather than balance market forces. Following the early shock of the neoliberal upsurge, a series of interdisciplinary analyses regarding the development trajectories of the Newly Industrializing Countries (NICs) paved the way for the formation of a modern comparative institutional stream in the study of macro-economic management and development. Aiming to stand aside from the stereotypes and preconceived dichotomies which characterized some strands of both neoliberalism and its structuralist predecessor, the novelty of the contemporary comparative institutional genre stemmed from the significance assigned to local institutions and values in facilitating socioeconomic development and to the synergy of state and society in the realization of common developmental objectives.[1]

Accumulated experience gathered especially from a variety of developing country contexts confirmed that successful and sustainable socioeconomic transformation in the wake of economic globalization requires a fundamental recomposition of state capacity, rather than the indiscriminate contraction that the neoliberal policies impose. The main reason was that the new global competitive game required a high degree of "stateness" (Evans 1997) rather than an eclipse of national authority, because of the increasingly sophisticated role that the political authorities ought to play at the intersection of global forces and their domestic political economy. Indeed, multidimensional processes of globalization created quantitative and qualitative changes in the organization of the global economy, and this necessitated a redefinition of the socio-economic roles and major policy priorities of state institutions involved in financial and macro-economic management in a world of increasing complexity, interconnectedness and volatility.

[1] Crucial examples of comparative institutional research, particularly on the development trajectories of the East Asian NICs include Johnson (1982, 1984), Johnson et al. (1989), Amsden (1989, 1990), Wade (1990), Appelbaum and Henderson (1992), Weiss and Hobson (1995), Evans (1989, 1995), Weiss (1998), Woo-Cumings (1991, 1999).

In the midst of the complex web of constraints and opportunities presented by contemporary globalization, traditional developmental regimes based on state-led crash-industrialization programs are no longer viable. However, as Weiss (1998) suggests, despite the constraining impact of international economic conditions, governments are by no means irrelevant or immobilized, because the internationalization of capital does not only restrict certain policy choices, but it expands others and creates brand new ones as well. Adoption of a mentality of "strategic planning" by key state institutions dealing with macro-economic management including the central banks and financial authorities is a crucial case in point. The key to fostering international competitiveness without making massive sacrifices in the form of human capital, physical environment and social justice is a strategic policy mentality on the part of the state that fine-tunes entrepreneurial activity in line with the logic of global competition and promote public–private cooperation.

As the 'dialectical history' of macroe-conomic policy making and development displays, major economic crises and systemic shocks occasionally trigger adoption of various developmental finance methods to confront imminent investment challenges. But the strong political backing that neoliberalism enjoys among corporate and policy-making circles ensures that neoliberal policy prescriptions assigning minimal role for state agencies and in the meantime, for central banks, are quickly restored. A quick glance to the evolution of macro-economic policy paradigm over the course of the twentieth century reveals that assigning extensive developmental roles to central banks and related financial institutions have been the dominant approach. In that respect, the neoliberal interregnum in the last decades that restricts the role of central banking to the control of inflation and price stability represents an exception rather than the rule in a historical account.

Indeed, in her seminal book, *The Rise of 'the Rest',* Alice Amsden suggested that medium- and long-term investment financing, often supported by central banking mechanisms, were key in stimulating the newly industrializing developing countries in the second half of the twentieth century Amsden (2001). The mobilization and allocation of medium-term and long-term financial instruments for critical industrial and infrastructural investments was made possible by the strategic initiatives of public financial agencies. The bulk of the "developmental states" in East Asia and elsewhere employed a development bank as the public authorities' main agent for financing investments aimed at industrial-technological upgrading. In certain cases, the whole banking sectors were mobilized to channel direct long-term and concessionary credits to targeted industries, and thereby acting as a "surrogate development bank" (ibid., p. 129). Many central banks in late industrializing economies played an important role in accommodating the development-oriented policies of their governments by keeping effective real interest rates very low, and even negative. Central banks also coordinated strategic capital controls that relatively insulated domestic markets from the vagaries of international financial markets by restricting hot money flows that could lead to overvalued exchange rates and financial crises.

In this chapter, after a historical introduction of the trajectory encompassing a broader time horizon, we focus on the question of whether consumption planning

could be conceived as a macro-prudential tool in the aftermath of the global crisis. In our theorizing, consumption planning is associated with a form of strategic planning in a highly globalized world where the state capacity in production is questioned due to reservations about its success in history while the state capacity in channelling the consumption across time and goods are relatively uncultivated. To this end, after theoretically explaining what we mean by consumption planning, the case of Turkey is explored with regard to the recent unconventional monetary policy experiences of the Turkish Central Bank and the succeeding macro-prudential policies in Turkey to channel the consumption across time and to a certain extent across goods to avoid financial stability anxieties stemming from widening current account deficit and escalating debt overhang led by overflowing of hot money to the emerging markets in the aftermath of the policy reactions of central banks of the developed countries. Hence, the next section explains the change in central banking and attempts to identify the main features of new central banking that we believe is currently in the making. Section 17.3, on the other hand, attempts to uncover the issue of consumption planning as a macro-prudential tool to foster financial stability in the light of fresh policy experiences from Turkey. The ensuing section goes into more specific details of Central Bank's policies in Turkey over time to show the proactive endeavours to contain the adverse effects of fluctuations in global capital mobility after the inception of the global crisis. Finally, the last section briefly concludes the study and puts forward some policy proposals.

2 The Making of New Central Banking in the Aftermath of the Global Crisis

In the first decade of the new millennium prior to the global financial crisis, the neoliberal approach to central banking had already become the dominant orthodoxy on a global scale. The prevailing neoliberal ideology invariably stressed that the only legitimate task for central banks is to control inflation while overlooking the broader macro-economic goals such as employment creation, financial stability or economic growth. Bernanke et al. (1999) described the major tenets of this approach as formal independence of the central banks; adoption of an agenda of inflation fighting (including 'inflation targeting') at the expense of other macro-economic goals; and the use of indirect methods, such as short-term interest rates, as exclusive tools of monetary policy, as opposed to more direct methods such as credit allocation.

Therefore, prior to the eruption of the global financial crisis, central banking has often been regarded as a boring subject and central bankers have quite enthusiastically liked the idea of conducting boring monetary policy. As stated by Mervin King (2000) "*...our ambition at the Bank of England is to be boring"*. Therefore, the discussions on the best practices of central banking used to be rather reduced to the technical nuances of monetary policy models. However, the global financial crisis and the policy measures taken against it in both the developed and developing countries have generated a rich set of policy experiences.

In the aftermath of the global economic crisis it became more noticeable that national economies which displayed strong exit performances from the crisis such as, China, India and Bangladesh were equipped with central banks that were using a broad array of tools to manage their economies for developmental purposes. The cost of inflation-focused neoliberal monetary regimes in developing countries has been to divert the attention of some of the most highly trained economists and policymakers away from the main tasks that their predecessors in central banking used to focus on: sustaining financial stability; facilitating employment creation; contributing to faster growth and improving productivity while fostering socio-economic development. In this context, the post-crisis environment witnessed the realization of new policy experiments in central banking in many countries, including those sincerely dedicated to the old neoliberal orthodoxy, i.e., the European Central Bank, the Bank of England and (the less orthodox) FED. The rising mentality of "neo-planning" in the era of open economies and financial globalization is more focused on *planning household consumption and savings*, as well as strategic ways in which national savings could be directed towards more productive investments. Therefore, the central banks especially in developing countries no longer blindly follow the lead of the major central banks in the developed world and IMF. However, they navigate in unchartered territories of developmental policy-making through cautious experimentation. The unorthodox strategies of central banking that surfaced in many emerging countries over the course of the global crisis are recognized as innovative experiments in more developmental policy-making and are to be continuously improved for long-term adoption. It would be a grave mistake to perceive attempts at "neo-planning in central banking" as exceptional aberrations from the neoliberal orthodoxy that should be abandoned at the first possible opportunity. Thus far, it is rather difficult to conclude on the best practices attributable to various policy experiments in different parts of the world. In a sense, the new paradigm of central banking is still in making in spite of the common knowledge that mainstream central banking will never be the same again in the post-crisis era.

Since the inception of the global crisis, central banks in both developed and developing countries have resorted to employ so many unconventional monetary policy tools that certainly it will take many years to conclude on the "*best practices*" of the new central banking paradigm. The difficulty in the formation of the new paradigm in central banking stems from the very nature of various responses of central banks to the global crisis. The global crisis was rather unique in its nature and hence the reactions against the global crisis required unconventional policy actions compared to traditional conducts expected from central bankers. However, at the outset, the bulk of the central bankers have been unprepared and were not equipped enough to tackle the crisis with their prevailing theoretical models. Since central banking has soon perceived to be the only game in town left to bolster economies, central bankers have been left with no choice but to *muddle through* the crisis.

