

# Keynes and the Neoclassical Synthesis

Einsteinian versus Newtonian  
macroeconomics

Teodoro Dario Togati

Routledge Studies in the History of Economics



**Also available as a printed book  
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## KEYNES AND THE NEOCLASSICAL SYNTHESIS

This remarkable volume provides a critical assessment of the *Neoclassical Synthesis*, long regarded as the standard interpretation of Keynes. Taking issue with this orthodoxy, the author offers a unique interpretation of the foundation of modern macroeconomics, arguing that the subject derives from the conflict between two research programmes inspired by different paradigms in physics: the Newtonian programme of Hicks and the Einsteinian approach of Keynes.

- Part I compares Hicks's Newtonian programme with the Einsteinian programme underlying the *General Theory*, and argues that only the latter challenges atomism and accounts for time in an essential way.
- Part II reconstructs the development of the Neoclassical Synthesis and underlines that some of its key products represent pragmatic deviations from Hicks's 'pure' Newtonian programme.
- Part III examines microfoundations approaches that seek to remedy the flaws of the Neoclassical Synthesis and concludes that they are fatally undermined by their inability to grasp the Einsteinian foundations of Keynes's approach.

Original and provocative in its reflections, *Keynes and the Neoclassical Synthesis* not only offers a fresh interpretation of Keynes but makes an important contribution to debates within post-Keynesian economics. It will thus be of interest to all those interested in Keynes's place in the history of economic thought and macroeconomic methodology.

**Teodoro Dario Togati** is Lecturer in Economics at the University of Torino.

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*Teodoro Dario Togati*



London and New York

First published 1998  
by Routledge  
11 New Fetter Lane, London EC4P 4EE

This edition published in the Taylor & Francis e-Library, 2002.

Simultaneously published in the USA and Canada  
by Routledge  
29 West 35th Street, New York, NY 10001

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*British Library Cataloguing in Publication Data*  
A catalogue record for this book is available from the British Library

*Library of Congress Cataloging in Publication Data*  
Togati, Teodoro Dario, 1957–

Keynes and the Neoclassical Synthesis: Einsteinian versus  
Newtonian Macroeconomics/Teodoro Dario Togati.

p. cm. —(Routledge studies in the history of economics; 21)  
Includes bibliographical references and index.

1. Keynes, John Maynard, 1883–1946. 2. Hicks, John Richard, Sir, 1904–1989. 3. Economics—Great Britain—History—20th century.
4. Keynesian economics. 5. Neoclassical school of economics.
6. Macroeconomics. I. Title. II. Series.

HB103.K47T63 1998  
330.15'6—dc21 97–52978  
CIP

ISBN 0-415-18396-0 (Print Edition)  
ISBN 0-203-21712-8 Master e-book ISBN  
ISBN 0-203-21724-1 (Glassbook Format)

*To the memory of my father*  
*Vincenzo Togati*





Fundamental ideas play the most essential role in forming a physical theory. Books on physics are full of complicated mathematical formulae. But thought and ideas, not formulae, are the beginning of every physical theory. The ideas must later take the mathematical form of a quantitative theory, to make possible the comparison with experiment.

(Einstein and Infeld 1938:291)

I am more attached to the comparatively simple fundamental ideas which underlie my theory than to the particular forms in which I have embodied them, and I have no desire that the latter should be crystallised at the present stage of the debate. If the simple basic ideas can become familiar and acceptable, time and experience and the collaboration of a number of minds will discover the best way of expressing them.

(Keynes 1937a:111)



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## PREFACE

There is a very long story behind this book. I do not wish to appear immodest and suggest impossible analogies, but I would like to say that for me too ‘the composition of this book has been...a long struggle of escape from habitual modes of thought and expression’ (Keynes 1936:xxiii). It has been a struggle of escape, this time, not so much from Neoclassical theory, but from standard ways of looking at the Keynesian revolution itself, such as the Neoclassical Synthesis.

The book is the product of a radical revision of all my previous work on the Neoclassical Synthesis, which started as a dissertation at the University of Turin (Italy) in 1982 and continued during the period 1983–9 that I spent at the University of Cambridge, in the form of a paper for the M.Phil. course and a Ph.D. thesis, and has taken a conclusive shape only very recently. In the course of time, I slowly came to realize that one of the problems with this work was the lack of an adequate critical perspective on Keynes. Indeed, it is difficult to criticize the standard interpretation of the *General Theory* without a clear alternative view in mind. As I was dissatisfied with many of the alternative interpretations of Keynes put forward in the literature, I decided to make an effort to get a deeper understanding of the epistemological background of his analysis, in line with the recent revival of methodological studies in this field as well as the whole subject of economics. The main result of this effort is my suggestion that we take the analogy between Keynes and Einstein into serious consideration. I am not at all sure that this is the best way to talk about Keynes’s approach. However, I must say that— contrary to the standard view that methodological perspectives are sterile— this analogy has really helped me to grasp many important aspects of the *General Theory* which seemed rather impervious to analysis, such as the relation between micro and macro and its approach to money and expectations.