The global crisis has demonstrated that targeting low inflation is necessary but not sufficient as a goal in itself. It has also unveiled the significance of financial intermediation for the health of an economy and henceforth of regulating the financial sector as a whole from a macro perspective to contain systemic risk instead of just

supervising each financial institution at the micro level. Therefore, while designing new policies, monetary and regulatory measures need to be employed simultaneously. Certainly, more prudent fiscal policies devised in good times provides more room to manoeuvre later on. However, this orthodox approach is fading since it is not thoroughly incorporating the risks attached to financial transactions. It also fails to include spillover effects of national monetary policies and the vulnerability of small economies to these spillover effects, owing to the exchange regime disparities and high fluctuations in capital mobility across countries.

Degrading of the financial transmission mechanism, global fluctuations in commodity prices and other destabilizing shocks complicates conducting policy for sustaining price stability and pushes central banks to unchartered waters of economic policy. Unsurprisingly, sustaining financial stability has come up as a mandate of central banks and other regulatory agencies of the financial sector. They started to use new micro and macro-prudential tools. Currently, the new optimization problem of central banks requires adjusting monetary and regulatory policies in harmony to reach dual objectives of sustaining price and financial stability. The prudential toolkit to achieve these objectives concurrently is expanding every day with different applications in different countries. This toolkit includes taxing financial institutions which use excessive leverage, limiting banks' credit/deposit ratios, devising solutions for problems of systemically important institutions, asking shareholders of "too big to fail" institutions to put extra capital to the companies and so on.

Still central banks are muddling through the effects of the global crisis and the repercussions of policy measures of other central banks. The case of emerging market economies and their central banks is even more interesting considering that they turned out to be "policy takers" rather than the "policy makers" of the global financial architecture during protracted episodes of the global crisis. Certainly, central bankers especially in emerging markets have attempted to be more influential policy makers for their economies instead of assuming their passive roles of policy-taking prescribed to them during the global crisis. Therefore, the experiences of the central banks across the world since the global crisis have formed a rich set of policy experiments; very blazingly shedding light for the making of "new central banking" especially for the developing countries.

3 Rethinking Central Banking: Consumption Planning as a Macro-prudential Tool

After classifying the general trends of central banking in various phases of the crisis, in this section, we focus on the Turkish experience and derive broad lessons concerning whether *consumption planning* can be used as a macro-prudential tool for emerging market countries like Turkey with a large current account deficit and overwhelming concerns for financial stability. The notion of planning is habitually associated with development economics, in particular with long-term economic objectives and often regarded as part of old fashion thinking while central banking

needs to concentrate on shorter term objectives which are more likely to be affected by main policy instruments of central banks. However, the term "*planning"* should not be a victim of conceptual taboos of the time when we rethink about central banking at large. *Planning* essentially refers to "*strategic thinking"* that central bankers are always supposed to be doing at all times in spite of the fact that they hesitate to reveal and share it with the public more vividly due to the conventional paradigms of the mainstream. An attempt to classify different stages of the central banks' reactions to the global crisis will help the *muddling through* efforts of the central banks and highlight the ways through which central banks are likely to benefit from the concept of *consumption planning* considering that it takes time and trails to come closer to the unconventional idea of *consumption planning* to fundamentally alleviate financial stability concerns.

Initially, global crisis came as a surprise to many including the finance practitioners, central bankers and the academics alike. When the Lehman Brothers has collapsed, main reaction of the central banks across the globe and more in developed countries were to how to alleviate the recessionary effects of the crisis before it turned into a major crisis in the world economic history. FED and other developed countries' central banks were quick to realize the conceivably shattering consequences of such a crisis. They acted promptly and injected huge liquidity into the financial system to reduce the systemic risks associated with the total collapse of the overall financial system. While FED was the most active central bank at the beginning of the crisis, other central banks of the developed world soon followed the FED due to the peculiarities of the global crisis.

With the G20 summit in Washington DC during the IMF–World Bank spring meetings in 2009, global leaders were there to stand collectively against the global crisis. More coordinated efforts of liquidity injection to the financial system aimed to provide a sense of confidence to the global financial system. Definitely, developed countries starting with the USA have hardly been hit by the crisis and in addition to monetary stimulus provided by the central banks, fiscal stimulus packages started to be announced and implemented very quickly in the developed countries. However, in spite of the initially pronounced *decoupling* ideas, developing countries were soon realized to be affected by the global crisis. Developing countries too, acted similarly and reacted initially with monetary easing and later responded with the fiscal expansionary policies. The trend was the "*flight to quality"* and as always "*quality*" was perceived to be in the developed countries especially in US financial markets. This episode can be considered as the first stage of crisis. We may name this stage as the *initial response stage* of the crisis that lasted broadly until the execution of QE2 (Quantitative Easing 2).

If the last global crisis was yet another recurrent crisis in global financial history, probably, after this *initial response stage*, we will go back to the normal and let the economies recover over time rather orderly on the way. However, the global crisis was rather unique and therefore required unprecedented policy measures to alleviate the collapse the global economy. These policy measures however, were not enough due to the severity of the global crisis. Hence, the new monetary easing polices like QE2 and QE3 and fiscal policies are further introduced during the process. Initially,

the main purpose of the policy measures was to restore confidence to the financial system and to boost the economic growth. However, various developed countries seemed to be affected differently at various stages of the global crisis. When the global crisis turned into a Eurozone Crisis, the main concern was debt sustainability and feasibility of the Eurozone. In this episode of the crisis, Japan was also struggling to deal with the rather old problem of its own and after a political campaign; Abenomics gained popularity and aimed to increase the inflation to the 2% target.

Certainly, the unconventional policy responses by the developed countries against the global crisis have been the leading headlines considering that their policy measures affected not only their economies probably more also economies of developing countries. In this second episode, the primary concerns of the central banks of developing countries (especially emerging markets) were to slow down the capital inflows injected by the developed countries' central banks such that their economies would be less susceptible to sudden stops and capital reversals when the economic conditions are realigned in the developed countries.

In this regard, there were two main strands of policy reactions to massive capital inflows among the emerging markets during this phase. The more typical response was to bring capital controls to lighten the harmful effects of massive and short-term capital inflows. The camp is mainly headed by Brazil; while the policies of the Turkish Central Bank stood on the other camp. The policies of the Turkish Central Bank were later complemented by the policy measures taken by the *Financial Stability Committee* of Turkey comprising delegates from other financial regulatory authorities and the Vice-Minister Responsible for Economic Affairs.

This camp resorts to policy measures again to slow down short-term capital inflows while doing it mostly with unconventional monetary policy tools and more structural macro-prudential policy measures instead of implanting rather hard to implement capital control measures. We explain the policy tools employed in Turkey especially by the Central Bank of Turkey (CBRT) in detail later. But in this section we briefly mention them chronologically to show how the search for policy remedies against the unconventional liquidity injections in the developed countries have, at the end, led to endorsing more structural measures like *consumption planning* to relieve the financial stability concerns in the Turkish context.

Without getting into the details of the Turkish experience, one needs to state the last phase of the global crisis. Quite apparently, this phase of the crisis is the *exit stage* of the global crisis. Its inception date is surely pinpointed as May 2013 when the Chairman of the FED, Ben Bernanke, announced the gradual cessation of the QE3 over time. Since this announcement, the emerging market economies are mainly affected by this fundamental policy change. Given that the policy measures against the crisis lasted rather long since 2008, the exit stage from quantitative easing is likely to last for a while as the emerging market economies reformulate their polices. Since we are already in this episode, the details of policy reactions and market reactions for various countries will be unfolding over time. However, the unconventional policy reactions of the central banks across the world so far since the inception of the crisis logically indicate more unconventional policy-making still to come in this new episode, as well.

Certainly, policy experiences from other emerging markets provide innovative insights about the possible reactions of developing countries. Therefore, after the global crisis, especially in the second phase of the crisis, country experiences have become even more important in rethinking new central banking. Nonetheless, due to its striking features, we prefer to focus on the Turkish experience in the remaining parts of the article. Hence, let us turn to the Turkish experience briefly to highlight the reasoning behind *consumption planning* that is likely to be helpful for countries with large current account deficits.

When the massive capital inflows threatened the financial stability objective of the CBRT, the Bank revised its policy framework and came up with a new policy mix at the end of 2010. The reserve requirements of the banks have been differentiated with respect to time and across currency. Lower reserve requirements for Turkish currency deposits and longer duration time deposits were provided. The reserve requirements of banks have been increased and the resulting liquidity needs of the banks started to be provided by the Central Bank while the lending and borrowing spread of the Central Bank policy rates have widened such that uncertainty regarding interest rates aimed to be internalized by the banks. These increasing costs stemming from policy induced uncertainty are reflected to funding costs to alleviate very high loan growth rates reaching close to 40 % in 2010.

Since Turkey has been running a large current account deficit historically, controlling credit growth was a must to alleviate vulnerabilities stemming from large current account deficits. The CBRT indicated a reference credit growth rate of 25 % in 2011, while this reference rate was announced to be 15 % for the upcoming years since 2012 to achieve financial stability in a more sustainable manner in the long run. In complementing the policy measures taken by the Bank, the Financial Stability Committee of Turkey has been established to coordinate the financial stability efforts of the regulatory authorities in Turkey which were deemed even more necessary with the widening of current account deficit in the second phase of the global crisis in 2011. This committee is chaired by the Minister responsible for Economic Affairs. Financial regulatory agencies in Turkey are also members of the Financial Stability Committee including Banking Regulation and Supervision Agency (BRSA), Capital Markets Board (CMB), Saving and Deposit Insurance Fund (SDIF) and Turkish Treasury.

Since its formation, Financial Stability Committee has taken some vital decisions to strengthen financial stability and these decisions have been implemented by the regulatory agencies responsible for the related segment of financial market regulations. Loan to value restrictions for mortgage loans, the increasing provisioning requirements for credit card loans and other consumer loans were among the first decisions to strengthen financial stability while aiming to reduce the current account deficit. More recently, at the end of the 2013, Financial Stability Committee has announced new macro-prudential policy measures to slow down the current account deficit and to foster financial stability. The maximum number of monthly instalments for the credit card purchases has been set to 9. Certain items like cellular phones, gold and jewellery has been subjected to a restriction of no instalments in credit card purchases. The consumer loans have been restricted to be given at most with 3 years

maturity while the maturities of automotive loans are restricted to be 4 years. Moreover, certain loan-to-value restrictions have been introduced for automotive loans. Furthermore, loan-to-income restrictions were also announced to be implemented when more reliable data on household incomes would become available over time.

After briefly touching upon the main macro-prudential policy measures taken in the Turkish experience, we would like to conceptualize these attempts as the constitutive steps of a new form of planning, namely "*consumption planning"*. Actually, the concerns with the current account deficit stem from consumption smoothing problems for emerging market countries like Turkey. When international interest rates are low and capital is abundant, these countries tend to attract large capital inflows. However, these capital inflows are often associated with the business cycles of the developed countries. Often the developing countries are caught unprepared when the capital outflow episodes start to take place due to business cycle developments in developed countries. Large current account deficit countries with saving problems like Turkey are the natural victims of these types of capital reversals. Hence, in order to smooth their consumption in both capital inflow and capital outflow episodes, one likely option for these countries is to start smoothing the credit growth in good times when capital inflows abound.

By smoothing the speed of credit growth, consumption tendencies are also planned intertemporally across time and goods. In fact, recent policy measures taken in Turkey by the Financial Stability Committee are to be viewed as implementation of *consumption planning* especially across time to smooth current account deficit. For example, the Turkish government has recently acted on this direction and increased *Special Consumption Tax* for automobiles after automobile sales and imports reached historically high levels in 2013. Again we claim that these attempts are rather pragmatic solutions to plan consumption over time and across goods towards more domestically produced products to lighten the concerns for current account deficit. When we think of the evolution of the policy measures taken to reduce the current account deficit, policy measures started initially as monetary policy responses; but over time, more direct measures have gained prominence. Hence, one could rightly conclude that as long as the issue of current account deficit is seen as a major problem for financial stability and the long-term prospects of the country, we are likely to see various forms of *consumption planning* decisions in the future.

We rather appreciate the pragmatic nature of this new form of planning in the Turkish context and think that these consumption planning policies are very likely to be applicable to countries with similar problems. The notion of "planning" often reminds us the centralist economic planning experiences that started in many developing countries including Turkey in the 1960s. Unfortunately, the planning experiment of Turkey was not successful enough and did not match the initial aspirations of the nation at large. However, development planning of the 1960s (and the earlier experiments in the Etatist era) were often associated with *production planning* for the reason that the main concern for these periods was rapid and state-led industrialization. Like many other developing countries of those times, state capacity for industrialization was apparently insufficient. However, the situation is radically different today. Turkey, like many other industrializing countries, does not

have much of a capacity problem in manufacturing production. However, today's circumstances make consumption planning more feasible for open economies like Turkey. Experiments of production planning are remembered rather negatively because of various failures in the process. Indeed, planning manufacturing production is comparatively much more difficult than planning consumption in today's globalized world. However, planning consumption across time and across goods is still achievable for many emerging market countries.

Production planning requires choosing certain strategic sectors and offering various incentives for those sectors. Human capital also needs to be enhanced for production purposes. It is also more exposed to misconduct and abuse since the incentives in question are distributed by state institutions. However, concerns on state capture are likely to be less pronounced in the case of consumption planning as there is no direct intervention into production preferences of economic actors. Therefore, a new form of planning, namely consumption planning could become a pertinent solution for the current account deficit of developing countries with low propensity of domestic savings, while asserting the importance of once overlooked notions of *planning* and *strategic thinking*.

4 The Peculiarity of the Turkish Experience in Crisis Management, Central Banking and Consumption Planning

In this section, we would like to focus more on the policies of the CBRT in detail to illustrate various stages and dimensions of strategic thinking and consumption planning. The CBRT is among the leading central banks attempting to shape its economy with innovative monetary and macro-prudential policies. The *interest rate corridor policy* which provided flexibility in the money markets in setting the interest rate, and the *Reserve Option Mechanism (ROM)* to alleviate the risk of sudden stop are the two main tools employed by the CBRT after the global crisis in handling the ongoing calamity.

Price stability has been the traditional target of monetary policy. However, in recent years after the global crisis, financial stability has been remembered again as it had been the main reason for the establishment of central banks over the course of history. This newly remembered objective calls for new indicators to keep track of financial stability. In the Turkish set-up, however, the best measure to follow for stability of the financial system emerges to be the credit growth rates. Inflation expectations and exchange rates are already conventional indicators that have been commonly traced. As mentioned, after the global crisis with the policy mix package announced in late 2010, the CBRT started to announce reference values for the credit growth rate while many macro-prudential measures have been implemented to influence the credit growth rates. Both the interest rate corridor and the ROM have the potential to influence domestic credit growth. The ensuing parts of the paper briefly describe what these novel tools are and how they can be employed to curb credit growth and thereby smooth consumption across time.

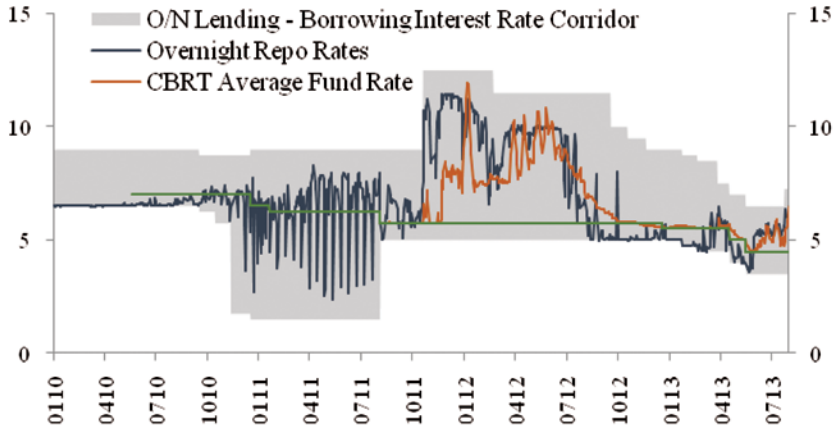

Fig. 1 Implementation of the interest rate corridor. (***CBRT*** Central Bank of Turkey)

4.1 Interest Rate Corridor Policy

In the overnight money markets banks can both borrow money from central banks and also deposit their excess liquidity to central banks. Conventionally, the wedge between lending and deposit rates is set very symmetrically and narrowly by central banks. By enlarging this wedge asymmetrically around the policy rate, the CBRT introduced a novel tool mainly for capital flow management. The lending rate is the ceiling of the corridor while the borrowing rate is the floor. The asymmetric interest rate corridor policy influences the incentives of the banks to borrow from and lend to the Central Bank. The CBRT uses the width of the corridor to control the uncertainty that the banks face. By creating a controlled uncertainty on the short-term yields, the corridor policy can discourage short-term capital flows, reduce loan growth and smooth domestic absorption.