Many people have helped me in various ways during my struggle for escape. It is impossible to mention and thank them all. However, I would like to single out a few to whom I am deeply indebted. First comes Terenzio Cozzi, the supervisor of the first dissertation on the Neoclassical Synthesis, written in 1982 at the University of Turin (Italy). I am very grateful to

## PREFACE

him for teaching me to address economics and the Keynesian literature, in particular, in a critical way, as well as for his constant encouragement throughout the years. I also wish to thank Geoff Harcourt, the supervisor of a paper which I wrote for the M.Phil. course at the University of Cambridge on the relationship between micro and macro in the *General Theory*, for his many valuable suggestions and comments on several papers as well as the Ph.D. dissertation on the Neoclassical Synthesis. I am also very grateful to James Trevithick, the supervisor of this dissertation, who made stimulating comments and helped me in all stages of my thesis. Among the persons who have contributed through discussion to the dissertation, I would like to mention Marcello De Cecco and Mario Nuti of the University of Rome for their comments on the chapters which I wrote while I was a research student at the European University Institute of Florence in 1987–9.

With regard to the final version of this book, I would like to thank Victoria Chick for her sympathetic stance towards the methodological perspective which I have proposed. Many thanks also to James K. Galbraith for his very useful comments on a part of the manuscript focusing on the Keynes/ Einstein analogy and to Sarah Law for her competent advice on physics as well as her careful reading of the first chapters of the manuscript. I wish to thank Alison Kirk and Geraldine Lyons of Routledge for guiding the book to the final stage; John Irving who has helped me to improve my English style; Guido Montegradi for helping me with the copy editing; Christos Mykoniatis and his family for allowing me to complete the manuscript in the wonderful natural setting of Ios (Greece); the staff and my colleagues of the Dipartimento di Scienze Economiche ‘G.Prato’ and the Fondazione ‘Luigi Einaudi’ di Torino for their moral and material support. Finally, and above all, I would like to express my thanks to my family and close friends for putting up with me and the Neoclassical Synthesis for so long.

*Teodoro Dario Togati*  
*Università di Torino*  
*June 1997*



# INTRODUCTION

## **Why a book on the Neoclassical Synthesis?**

This book is a critical assessment of the standard interpretation of Keynes, labelled as the Neoclassical Synthesis, provided by leaders of the economics profession such as Hicks, Modigliani, Samuelson, Hansen, Klein, Tobin and Patinkin from the late 1930s to the mid-1960s. There were two main reasons for writing it. The first was to provide a complete assessment of the Neoclassical Synthesis. In this respect, the book seeks to fill a lacuna as, by and large, the existing literature on this topic is based either on textbooks or contributions which provide only rather sketchy pieces of analysis. The second was to assess Keynes's theory as well as modern macroeconomics, for to deal with the Neoclassical Synthesis is to deal with the basic unsolved problems of both. This becomes clear if we reflect on the main characteristic of the Neoclassical Synthesis. Ever since Hicks's contributions, the Synthesis has tried to perform one major project: namely, to reduce Keynes to a particular case of Classical theory or, more precisely, to encompass Keynesian issues, such as money and expectations, within general equilibrium analysis. However, by the end of the 1960s this project had been almost unanimously recognized as a failure, money and expectations having been demonstrated as largely inessential elements in the general equilibrium models of Hicks and Patinkin (e.g. Hahn 1965; Rogers 1989).

Developments in economic theory over the last thirty years have not changed this basic picture. The flaws in the Neoclassical Synthesis have not been remedied and no real progress has thus been made with respect to it. It is sufficient to refer to two lucid remarks by Hahn, who very honestly points out the deficiencies which undermine the general equilibrium approach to macroeconomic issues. He admits, for instance, that 'the most serious challenge that the existence of money poses to the theorists is this: the best developed model of the economy cannot find room for it' (1982d:1); and that 'we have no theory of expectations firmly founded on elementary principles comparable say, to our theory of consumer choice' (ibid.: 3). This basic failure of general equilibrium theory is at the root of the current crisis of economic theory; of the sheer irrelevance of so much of it for issues of

practical significance; of the recurrent claims made by influential economists that the ‘emperor has no clothes’ (Kirman 1989) or that ‘hard’ economic theory must soften slightly by following the method of Popperian ‘piecemeal engineering’ —i.e. by a sequence of small reforms. (One might think, for example, of the predictions that economic theory will need to address itself to matters of sociology and history (Hahn 1991:50) or focus more upon complex and specific premisses and embrace the methods of computer simulation (Leijonhufvud 1996).)

In my view, it is no longer the time for ‘piecemeal engineering’. The failure of general equilibrium theory poses two questions to economic theorists, which can no longer be eschewed if economic theory is to regain its practical significance:

- 1 Why can’t general equilibrium theory encompass expectations and money?
- 2 Why can’t Keynes be reduced to general equilibrium and considered a particular case of it as in the Neoclassical Synthesis?

In my view, these two questions are closely related, given the prominent role played by money and expectations in the *General Theory*. Thus, by trying to answer the second question, this book will also suggest an answer to the first, in contrast with those who believe that, sixty years after its publication, the *General Theory* has historical value alone and hence that current macroeconomics can well do without it.

### Alternative perspectives on Keynes

Several explanations of the incompatibility between Keynes and general equilibrium have been put forward in the literature, but none of them seems to be entirely convincing. One of the most popular is that Keynes’s approach is *ad hoc* or simply ‘not scientific’ because it is based on a number of unjustified violations of the general equilibrium modelling discipline. This is stressed, for example, by Lucas and Sargent (1979), who dismiss the *General Theory* as being largely irrelevant. A more moderate view is put forward by Hahn (1984d) that although Keynes never learnt how to theorize properly, nevertheless he had profound insights into the working of the economy. He can be regarded as an incompetent but not an irrelevant theorist. In either form, this thesis is to be rejected as it simply takes for granted that general equilibrium is the only right approach to economic theory without addressing the causes of its failure.