Quantitative easing, for instance, observed in developed countries escalates the flow of funds towards developing countries. This flow causes domestic currencies to appreciate and domestic credit growth rates to go up. In such circumstances, by lowering its deposit rate, the Central Bank widens the corridor, and volatility towards the floor of the corridor goes up, and short-term capital inflow could be dampened. The interest rate corridor policy prevents fluctuations of the short-term capital flows and can be used as a macro-prudential instrument to curb domestic credit growth. Particularly, the larger the difference between the policy rate and the ceiling of the corridor increases the expected value of cost of funds for banks, and hence reduces their incentives to borrow from the central bank and extend credit. The CBRT maintains its average funding rate within the corridor using its liquidity management instruments (Fig. 1).

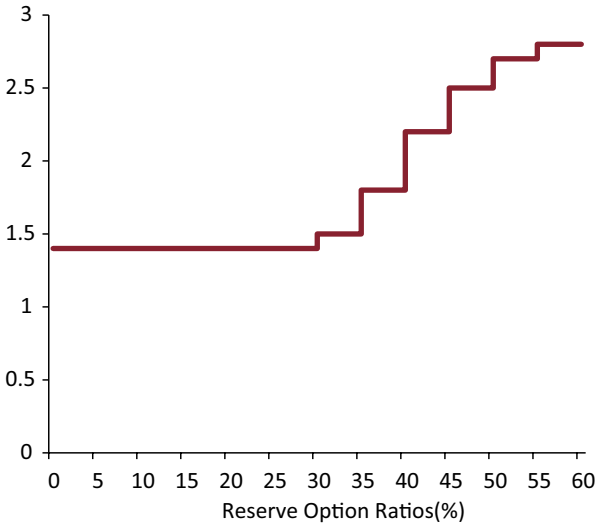

Fig. 2 Reserve option coefficients

4.2 The Reserve Option Mechanism (ROM)

ROM is designed to decrease the impact of volatile capital flows on financial and macro-economic stability. It also aims to foster immunity of the economy against foreign financial shocks, to reduce imbalances in foreign exchange (FX) demand and supply, and acts as an automatic stabilizer. The CBRT introduced the ROM facility in late 2011. It gives banks the option to hold some of their domestic currency required reserves in foreign currency or gold up to some certain fraction of their obligations. Reserve Option Coefficients (ROCs) determine the amount of foreign currency or gold that can be held at the Central Bank per Turkish Lira required reserve. For instance, if a bank wants to hold FX for 50 TL and the corresponding ROC is 1.6 then the bank should hold 80 TL (50 TL×1.6) worth of foreign currency as its required reserve. ROCs increase with the fraction of required reserves that a bank opts to hold in FX.

Recently, the CBRT permits banks to hold up to 60% of their required reserves in FX. As seen in Fig. 2 up to the first 30% of the obligations ROC is 1.4 and it gradually increases until 60% and at that level the coefficient is 2.8. The CBRT changes these coefficients depending on the liquidity conditions of the economy.

When capital inflows go up, cost of FX-based assets comes down compared to cost of Turkish Lira based assets. Hence, banks prefer to hold their required reserve obligations at the Central Bank in foreign currency which is relatively cheaper. In other words, as cost of borrowing gets lower in foreign currency and banks will further utilize the ROM. Similarly, in the case of capital outflows from the country, the reverse mechanism will work on opposite direction and banks will reduce their usage of the option. Consequently, the excess foreign capital flown into the country is stored in the central bank reserves and oscillatory pressures on the domestic currency will be contained.

This mechanism has the potential to absorb volatility in market liquidity and exchange rates. Since excess foreign currency is kept out of money markets, over-appreciation of the domestic currency is hindered. It is also a market-friendly instrument. It allows banks to optimally select composition of the currency bundle that they are required to hold at the Central Bank. Their liquidity positions in different currencies and gold govern the banks' decisions and they voluntarily opt using this facility and hold or release foreign reserves. This facility also plays an instrumental role in smoothing the credit growth. But the benefits of the ROM are even more appreciated in the "sudden stop" episodes. When capital leaves the country, the ROM enables the banks to use their reserves at the central bank and prevent the sudden declines in credit growth.

4.3 Macro-prudential Tools

The CBRT actively uses several other tools in its policy mix. Some of the remaining tools can be categorized as macro-prudential ones such as maturity, currency and leverage-based reserve requirements, limits to loan-to-value ratios on bank lending, and caps on credit card limits. At the first glance, some other implementations of the CBRT appear to be driven by developmental concerns at the forefront such as the increase in Central Bank credits to the Exim Bank, which finances the trade transactions of the Turkish firms. However, even the support given to exporters helps reducing the current account deficit by channelling cheaper funding more towards exporters and thereby helping in improving the financial stability.

The macro-prudential tools mainly target financial stability and particularly try to influence credit growth rates. The macro-prudential tools are mainly discussed at the financial Stability Committee and implemented by the related regulatory agencies in coordination. For example, on 16 December 2010 the BRSA of Turkey introduced a rule stating that the loan-to-value ratio to be at most 75 % for mortgage loans to limit the credit volume. Similarly, loan-to-value ratio was set to 50 % for credits to finance commercial real estate purchases.[2] In coordination with the Central Bank, later, the BRSA has also put caps on individuals' credit card limits and on the number of credit card payment instalments. All these macro-prudential policies are also the results of some strategic thinking and planning to enhance the financial stability to reduce the fluctuations in loan growth, current account and consumption.

4.4 Effectiveness of the New Policy Bundle

The key indicators for checking effectiveness of this new policy bundle are mainly inflation expectations, exchange rate volatility and credit growth rate. Figure 3 exhibits inflation expectations and realizations as well as the target inflation. During

[2] This decision has been revoked later just for the commercial real estates.

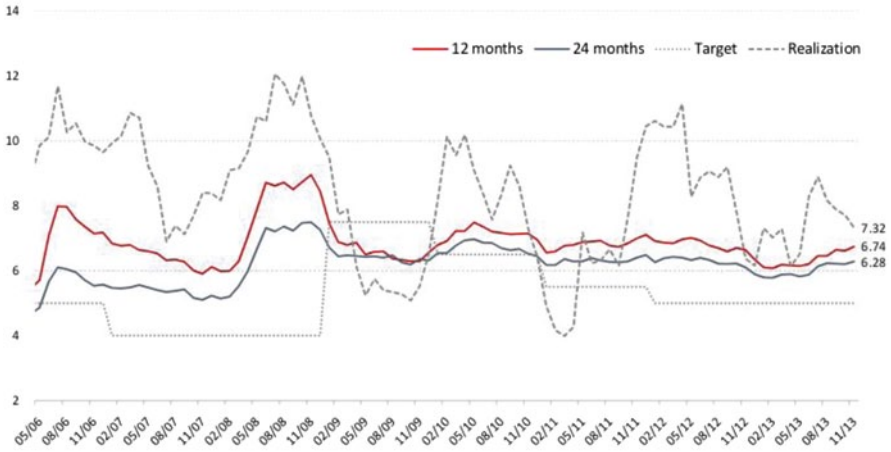

Fig. 3 12- and 24-month inflation expectations and realizations

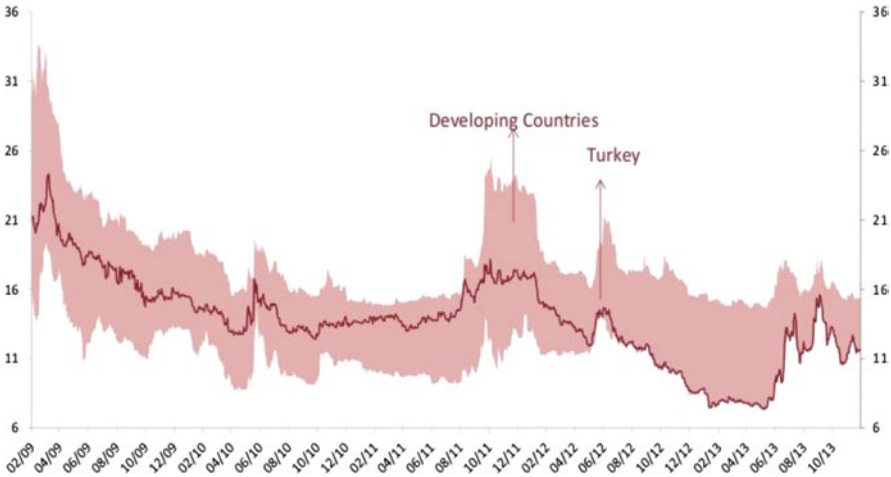

Fig. 4 Exchange rate volatility in selected countries (percentage, implied volatility for the next 12 months)

the course of the new policy mix inflation expectations and realizations were slightly above the target. New tax levies and exchange rate pass-through as well as global commodity price fluctuations also contributed to these deviations.

Through effective implementation of the ROM and interest corridor policies, Turkey has significantly differentiated itself from other developing countries in terms of the volatility of exchange rate. As seen in Fig. 4, Turkey had the lowest exchange rate volatility in 2012 and 2013 compared to other developing economies.

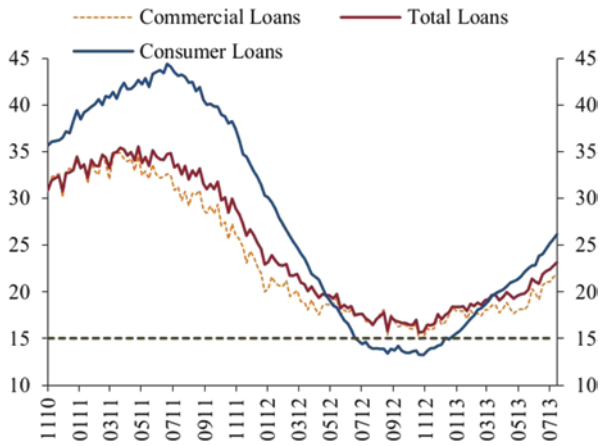

Fig. 5 Total credit growth (annual percentage change)

The high volume of capital flows into Turkey as a result of the quantitative easing in developed countries have boosted credit growth rates in the country as seen in Fig. 5. The macro-prudential measures have started to show their impact as of mid-2011 and credit growth started to lose acceleration.

5 Concluding Remarks

In this chapter, the question of whether consumption planning could be conceived as a macro-prudential tool in the aftermath of the global crisis is thoroughly examined. In order to unravel what we mean by the notion of consumption planning and the role of the central banks in this new form of planning, we started by stating the needs and circumstances for this policy change. Therefore, at the beginning of the article, we attempted to give the historical trajectory of central banking encompassing a broader time horizon from past to the global crisis and beyond. This historical perspective is needed to better appreciate the reasons why the central banks were mainly established for in the past, which is the *financial stability*.

In our theorizing, consumption planning is associated with a form of strategic planning. This study suggests that recent macro-prudential measures and unconventional central bank policies adopted after the global financial crisis in emerging markets are the products of strategic thinking and often associated with the idea of consumption planning in the pursuit of alleviating financial stability concerns. This consumption planning approach is especially applicable in countries like Turkey, Indonesia and India to contain the risk attributed to the large current account deficit.

In a highly globalized world, state capacity in production is definitely challenged due to reservations about its success in the economic history of many developing countries which implemented different forms of production planning in the course

of developmentalist state formation in the past decades. However, state capacity in channelling the consumption across time and goods is relatively unexplored. To this end, after theoretically explaining what we mean by consumption planning, we cover the case of Turkey in regard to the recent unconventional monetary policy experiences of Turkish Central Bank and the ensuing macro-prudential policies in Turkey designed to channel consumption across time and to a certain extent across goods to avoid financial stability concerns stemming from widening current account deficit and escalating debt overhang led by overflowing of hot money to the country in the aftermath of the policy reactions of central banks of the developed countries. Then, we also attempt to uncover the issue of consumption planning as a macro-prudential tool to foster financial stability in light of fresh policy experiences from Turkey. We also broadly explain the axis shift in central banking and identify the main features of the new central banking in making. More specific details of Central Bank policies in Turkey in the course of the global crisis show proactive endeavours to relieve the adverse effects of fluctuations in global capital mobility. To this end, we explain some of the unconventional macro-economic policy tools of the CBRT in addition to clarifying macro-prudential measures adopted by the Financial Stability Committee. Overall, we claim that strategic planning in the form of consumption planning needs to be explored further. This idea poses great opportunities in the making of the new central banking especially when central banking is reconsidered after the global crisis both in the developed and developing countries.

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Integrating National Learning Systems in Economic Planning: A New Approach to Economic Planning

Murad Tiryakioğlu

1 Introduction

Until World War II, the Soviet Union was the only country regarded as a planned economy. In the aftermath of the war, many nations began utilizing economic planning in various shapes and forms as a means of development. As national economic planning gained wide popularity, centralized planning became a prominent tool for economic policy. The progress achieved by the planned economies instigated a surge of interest in planning by the post-colonial nations. Despite variations in implementation across different economies, planning became accepted as a cardinal component of the policy to be practiced in one form or another by governments aspiring to achieve rapid development.

Further, planning evolved to become seen as an important tool for increasing the international competitiveness of knowledge and technology. The transfer and diffusion of technology is a potent resource for developing nations that lack indigenous technology production capacities. In order to effectively utilize this resource, there has to be in place, a systemic integrated evaluation of national technological developments in tandem with the transfer of knowledge. Planning, internalizing the importance of technological learning, may render effective the functioning, monitoring, and proper absorption of technology.

The transfer of technology carries a special significance for the development stage of under-developed economies, and for the successful realization of healthy and sustainable economic policies. Hence, economic planning properly integrating technological concerns could nurture self-sustaining and rapid economic growth. The inclusion of measures to increase national technological and learning capabilities in medium- and long-term development planning could significantly accelerate the technological 'catch-up' and increase innovation capacities.

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This study proposes a framework for an alternative approach to include technological learning in economic/development planning. It advocates the potential of a national learning system as a useful planning tool for the accumulation of technological capability. The first section addresses the relationship between technological learning and economic development planning. This section which observes the conceptual framework of technological learning, which has resulted in an alternative approach, questions the role of the government in this learning process. The second section examines the approach of a national system of innovation, a component of this approach which is shaped during this learning stage, the national learning system. The last section, which *forms* the basis of this study, conceptualizes the relationship between the national learning systems and its components used as planning tools.

2 The Relationship Between Technological Learning and Economic Development Planning

Technological learning, an important mechanism of economic development, is highly interconnected with other determinants of development. Hence, centralized planning plays a determining role in ensuring the adoption and diffusion of technology and subsequently in the development of indigenous technological capabilities and economic development. Prominent historical examples of successful technological learning and catch-up cases include Germany and Japan, from *late-development* literature (Gershenckron 1962), and the so-called Asian tigers: South Korea, Taiwan, and Singapore, of *late-late development* literature (Vogel 1991). A significant portion of the literature has been shaped by the rapid industrialization and technological catch-up achievements of Japan, a first generation late development success, and of South Korea, a second generation late development success.[1] Technological learning as the main concept to understand these experiences is drawing the alternative planning approach developed in this study. The planning of technological development capacity and technology development capabilities is the planning of technological learning. In this context, the planning of technological learning prepares the grounds necessary for coordinating economic development.

2.1 Conceptual Framework

Technological learning is defined as the process of internalization of technological capabilities achieved through technology transfers. Technology transfer is crucial

[1] For some studies, which evaluate Japan's industrialization and technological development success, look at: Akkemik (2014), Fan and Watanabe (2006), Harayama (2001), Johnson (1982), Saxonhouse (1993). Likewise, for some studies which evaluate Asian Tigers' and especially South Korea's fast industrialization and technological catch up success, look at: Akkemik (2009), Amsden (1989), Chang (1993), Hanna et al. (1996), Lall (1994), Stiglitz (1996), Suh (2009), Wade (1990), World Bank (1993), Yülek (1998).

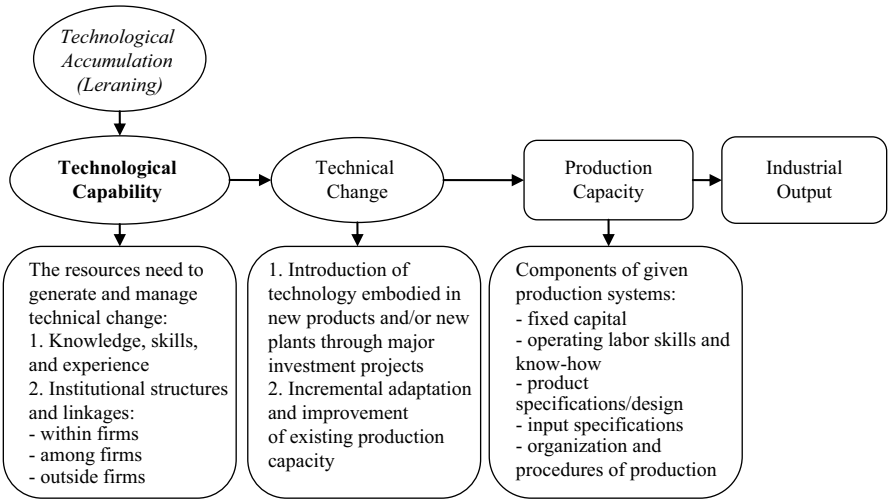

Fig. 1 Technological accumulation: basic concepts and terms. (Source: Bell and Pavitt 1995; Fig. 4.1, p. 78)

for technological learning. In other words, the accumulation of national technological capability is dependent on technological learning, which is obtained predominantly through technology transfer and, to a lesser extent, through labor transfer. According to Bell and Pavitt (1995), technological learning and accumulation form the main input for technological capability. Technological capabilities, by enabling technological change, increase production capacity and, subsequently, industrial production. Figure 1 shows that knowledge and skills required to generate technical change were relatively close to those needed for production and were frequently developed largely on the basis of cumulated production experience (Bell and Pavitt 1995, p. 77).