The second explanation is that Keynes belongs to the tradition of political economy which is drastically opposed to general equilibrium. This view was put forward, for example, by Pasinetti (1974) in his important contribution, where he stressed that the *General Theory* is autonomous with respect to

the canons of general equilibrium because its method is similar to Ricardo's.<sup>1</sup> In my view, Pasinetti's view is correct only up to a point. While it is true that the *General Theory* cannot be reduced to general equilibrium and there is an important link between Ricardo and Keynes, it is not correct, however, to regard the latter as being entirely in line with political economy. Suffice it to consider that, like general equilibrium, this approach also fails to account for money and expectations. It thus seems fair to say that Keynes's revolution implies a departure from both in at least one important respect. To make this clear we have to consider these approaches in a wider perspective, referring them to their epistemological background. From this standpoint, an important link can be noted between political economy and general equilibrium. As pointed out by most methodologists and historians of economic thought, both are based in a broad sense on the mechanistic model of classical physics, a model based on at least three key features such as belief in the existence of unchangeable particles (atoms), reliance on the 'constructive' method according to which atoms constitute the simplest elements to which all physical phenomena should be reduced and emphasis on simple forces acting directly between the particles like Newton's gravitational attraction force.<sup>2</sup> In the light of this epistemological perspective, there seems to be very good reason to regard Keynes's macroeconomics as an autonomous discipline with respect to both political economy and general equilibrium. The point is that, as suggested by many authors especially in recent years, Keynes actually breaks with the mechanistic model (e.g. Boland 1982:88, 1992:43; Carabelli 1988; Davidson 1991:40; Dow 1990:147, 1991:153; Hillard 1992:66; Hodgson 1993:262–5; Mirowski 1989:314; Vercelli 1987:88–9).

The third type of explanation of the incompatibility between Keynes and general equilibrium is that advanced by many of the authors just mentioned, who argue that the *General Theory* relies on alternative epistemological foundations with respect to the mechanistic model. However, there is wide disagreement among them concerning what particular approach is able to justify the autonomy of Keynes's contribution.<sup>3</sup> The main alternative options (often not mutually exclusive) seem to be the following:

- 1 Keynes is in line with irrationalistic moves (e.g. Boland 1982; Mini 1974; Shackle 1972). As pointed out by Shackle (1972:79), for example, in the *General Theory* there is a contrast between equilibrium method and message: the former is mechanical, while the latter is kaleidoscopic. In particular, Keynes's expectations are unstable and irreducible to rational analysis.<sup>4</sup>
- 2 Keynes adopts an organic method (e.g. Brown-Collier 1985; Brown-Collier and Bausor 1988; Carabelli 1988; Dow 1991; Hodgson 1993; Rotheim 1988, 1989; Winslow 1989) in line, for example, with Whitehead's process analysis or Marshall's biological analogies.

According to this view, Keynes emphasizes the links of organic interdependence among individuals, which ‘also undermines the premise of an autonomous individual, whose actions are always and only seen as the cause of economic outcomes and whose being is never determined by these outcomes’ (Rotheim 1989:321).<sup>5</sup>

- 3 Keynes is in line with the historicist and hermeneutic or post-positivist methodology of authors such as Dilthey, Weber and the ‘late’ Wittgenstein (e.g. Carabelli 1988; Coates 1990; Davis 1994). According to this view, Keynes places the emphasis on such themes as the differences between the models of the social sciences and those of the natural sciences, the interdependence of individual beliefs in line with Wittgenstein’s language games (e.g. Coates 1990:5–6; Davis 1994:72), the process of argumentation and persuasion (e.g. Carabelli 1988; Coates 1990:236) and the Weberian perspective that macroeconomic theory must be founded on individual behavioural relations (e.g. Coates 1990:161–3).

I sympathize with the spirit of the authors just mentioned, insofar as they all seek to make a more correct interpretation of Keynes. However, in my view, the alternative options they put forward are for several reasons one-sided or misleading. Various objections may be put forward.

First, many of these authors imply that Keynes’s method is somewhat ‘obscure’ or ‘fuzzy’ or definable only in negative terms. For instance, Mini points out that Keynes refuses to adhere to one methodology (1974:269) or draws a confused map (*ibid.*: 270). Similarly, Dow argues that Keynes relies on the Babylonian mode of thought, which is ‘an attempt to theorise about a complex reality, but one which does not aim at a complete, closed, theoretical structure. The complexity of reality is regarded as being beyond complete understanding, and thus endemically uncertain’ (1990:146). This view is perhaps correct but vague: it does not seem to characterize Keynes’s view sufficiently. Dow, for instance, argues that Smith and many Neo-Austrians also rely on the Babylonian mode of thought (1990:153–4).