Lall (2009, p. 15), who emphasizes the vital importance of technological learning for industrial development, expresses that in the developing countries, although technological learning is conscious and deliberative rather than automatic and passive, firms do not have complete information on technical alternatives. Thus, as the firms' information on the technologies they use remains inadequate, changeable, and tenuous, there will be greater discrepancies in learning between countries that are at different levels of development. On the other hand, in order to effectively extract economic value from the transfer of technology and to learn how to improve their existing capacities, firms have to first master the process of learning itself. In other words, planning the process of technological learning is necessary.

Technological learning is a process that enables developing countries to imitate, recreate, and develop new technologies. This process occurs in three stages, namely, duplicative imitation, creative imitation, and innovation (Kim 2001). During the first stages of industrialization, firms in developing countries achieve technological learning by using the method of duplicative imitation. At this stage, foreign

products are duplicated using the method of reverse engineering. At the stage of creative imitation, firms undergoing industrialization produce imitation products; most newly industrialized countries are at this stage. When developing countries catch-up to developed countries and to their technological level, they transition from creative imitation to original innovation. Planning plays an important role in this transformation process. Innovation-oriented policies in the planning of this technological learning process will contribute tremendously to the economic development process.

The factor that drives technological capability accumulation in developed countries is *learning by research.* In developing countries, it is rather *learning by doing*[2] (Kim 2001, pp. 297–298) as in such countries lack sufficient research funds. Learning by research process refers to technological learning and capability obtained as a result of national research and development (R&D) activity. Developed economies are able to accumulate technological capabilities as a result of their advanced R&D capabilities. On the other hand, learning by doing expresses firms' expertise in the products and services they produce and the learning achieved through this specialization process. Over time the *learning by doing* process, in relation with the countries' technological absorption capacities and technological capability, can transform into learning by research process. *Absorptive capacity* changes according to the intensity of efforts to improve and the scope of the existing knowledge basis, which covers general information, problem solving, and learning abilities (Cohen and Levinthal 1990, p. 131). Effective transition from learning by doing to learning by research requires technological learning planning that addresses this transition. *Absorptive capacity* must be regarded as the main determining factor of this planning process.

When viewed form a broader perspective, technological learning planning entails the planning of labor and technology transfer. Technology transfer through official means, such as foreign capital investments, licensing, and turn-key projects, and through unofficial methods, such as scientific publications and labor movement, broadens the existing knowledge base of firms through and expanding spiral of learning (Kim 2001, p. 299). All stages from the choice and acquisition to the absorption and development of technology stand on the foundation of technological learning. The choice of appropriate technology and its transfer via appropriate methods will establish the stage for technological learning and create opportunities for the development and reproduction of acquired technologies. At this stage, the most important characteristic that a country undergoing technology transfer should have is the capacity and capability related to technological learning. On the contrary, incorrect choice of technology and process threatens to decrease the effectiveness of the absorptive capacity and inhibit learning during the transfer process. Such a mistake could lead to a technological poverty trap in developing countries.[3]

[2] Arrow's (1962) ideas are considered as the formal foundation of the research on the economic implications of learning by doing.

[3] For a study which evaluates technological poverty concept with its reason and consequences look at: Tiryakioğlu (2011)

2.2 The Role of State in the Technological Learning Process

In developing countries, governments target economic development and growth through centralized planning via the public sector, whereas, in developed countries, government plays primarily a regulatory, supervisory, and advisory role for the private sector. In the developing countries, until a certain level of development is reached, planning has a vital role. Eckstein (1957), while defending the advantages of planned development for underdeveloped countries, asserted that market mechanism alone would not be enough for economic development and hence, that investment decisions could not be left to the leadership of the market. When this assertion is evaluated through the developmental state lens (Johnson 1982) planning is an important intervention tool for economic development.[4] In other words, for developing countries to catch-up to developed economies, governments must adopt an interventionist and developmental role.

Insufficient investment for the development of strategic technologies, excessive and unnecessary overlap in the investments made, and slow diffusion of new technologies pronounce the importance of the role of the state in the planning and coordination of technological learning and development. In this context, the role of state in the technological learning process encompasses determining support for R&D activities, which guide the national technological development effort, encouraging and supervising the flow of direct foreign capital investment to the manufacturing industry, increasing the domestic productive capacity of the sectors that depend on imports, and the accumulation of qualified labor and human capital. In other words, through pursuing the reproduction and development of transferred technology, the state leads the way for the increase of national technological capabilities, and improvements in the effectiveness of and reductions in the costs of producing new domestic technologies.

The accumulation of national technological capability is dependent not only on physical capital investment but also on the support of a national technological effort and increases in national technological capabilities (Lall 1992, p. 170). Support for R&D activities to increase the effectiveness of national technological effort form the first stage of state-sponsored technological capability accumulation. However, the state's role in subsidizing R&D investments is criticized on three grounds:

First critique states that incentives do not increase R&D investments, but lead instead to a reclassification of firms' expenses. Secondly, the activities that lead to technological development are not limited to official R&D activities; minor changes at workshops are as important and efficient as R&D activities. Thus, effectiveness of formal incentives may be questionable as they may be targeting only a limited part of

[4] According to Song (2013), developmental state is regarded as the main actor in the frame of late capitalized countries problem of "catching-up" developed capitalist countries. However Oğuz (2013) here asserts that it is an illusion to view the state as the actor who tries to achieve capitalist planning and asserts that the developmental state is a genuine type of capitalist state, which emerges as a result of the unequal development of capitalism and as a side-product of the hierarchical world order.

the activities that contribute to the technological transformation process, and as most of R&D activities are performed by big firms, incentives may disproportionately concentrate on large players. The last critique expresses the difficulty of calculating the yield and expenses of R&D activities, ex post; thus the incentives determined ex ante do not depend on objective measures (Taymaz 1993, p. 561). In spite of this criticism, state support of R&D efforts and activities which support technological learning is especially important for underdeveloped economies aspiring to effectively translate technology transfer into economic development and growth.

The second stage of the state's importance in accumulating national technological capability and technological learning is the accumulation of qualified labor and human capital. The state's regulatory and supervisory role in the development of technical and vocational education in addition to applied learning modules for industrial entities in the curriculum is a crucial contributor to the accumulation of national technological capability. At this stage, cooperation between universities, industry players, and the state on the direction of strategically determined policy objectives, and the effectiveness of this cooperation, will determine the success of the transfer, learning, and accumulation process. However, this determining role emerges in the context of university, industry, and state cooperation. In this context, the national innovation system (NIS) approach and national learning system, as components of this system, can be regarded alternative planning tools. The increases in demand for skilled labor and the increases in labor productivity brought about by technological developments have determined the role to be undertaken by the state in this field.

Foreign capital policy of a government may be instrumental in guiding the learning and accumulation process for technological capability. The state's role in this context emerges during the stage in which foreign capital supplements domestic capital and technological development accumulation (Şenses 1993, p. 542). To achieve this, instead of being supported without any prioritization, international investments should be directed towards selected field with a view to achieve technological learning and absorptiveness at the highest levels. Policy and planning shaped and driven by this objective would make possible the rapid-industrialization and technological learning based on foreign capital that the Asian Tigers achieved in the past.[5]

The state may also play a role in technological learning and technological capability accumulation through selective protection of strategic sectors or infant industries.[6] Hamilton's "Report on Manufactures," which advocates protective measures for the industrial sector became an origin of List's (1841) thesis on protecting infant industries and asserted that strategic sectors and infant industries, especially in developing countries, need protection to flourish. Today's developed countries who have achieved their competitiveness, in Chang's (2009) words, and have "*kicked the ladder*" of development for other developing economies. To explain, policies such as investment incentive credits, tax incentives, trade protectionism, export

[5] For a related reading look at: Abu-Ismail et al. (2011).

[6] The industries with higher import dependency are sometimes called "strategic" in developed countries whereas in developing economies they are called *"infant industry"* (Taymaz 1993, p. 535).

subsidies, and limitations on capital entries, which are "*advised*" as policies to be avoided by some economists were once used as the most important and prominent development policy tools before the developed countries 'kicked the ladder' used by the Eastern Asian Model, which supported a strong developmental state.

3 National Learning Systems as a Complementary or Alternative Planning Tool

Economic development planning aimed at attaining economic growth, full employment, price stability, and to minimize regional disparities. Many developing countries still prepare development plans to accomplish economic objectives. However, the transformations in the world economy have rendered technological capabilities and innovation capacity as decisive factors for international competitiveness and economic development. As a result of this transformation process, economic planning follows to provide accumulation of human capital and technological capability, to ensure rapid and sustained industrialization, and to catch-up and bridge the technological gap with developed countries. Classic tools of planning may not serve effectively and sufficiently for these specific purposes. Rather, the national learning system, as an important component of the NIS, should be taken as a complementary or alternative approach to be implemented by late-developers.

The national learning system, which is defined as a national technological change system by Viotti (2002), enables learning from external sources, such as the transfer and accumulation of technological capability for late-industrializing countries. The inclusion of research institutions, as well as all other institutions that affect learning, in the NIS reveals the importance of the national learning system for economic development.

3.1 The Concept of National Innovation System (NIS) and its Relation to Development and Learning

Intellectual foundations of the NIS are mostly based on List's (1841) book titled "*National System of Political Economy.*" List (1841) advocated the design of a wide set of policies that would lead to and accelerate economic growth and industrialization, and most of these policies are related to learning and applying new technologies (Freeman and Soete 1997, p. 297). Freeman (1989, pp. 86–87) argues that List's ideas not only conditioned Germany's catch-up to Great Britain, but these ideas were also sources of inspiration for Japan and South Korea's catch-up experiences.

The concept of NIS has been developed by the pioneers of evolutionary economics (Freeman 1987, 1988; Lundvall 1988, 1992; Nelson 1988, 1993; Nelson and Rosenberg 1993). Freeman (1987) defined NISs as a network of public and private sector organizations, which import, change, and diffuse new technologies. Lundvall

(1992, p. 2) emphasizes "social importance" of NISs; the main activity of the NIS is learning; and learning is a social activity. Therefore, innovation systems cover learning and all the elements that affect learning aside from research institutions. Patel and Pavitt (1994, p. 79) define the innovation system by identifying technological learning by the national institutions, their incentive structures, and their competencies that determine the rate and direction of technological learning, or the volume and composition of change-generating activities in a country. According to Patel and Pavitt (1994) this definition remains very broad and begs two major questions: Which institutions, incentives and competencies are important for national systems of innovation? What are the important differences amongst countries in the rate and direction of technological accumulation?

Institutions and organizations that constitute the NIS can be classified as follows: (1) private and public firms in innovation activities and networks of these firms, (2) research organizations, (3) scientific institutions, (4) support and bridge organizations, (5) financial institutions, and (6) policy makers (Taymaz 2001, pp. 26–27). These components of NIS are founded on three main elements as, university, industry, and government. List's (1841) model of the knowledge-based economy explains the conversion of knowledge generated in academic institutions to economic benefit as knowledge being commercialized by industry. The state lays the foundations for this structure and provides incentives and supports the role of each actor. According to this process, the government intervenes when the free-market mechanism fails to provide a targeted level of scientific and technological progress, by providing financing necessary to establish public research institutions that will also have the right of shutdown (Göker 2001, pp. 2–3).

NIS, constituted by university, industry, and government cooperation, is a basic structure to learn, absorb, and produce again using transferred technology. The main determinant of this system constitutes the state. When the state plays an active role in the technological learning process, technological capabilities accumulated through technology transfer will be turned into a competitive advantage and knowledge to be produced at the national level by the industry. In brief, if university, industry, and government cooperate effectively, the national innovation and learning system will work efficiently.

Etzkowitz (2002, 2003) defines the most ideal form of relationship between universities, industry, and government as the triple helix model and represents cooperation in three different ways. As shown in Fig. 2, the first model of cooperation between universities, industry, and government is the statist model. In this model, the state has a dominant and leading role over universities and industry. The former Soviet Union and Latin American countries in earlier period are examples of this structure, which is dominated by state-owned industrial enterprises. In the liberalist model, government, industry, and the university's boundaries are very clearly defined, and counterparties have distant relationships in the institutional structure. The latest, triple helix model demonstrated the convergence of roles between the counterparties. Viale and Campodall'Orto (2000, p. 14) argue that the triple helix model implemented in the industrialized countries of Europe can be more closely compared to the USA.

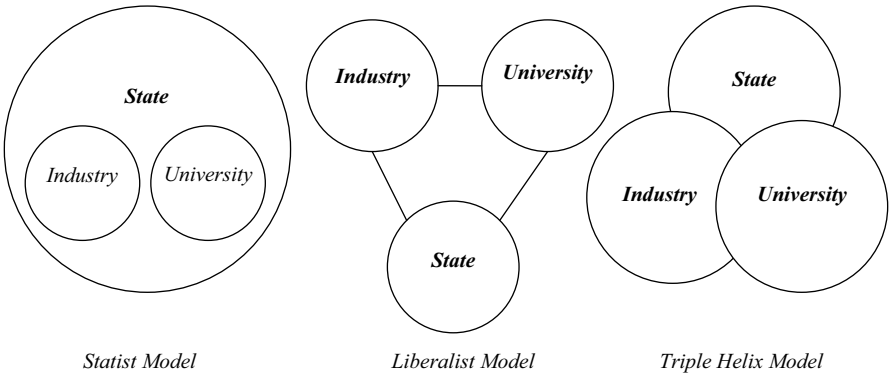

Fig. 2 University, industry, and government cooperation. (Source: Etzkowitz 2002)

The cooperation between universities, industry, and government can also be described as a mutually beneficial relationship between the university as knowledge creator, and industry as the commercialization actor under the state's regulatory and supervisory mechanism. Universities benefit from this collaboration just as researchers' theoretical knowledge is supported through practical implementations using industry facilities and equipment. Industry benefits from as access to sophisticated technological knowledge, the systematic evaluation of the results of applied research, and the opportunity to reach highly skilled scientific-technical labor. Techno-parks, technology transfer centers, incubators, and co-operation centers as well as institutional structures are essential tools for providing cooperation. Ensuring cooperation among actors provides easy access to knowledge for small and medium-sized firms, which make up an important part of economic activities.

To sum up, the NIS can be created on the basis of a national learning system where knowledge generated in the universities is commercialized by industry and supported by government incentives, which would help transform knowledge into a marketable and competitive product. This period is denoted as the national technological effort and supported by external factors such as technology flow and labor transfer, because of the lack of indigenous knowledge creation ability. The absorption and learning of new knowledge and technology made possible through technology and labor transfers are rendered valuable via university, industry, and government cooperation.

3.2 National Learning System as a Component of NIS

Based on cooperation with universities, industry, and government NIS, shaped by technological learning, should have competences, for instance, to provide, absorb, and diffuse new technologies; to develop and design current and new products and production methods; and to improve application abilities for design and produc-

tion (Göker 2001, p. 8). The ability to obtain and assimilate new technologies has been highlighted as an important attribute of innovation systems in the process of technology transfer and learning. The knowledge and skills and decision-making capabilities of institutions, which constitute the innovation system and are supported by government, promote the efficiency of technology transfer. Patel and Pavitt (1994, pp. 79–80) point out that incentives for innovation systems are essential for government-backed research and innovation activities and the generation of monopolistic profits. These government incentives emphasize the impact on R&D activities, particularly their increase and dissemination. In addition, these supporting and encouraging processes also enable the development of innovative companies and the monopolistic profits. Therefore, the promotion of institutions in the innovation system is important both to develop research capabilities and to improve profitability.

NIS, as a learning-based social system, is defined as a national learning system for late-industrializing countries. Learning is an important source in building national technological competence in developing and late-industrializing countries. Viotti (2002) argues that the dynamic engine of late industrialization is technological learning rather than innovation. For this reason, late-industrializing countries should be evaluated within the context of national learning systems. According to Viotti (2003, p. 8), learning can be categorized as "passive" and "active." Passive learning is the process of technical change achieved by the forms of technological absorption that follow the pathway of minimal technological effort, i.e., the black-box approach (e.g., turnkey projects), and the type of incremental innovation achieved as an almost automatic and costless consequence of experience acquired during production (learning-by-doing). On the other hand, active learning is the process of technical change achieved by technological absorption accompanied by technological efforts to master the assimilated technology (e.g., reverse engineering), and the type of incremental innovation achieved as a consequence of deliberate efforts and investments in technology. Viotti (2003) argues that a passive learner is satisfied merely with the acquisition of the capabilities for production and an active learner develops capabilities for improvement besides the capabilities for production.

As shown in Fig. 3, national learning system increases absorptive capacity and innovation capability of late-industrialized countries as a result of learning via technology transfer. In the industrialized nations, innovation, incremental innovation, and diffusion are connected to each other in the NIS. National learning system has become an important tool to accumulate technological capability and to enhance innovative and competitive activities in the manufacturing industry. This system in developing countries is based on absorption and learning from technology transfer. If learning is passive, manufacturing capabilities will develop automatically. In addition to passive learning process, active learning contributes to innovation by technology assimilation and development of capabilities. For instance, South Korea's technological development process accelerated and went beyond imitation to reach the innovation path by reverse engineering, and she turned up one of the world's technology leaders in a short time.