Second, to regard Keynes’s method as being organic is also incorrect. On the one hand, unlike organicism, Keynes does consider individuals as being rational and autonomous (for example, he allows for maximizing behaviour). On the other, a basic problem with organicism is that it is a paradigm which dominated Europe before the sixteenth century and is thus associated with pre-scientific ways of thinking.<sup>6</sup> This opens the way for Neoclassical writers to regard Keynes as a backward step in economic analysis. In particular, this argument has been put forward by early critics of the use of aggregate models, like Arrow (1951:640), according to whom organicism or holism, claiming as it does that aggregates have an existence over and above individual units, is a form of mysticism and should be discarded altogether as a principle of scientific analysis. In my view, the rejection of the

mechanistic model does not necessarily imply going back to the approaches that this model opposed.

In the end, one could think of many features of the *General Theory* that are not in line with any of the three options described above and have to be either assumed away or accounted for in *ad hoc* terms. First, although Keynes accounts for uncertainty in an essential fashion, he does not give up science or theorizing. As Schumpeter puts it: ‘Lord Keynes’s theory is theory in the same (logical) sense as is Marshall’s’ (1954:539). Moreover, Keynes rules out the polarity between rationality and irrationality stressed by Shackle. It can be argued that he holds a more general theory of rational behaviour with respect to the standard one. Second, while rejecting the mechanistic model, Keynes does not altogether rule out the use of mechanical notions like that of equilibrium. Third, while accounting for the notion of ‘time’, he does not embrace an evolutionary perspective implying, for example, the analysis of changes in individual preferences in line with biological analogies. Fourth, while analysing individual motives of behaviour, Keynes does not fit the Weberian microfoundations perspective. Rather the opposite seems to be true: namely, that he advocates the macrofoundations for microeconomics.

The fourth type of explanation of the incompatibility between Keynes and general equilibrium is that the former rejects the mechanistic model without, however, breaking with the basic rationalist tradition of western thought (e.g. Lawson 1988; O’Donnell 1989). The emphasis is placed on two points:

- that Keynes endorses a realist view similar to that underlying other scientific approaches;
- that there is a continuity between the various stages of his thought, in particular between the *Treatise on Probability* and the *General Theory*.

In our view, this stance looks much more plausible than the others. However, it needs to be qualified and stated in more precise terms. It is not enough to argue that Keynes is a realist or a rationalist in general terms. On the one hand, there are too many forms or versions of both; on the other, it is difficult to discuss Keynes’s epistemology in abstract terms. The problem is that in Keynes, as in many other theorists, it is difficult to find one systematic epistemological position held steadily throughout. One convincing reason is put forward by Einstein in his discussion of the philosophy of science:

He (the scientist) must appear to the systematic epistemologists as a type of unscrupulous opportunist: he appears as a *realist* insofar as he seeks to describe a world independent of the acts of perception; an *idealist* insofar as he looks upon the concepts and theories as the free inventions of the human spirit (not logically derivable from what is

empirically given); as *positivist* insofar as he considers his concepts and theories justified only to the extent to which they furnish a logical representation of relations among sensory experiences.

(Einstein 1949:684; original emphasis)

If this is true for Keynes as well, then dealing with his work ‘in isolation’, and looking for a sort of internal consistency, may in the end turn out to be a sterile operation.

### Keynes as the Einstein of economic theory

In order to clarify the epistemology of the *General Theory*, it is useful instead to refer it to some external paradigm. In particular, I believe that to justify the autonomy of Keynes’s contribution from the mechanistic model, while at the same time stressing its links with a realist and rationalist stance, there is a need to anchor it to the scientific tradition of the twentieth century, especially to the deep intellectual changes that took place in the early decades thereof. It seems plausible to suggest that a firm anchor might be found in the work of Einstein. By stressing the link between Keynes and Einstein, it will appear that Keynes endorses a modern form of realism and rationalism not unlike the one proposed by Karl Popper. Suffice it to note that, according to Popper, Einstein’s work is the basic starting point for the whole epistemology of the twentieth century. By calling the Newtonian model into question, it destroys the basis of the old rationalism of Kant’s philosophy, arguing that major parts of Newton’s physics as well as the concepts of arithmetic, Euclidean geometry and causality were a priori valid statements. In Popper’s view, after Einstein, science can no longer be regarded as *episteme* (certain knowledge) but only as *doxa* (fallible knowledge).<sup>7</sup>

In my view, the advantage of adopting this approach to Keynes is twofold. One is that the *General Theory* ceases to appear as the work of an ‘isolated’ or ‘extravagant’ theorist, finding a sort of personal or *ad hoc* way out of the difficulties of the old paradigm. It becomes instead the substantially coherent product of a new and higher stage of evolution of economic analysis influenced by the deep conceptual changes brought about by the most advanced theoretical science. In other words, it comes across as a forward step rather than the backward step claimed by Neoclassical writers. The other advantage of this approach is that it places the role of Einstein’s physics in the right perspective. In my view, it is rather odd that one of the most significant intellectual achievements of mankind has not been recognized so far as exercising a major influence on economics, despite the latter’s consolidated acquaintance with physics.