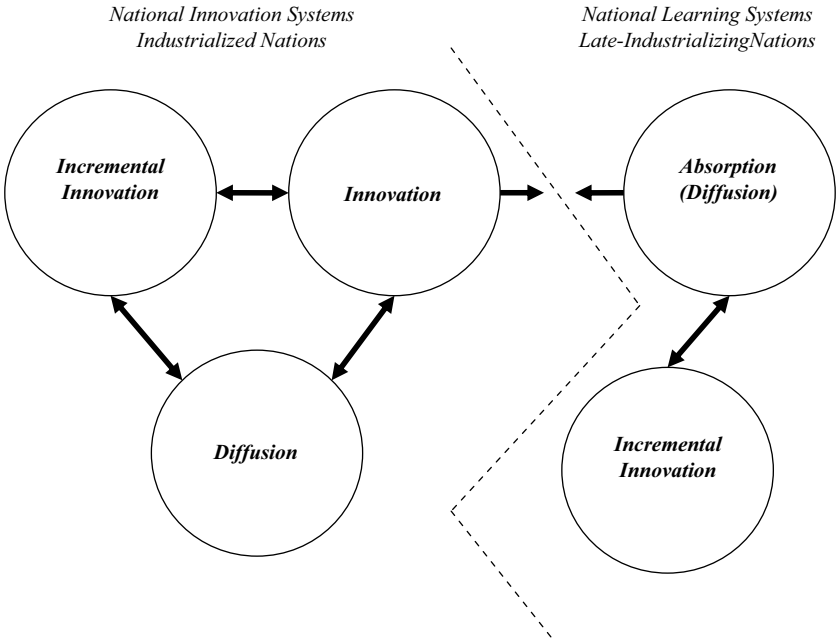

Fig. 3 National systems of technical change. (Source: Viotti 2002)

4 A New Approach to Economic Development Planning

Although the objectives of planning exhibit differences according to development levels and economic, social, and institutional infrastructure and characteristics across countries, knowledge-based transformation in the world economy incorporates all these objectives under the objective of technological learning and development. Technological learning-oriented planning approach also constitutes an important starting point for developing countries to overcome the dilemmas they have been suffering from.

The dilemma, which is defined by Nurkse (1961) as a *vicious circle of poverty,* implies poor countries' incapability to supply and demand capital, and consequently, suffering from poverty because of insufficient supply and demand of capital. Nurkse (1961), who foresees poverty would continue and remain as a deadlock for accumulation of capital in the developing countries, describes the main problem in the generation of capital in the underdeveloped countries from supply and demand sides with an illustration of the vicious cycles. On the supply side, low income causes low savings, low investment, capital deficiency, and low productivity. On the demand side, low income results in low demand for goods, limited home market and low investment. Nurkse's approach, without questioning the causes of underdevelopment, points out to the necessity of foreign aid and foreign capital to break the vicious cycle, and asserts that the cycle would be broken when the level of capital increases (Soyak 2006, p. 26).

At the present day, the vicious cycle of poverty can be more specifically defined as "*human capital poverty*" (Tiryakioğlu 2008), and "*technological poverty,*" especially for developing countries (Tiryakioğlu 2011). The concept of human capital poverty (Tiryakioğlu 2008) hinges on the inadequacy of countries' resources for the education and health of labor. Deprivation of labor from health and education would adversely affect labor productivity, innovativeness, and creativity, and would lead to brain drain. As a result, if adequate funds for the basic components of human capital, i.e., health and education, were not secured, human capital would not accumulate and it would be impossible to produce knowledge and technology. After a while, the countries that enter the vicious cycle of human capital poverty would inevitably face the dilemma of technological poverty. Technological poverty, which emerges as a kind of human capital poverty (Tiryakioğlu 2011), can be defined as the lack of necessary and sufficient human, physical, and financial resources to produce the needed technologies for countries at the macroeconomic level, and for firms at the microeconomic level. Human resources, which are shaped and developed in conjunction with education and health policies, constitute the most important element in increasing the effectiveness of other resources, and direct technological development process. Therefore, human capital poverty emerges as the main reason for technological poverty. In this context, developing countries should give priority to national education systems that focus on technological learning as a strategic planning device because of the dilemmas they contain, such as human capital poverty and technological poverty. National learning system, which is regarded as an alternative approach to economic development planning, rests on technological learning capacity and capability.

"*Planning based on technological learning,*" whose conceptual framework is drawn in this study, essentially stands on technological learning capacity and capability. In this approach, national technological effort, labor, and technology transfer, as indicators of technological capability, are viewed as learning-based tools. These three tools, illustrated in Fig. 4, achieve effectiveness through NIS, which has university–industry cooperation and public policies in its foundation, and vice versa. National technological effort rendering a national process of learning also emerges as an element which increases the effectiveness of technology and labor transfer. By effective planning, learning-based national technological effort can be transformed into development-based national technological effort. During this process, the usage of other tools, such as national technological learning capacity and capability, labor, and technology transfer would be deterministic.

Technological learning process is a planning tool with the aim of attaining economic development and growth, and requires that national technological capabilities reach a certain level of maturity. Only after that level, national technological efforts may promote economic development and competitiveness. Technological learning-based planning approach stands on an ecosystem in which learning-based national technological efforts, which are extensively determined by NIS, are transformed into development-based national technological efforts.

This system, which determines domestic production capacities and capabilities, is not independent of institutional, cultural, and social factors. Institutional

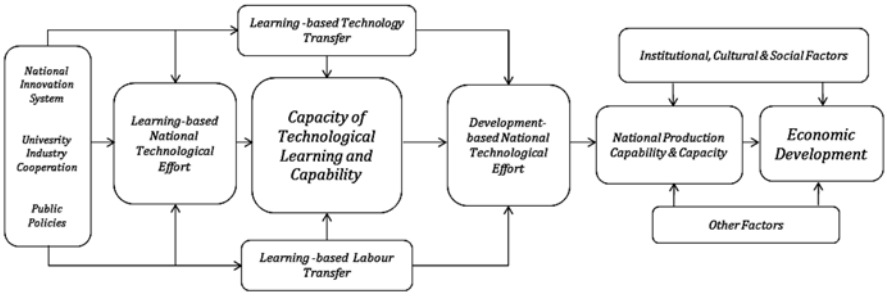

Fig. 4 A new approach for planning economic development: technological learning-based planning

infrastructure, cultural values, social tenacity, and other distinctive characteristics directly affect the stability and success of economic and social development.[7] To sum up, economic development, which involves interaction of many different factors, is based on technological learning process. Most importantly, the social dimension of economic development is vital for the success of technological learning-based ecosystem. In this context, a strategic development plan that takes national technological learning as a basis is the only way to break the vicious cycle of poverty (Nurkse 1961), which in turn, is defined by human capital and technological poverty (Tiryakioğlu 2008, 2011).

5 Epilogue

The vicious cycle of poverty, in which developing countries find themselves, makes it nearly impossible for these nations to rely on the mechanisms of the free market to resolve their development challenges. In this sense, the need for intervention by a developmentalist state, and the need for such intervention to be planned and strongly coordinated, is as pronounced as before. Classical economic policy tools and planning used after World War II have begun losing their influence in the aftermath of the global economic transformations of the knowledge-based economy. In other words, the use of economic development planning for the purpose of attaining technological capabilities and the use of planning for effective technological learning are inevitable by-products of a world undergoing economic transformations

[7] According to Chang and Grabel (2004, p. 39), "…There are five unique characteristics of East Asian countries that were pivotal to success of this model: First, the East Asian countries share a common Confucian culture…. Second, East Asian countries are far more ethnically homogeneous than most other developing countries…. Third, East Asian countries are blessed with poor resource endowments, and were therefore able to avoid what some call the 'resource curse'…. Fourth, East Asian countries benefited in vital ways from Japanese colonialism left behind a strong industrial base, an educated population, and an advanced infrastructure. Last not but least, the East Asian model benefited from propitious external circumstances…."

where knowledge and technology come at the forefront. This study focused on the period of economic transformation that gave rise to the use of an alternative planning tool, namely, the national learning system, which addresses the importance of technological learning for economic development. This tool that has been conceptualized as an alternative planning approach is based on the planning of technological capability accumulation, which is dependent on technology transfers. This general conceptual framework of the concept which has been defined in this study could be further investigated in future studies through a deeper investigation of the conceptual framework and supplemented with a more holistic analysis fortified with country case studies.

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