This neglect can perhaps be explained in two ways. The first explanation is that many social scientists still hold a rather narrow view of physics and the natural sciences in general. When talking about physics, most of them

quite naturally think of Newton and the mechanistic model. While this view was perhaps justified at the beginning of this century, when critics of the natural science method such as Max Weber were writing, it is no longer tenable today. The second explanation is that the most influential economic theorists of our century seem to be more willing to direct their efforts towards the refinement of last century's theoretical frameworks than to develop new ones. Immense intellectual efforts have been exerted in attempts to establish or improve the general equilibrium model, but this stance can only be justified by the belief that the latter is the only possible 'right' model for the economy, a model that despite its old Newtonian roots, no Einstein can even hope to replace. As Samuelson puts it:

We are forced to agree with Schumpeter's appraisal of Walras as the greatest of theorists...because of the key importance of the concept of general equilibrium itself. We may say of Walras what Lagrange ironically said in praise of Newton: 'Newton was assuredly the man of genius *par excellence*, but we must agree that he was also the luckiest: one finds only once the system of the world to be established!' and how lucky he was that 'in his time the system of the world still remained to be discovered.' Substitute 'system of equilibrium' for 'system of the world' and Walras for Newton and the equation remains valid.

(Samuelson 1952:1756)<sup>8</sup>

What grounds are there to regard Keynes as the Einstein of economics? At first sight there would seem to be none. On the one hand, while it is true that the positive implications of Einstein's revolution and twentieth-century physics in general for all the social sciences are now quite often emphasized in the literature (e.g. Beed 1991; Chick 1990; Dow 1985; Ganley 1995; Mirowski 1989),<sup>9</sup> the relationship between Einstein and Keynes is almost totally neglected (with the important exception of James Galbraith, who in his 1994 paper focuses exclusively on the Keynes/Einstein analogy).<sup>10</sup> On the other hand, direct evidence from the published works of Keynes seems to be almost nil. In the *General Theory*, Keynes did not indulge in physical analogies, perhaps due to the habit of regarding the social and the natural sciences as quite different at the methodological level. However, my suggestion is not altogether without foundation in Keynes. Not only was he aware of the significance of Einstein for science and culture in general, but he also actually met him on a number of occasions (see Hession 1984:225–6; Moggridge 1992:659) and wrote two essays on him in 1926 and 1933 (reprinted respectively in Keynes 1972b, 1982). Most important of all, he saw Einstein's achievement as an example to imitate. That Keynes saw a parallel between relativity theory and the *General Theory* is, for instance, Pigou's impression: 'Einstein actually did for Physics what Mr

Keynes believes himself to have done for Economics. He developed a far-reaching generalisation under which Newton's results can be subsumed as a special case' (1936:21).<sup>11</sup> There is one important element which supports this impression. Keynes (1933) quotes a passage of Einstein's essay on relativity theory containing a critique of Euclidean geometry:

Assuredly you too, dear reader, made acquaintance as boy or girl with the proud edifice of Euclid's geometry... Assuredly by force of this bit of your past you would treat with contempt anyone who casts doubts on even the most out of the way fragment of any of its propositions.  
(quoted in Skidelsky 1992:486–7)

The rejection of Euclidean geometry played a crucial role for the development of Einstein's relativity theory. However, it is also mentioned in Keynes's well-known critique of Classical economics in the *General Theory*. This is hardly a coincidence. As Skidelsky stressed in his comment on Keynes's essay: 'Keynes's identification with Einstein is also too clear to miss. Keynes was writing a "General Theory" of employment, in which he called classical economics a "special case" and classical economists "Euclidean geometers" in a non-Euclidean world' (1992:487; see also Hutchison 1981:123).

### Analogies between Keynes and Einstein

In my view, this insight on Euclidean versus non-Euclidean geometry is not a rhetorical flourish but hides a substantial point, namely the existence (at a sufficiently high level of abstraction) of a broad correspondence between the innovations of Einstein and Keynes in their respective fields.<sup>12</sup> To avoid misunderstandings, it must be pointed out that I am not suggesting that Keynes holds a conception of man and society as natural or physical phenomena or that he relies on the same methods as physics.<sup>13</sup> For example, no links between the *General Theory* and the relativity theory can be found at the level of formal tools used in the analysis, as, for instance, those emphasized by Mirowski (1984, 1989) between nineteenth-century physics and Neoclassical economics (e.g. both relied on the calculus of variations). What I am suggesting is that Einstein's physics is the appropriate metaphor for Keynes's economics; that it is useful to make a heuristic analogy between the two theories.<sup>14</sup> In particular, I believe that there is an important formal analogy between the concepts and the models used by the two theorists.<sup>15</sup> I refer mainly to the 'basic' and 'simple' ideas which both authors were eager to convey to others. It is interesting to note that they use almost identical words in this respect. Einstein points out, for example:

Fundamental ideas play the most essential role in forming a physical theory. Books on physics are full of complicated mathematical



formulae. But thought and ideas, not formulae, are the beginning of every physical theory. The ideas must later take the mathematical form of a quantitative theory, to make possible the comparison with experiment.

(Einstein and Infeld 1938:291)

Keynes, on the other hand, claims:

I am more attached to the comparatively simple fundamental ideas which underlie my theory than to the particular forms in which I have embodied them, and I have no desire that the latter should be crystallised at the present stage of the debate. If the simple basic ideas can become familiar and acceptable, time and experience and the collaboration of a number of minds will discover the best way of expressing them.

(Keynes 1937a:111)

Among the most general conceptual analogies between Keynes and Einstein, it is worth stressing the following two. First, both search for a new image of the world, a new way to look at the world's complex unity in opposition to the naive unity of both the mechanistic model and Classical theory. Second, both show that a revolutionary theory does not reject old concepts but redefines them (e.g. Kuhn 1970:130). On the one hand, they manage to show that contemporary orthodox theories are a particular case of their own framework. On the other, they retain the analytical tools of standard theories. For example, Einstein's general relativity theory is based on three main ideas which he borrows from the physical and mathematical tradition of the nineteenth century: the field, space-time theory and the notion of curvature. Similarly, Keynes's ideas are not without roots in the history of economic thought. In particular, there is a link between Keynes and the British Classical economists through the use of aggregates, despite the latter's Newtonian background. It can be suggested that Keynes updates and restores some aspects of their view in a new epistemological form. Moreover, Keynes also borrows from Neoclassical economics demand and supply analysis and the assumption of maximizing behaviour.

However, there are also more specific analogies. To outline them here, all I can do is to offer a brief anticipation of what I intend to discuss at greater length in the following pages. Let me start by recalling some of the key features of Keynes's approach. In Dow's book on macroeconomic thought she (1985:57) argues, for example, that unlike general equilibrium theory, Keynes: (a) redirects attention to aggregates as something other than the summation of the outcome of individual behaviour (he follows in Smith's footsteps by demonstrating paradoxes between individual intentions and macroeconomic outcomes); (b) places his theory within a historical context

and emphasizes the essential or primary role of money and expectations; (c) underlines the non-market clearing role of prices.

It can be argued that these features find a formal counterpart in Einstein's general relativity theory. First of all, Keynes's concept of aggregate can be regarded as similar to the concept of field through which Einstein calls into question the old atomist tradition. Second, Keynes's emphasis on historical time and expectations as necessary features of the analysis finds a counterpart in the primary role that time plays in relativity theory. The latter appears as a 'theory of principle' rather than a 'constructive' theory because it does not consider time as a secondary feature to be eventually added to the picture as is the case with the mechanistic model. In the end, Keynes's indictment of market forces corresponds to Einstein's emphasis on indirect forces rather than on the simple, direct forces dealt with in the Classical model. In particular, it can be argued that Keynes rejects the view held by general equilibrium theorists according to which self-interest is the only motive underlying agents' interaction, the counterpart in economics of direct forces such as the Newtonian gravitational attraction force. He also stresses the fact that agents need to 'coordinate' their efforts with those of others. This view leads Keynes to attach a lot of weight to conventions which impair the smooth working of the price mechanism. While prices are still flexible they do not play a direct equilibrating role. In general, they affect market demand and supply only indirectly through the filter of aggregate psychological data such as the propensity to consume or invest which are the product of agents' conventional behaviour.

### **A critique of the Neoclassical Synthesis**

On the grounds of this analogy between Keynes and Einstein, I can make three basic points. First, I can justify the claim that Keynes's macroeconomics is more general than Classical theory. According to Keynes, while the latter makes sense only under certain assumptions (e.g. a fixed level of income) and deals with specific problems (e.g. allocation of resources), his own theory accounts for the possibility of multiple equilibria. The generality of Keynes's theory is due to the fact that he focuses on aggregate psychological data neglected in general equilibrium analysis, which only deals with data such as individual preferences, resources and endowments.

Second, I can now argue that Keynes's macroeconomics is an autonomous discipline with respect to the theories based on the mechanistic model (such as general equilibrium and political economy), without having to draw the conclusion that it breaks with science in general. While rejecting an old scientific paradigm, Keynes's stance turns out to be rooted in twentieth century epistemology.

Third, I can make a more correct critique of the Neoclassical Synthesis than those prevailing in recent Keynesian literature. While such critiques tend

to suggest that the Neoclassical Synthesis should be questioned because it relies on the model of physics and mathematical formalism,<sup>16</sup> I hold instead that it should be criticized because it relies on the wrong model of physics. By relying on general equilibrium and the mechanistic model, it produces an interpretation of the *General Theory* which is just as narrow as a Newtonian interpretation of Einstein. For this reason, I regard the models of the Neoclassical Synthesis as ‘Newtonian’ or ‘Classical’ macroeconomics, in contrast with Keynes’s ‘Einsteinian’ macroeconomics.

The interpretation of Keynes made by the Neoclassical Synthesis rests on two complementary features. One is that it is engaged in what we can call an exercise in ‘translation’. This means that it tends to provide a ‘purified’ version of the *General Theory*, obtained by discarding all those aspects which do not fit in the old framework and constitute the basis of its generality and autonomy with respect to the canons which general equilibrium borrows from the mechanistic model. The other feature of this interpretation is that it indulges in an exercise in ‘generalization’. Just as the old physicists tried to extend the mechanistic model to new phenomena, such as heat, light and magnetism in the last century, the Neoclassical Synthesis tries to extend the explanatory power of general equilibrium to Keynesian issues or phenomena, such as money and expectations. Suffice it to think, for example, of Hicks’s (1935) seminal contribution on the microfoundations of monetary theory.

It would be wrong to suggest, however, that the full application of the general equilibrium canons is a straightforward matter that all the theorists of the Neoclassical Synthesis manage to accomplish to the same degree. For them, the application of these canons is only an ideal target, one which has not been hit by anyone so far (and, in my view, never will), but constitutes the driving force of most analytical efforts in economic theory. Indeed, the history of the Neoclassical Synthesis and the microfoundations approaches in the last sixty years can be interpreted as a sequence of attempts to approximate this ideal in various ways.

In order to account for this history, I make a distinction between two basic types of macroeconomic approach, which differ in their degree of application of the general equilibrium canons and for this reason can be regarded as two different versions of ‘Newtonian’ or ‘Classical’ macroeconomics: namely, ‘pure theoretical’ macroeconomics or, more simply, ‘pure theory’, which rests on the proposal to apply all of the general equilibrium canons (atomism, the constructive method and the emphasis on direct forces) and ‘pragmatic’ macroeconomics, which seeks only a partial application of these canons and thus amounts to a simplified version of general equilibrium. Both of these approaches have their roots in the Neoclassical Synthesis and in the work of John Hicks in particular; the former finds its clearest expression in the classic *Value and Capital* (1939), the latter in the famous paper, ‘Mr. Keynes and the “Classics”’ (1937). In the following pages, I describe the evolution of the Neoclassical Synthesis

and the later microfoundations debate by focusing on the relationship between these two different approaches. In particular, the proposal for constructing a ‘pure theory’ defined in Hicks’s (1939) book is the benchmark against which to assess the validity (from the Classical standpoint) of all the other models of the Neoclassical Synthesis and microfoundations theorists, which, by and large, are instances of ‘pragmatic’ macroeconomics.

### Outline of the contents

This book analyses both Newtonian and Einsteinian macroeconomics. On the one hand, it outlines the evolution of the Neoclassical Synthesis and the microfoundations debate by focusing on the relationship between ‘pure theory’ and ‘pragmatic’ macro. My analysis attempts to evaluate the extent to which the various models approximate the ideal of ‘pure theory’ and the problems of internal consistency which arise when they fail to do so. On the other hand, this book stresses that Keynes is completely foreign to these attempts insofar as he relies on different principles that are in tune with Einstein’s physics. These two aspects are linked since to clarify and criticize the first effectively implies full awareness of the second. The book is divided into three parts.

**Part I** lays the foundations for the whole analysis by presenting the two basic paradigms of modern macroeconomic theory: Hicks’s ‘pure theory’ developed in *Value and Capital*, which represents the best programme of Newtonian macroeconomics, and Keynes’s approach in the *General Theory*. Chapter 1 focuses on Hicks’s definition of the three general equilibrium canons of atomism, the constructive method and the emphasis on direct forces inspired by the mechanistic model. Chapters 2 to 4 deal with the *General Theory*. They seek to show the links between Keynes’s analysis and the canons underlying Einstein’s approach, such as anti-atomism, the ‘theory of principle’ approach and the stress on indirect forces.

**Part II** reconstructs the development of the Neoclassical Synthesis. Chapter 5 deals with ‘Mr. Keynes and the “Classics”’ and its crucial IS-LM model. The significance of this model is that it marks the beginning of ‘pragmatic’ macroeconomics, virtually a simplified version of general equilibrium theory. This version is characterized by the fact that not all of the canons of the theory are actually followed. IS-LM, for example, by relying on aggregates which are essentially foreign to ‘pure theory’ defies atomism and the constructive method. Conversely, however, this model does rely on the direct forces paradigm, which involves emphasis on the direct adjusting role of prices based on standard demand and supply analysis. This is the reason why Hicks seeks to translate Keynes’s saving-investment relation in symmetric terms and regards a rigidity such as the liquidity trap as the cornerstone of Keynes’s theory. Chapter 6 focuses instead on Hicks’s ‘Suggestion for Simplifying the Theory of Money’. This provides a first important instance of the ‘generalization’

exercise; namely, the attempt to introduce money into general equilibrium by a suitable application of the constructive method.

Chapters 7 to 11 deal with the contributions of the most influential American Keynesians, which are especially important for their development of ‘pragmatic’ macroeconomics. They present some common features such as the use of aggregates, reliance on various forms of the notion of ‘long-run equilibrium’, which allows only a truncated version of the constructive method, and concern for the ‘translation’ of Keynes’s aggregate relations in symmetric terms, as if they were the relations between demand and supply of individual goods. On these grounds, the various authors make their specific contributions. Chapter 7 deals with Modigliani, who focuses upon the labour market, which is absent in Hicks’s IS-LM story, and suggests that money wage rigidity is Keynes’s distinctive characteristic.

Chapter 8 deals with Samuelson, who starts by stressing the existence of an unbridgeable gap between ‘pure theory’ and ‘pragmatic’ macroeconomics. In his view, the former corresponds to standard microeconomics, while the latter concerns short-run disequilibrium phenomena, such as those dealt with by Keynes, and is quite simply *ad hoc*: that is, without links with the basic principles of maximization. Despite this gap, Samuelson nevertheless seeks to deal with Keynes’s saving-investment relations in symmetric terms, on the grounds of his dynamic notion of stability.

Chapter 9 deals with Klein’s contribution, which is important insofar as it relies on the view that the gap described by Samuelson does not exist. By stressing the aggregation problem, Klein argues that Keynes’s model does not actually differ from the Classical model as his aggregates can be shown to derive from the standard micro functions. The dispute between the two models concerns only different values of the same parameters and can be settled by econometric analysis.

Chapter 10 deals with the first microfoundations contributions made in the 1950s by Modigliani, Ackley and Tobin. The ‘pragmatic’ nature of these works is clear from the fact that they take for granted the general interpretations given in the previous decades and focus on partial equilibrium explanations of individual aggregates, such as consumption, investment and liquidity preference. Chapter 11 concentrates on Patinkin’s influential book (1965), an attempt to achieve an analytical synthesis of the main aspects of previous contributions and completes the process of ‘translation’ of Keynes’s theory in symmetric terms. In particular, while accepting Samuelson’s disequilibrium view, Patinkin refuses to regard Keynesian economics as being quite simply *ad hoc* and stresses that concepts like the principle of effective demand and involuntary unemployment can be dealt with in terms of the standard canons and develops the analysis of aggregate demand as an inverse function of the price level in analogy with the demand for an individual good.

**Part III** focuses on the debate on the microfoundations of macroeconomics. This reveals increasing tension within the Newtonian

paradigm. While the Neoclassical Synthesis accepts a kind of peaceful compromise between ‘pure theory’ and ‘pragmatic’ macroeconomics, the microfoundations theorists call it into question and stress that the two are actually inconsistent. The various approaches suggest different solutions to this inconsistency problem. Chapter 12 focuses mainly on Lucas’s New Classical solution, stressing the need to get rid of Keynesian disequilibrium concepts altogether, while retaining ‘pure theory’ as much as possible. However, Lucas’s approach does not mark the end of ‘pragmatic’ macroeconomics. It is sufficient to note that unlike Hicks’s ‘pure theory’, he sticks to the use of aggregates, which are a source of problems for the Newtonian paradigm.

Chapter 13 deals with the solution provided by the Keynesian approach to microfoundations based on the belief that general equilibrium theory still constitutes the benchmark of economic theory. Authors such as Stiglitz and Hahn also seem to place more emphasis on ‘pure theory’: they stick to atomism and the constructive method and suggest a sharper focus on either micro or general equilibrium theory to account for Keynes’s insights. However, their study of various forms of price rigidities and market imperfections leads them to reject the direct forces paradigm. In this way they end up in an uncomfortable conceptual middle ground between the two basic paradigms of macroeconomics, leaving behind both ‘pure theory’ and ‘pragmatic’ macro but without making any steps towards Keynes, whose analysis of the working of the price mechanism has nothing to do with market imperfections.

In conclusion, Chapter 14 focuses on those approaches—the post-Keynesian and the post-Walrasian—that appear to be most in tune with a Marshallian benchmark approach. The first approach is certainly much closer to the spirit of Keynes than the others, but it also occupies a conceptual middle ground between the two basic paradigms. While rejecting both ‘pure theory’ and ‘pragmatic’ macro, it fails fully to embrace Keynes’s alternative stance. The post-Walrasian approach is full of interesting insights, but has difficulty in accepting the drastic simplification imposed by the need to model the economy as a whole.



## Part I

# THE TWO BASIC PARADIGMS OF MACROECONOMICS





## HICKS'S VALUE AND CAPITAL

Hicks's work in the 1930s opens the way to the basic result of the Neoclassical Synthesis: namely, the reduction of the *General Theory* to a special case of Classical theory. Hicks reaches the same conclusion in all his major works during this period:

- 1 In 'Mr. Keynes and the "Classics"' (1937), where the *General Theory* is linked to the special case of the liquidity trap.
- 2 In *Value and Capital* (1939), where Keynes's analysis is presented as a special case of his temporary equilibrium model with fixed money wages.
- 3 In 'A Suggestion for Simplifying the Theory of Money' (1935), which provides the background for his later view that Keynes's liquidity preference theory is a special case of Cambridge theory and may be analysed using the tools of Neoclassical value theory.

Hicks, arguably, draws this conclusion quite simply because he relies on the general equilibrium method, which leads him to rule out the crucial features of Keynes's approach—such as the use of aggregates and expectations as autonomous variables—which account for the autonomy of his macroeconomics. My justification for basing my analysis on *Value and Capital* is thus relatively straightforward. In this book Hicks provides the most complete description of a full-blown general equilibrium approach to macroeconomics—what he calls 'pure theory'. As I stressed in the Introduction, Hicks's approach would appear to be inspired by the mechanistic model. To grasp this concept fully it might be useful to refer to Einstein's precise description of the model in the book he wrote in collaboration with Infeld:<sup>1</sup>

The great results of classical mechanics suggest that the mechanical view can be consistently applied to all branches of physics, that all phenomena can be explained by the action of forces representing either attraction or repulsion, depending only upon distance and acting between unchangeable particles.

(Einstein and Infeld 1938:67)

Here Einstein stresses three basic features of the standard model:

- the existence of unchangeable particles (atoms) whose position and speed can be accurately stated;<sup>2</sup>
- the view that these particles constitute the simplest elements to which all physical phenomena should be reduced (the compositive or constructive method);
- the existence of simple forces acting directly between the particles (direct forces).

I would suggest that each of these features finds a precise counterpart in the method of *Value and Capital*.<sup>3</sup> More specifically, it is possible to establish analogies between:

- the particles of classical physics and the individual agents of ‘pure theory’ (for a similar analogy see Fisher 1926:85–6; Hodgson 1993:234–5; Lawson 1997:90);
- the constructive method used in the mechanistic model and that adopted by Hicks;
- direct forces, such as Newton’s gravitational attraction force and the universal properties of human nature, such as the self-interest which Hicks emphasizes (for a similar analogy in Adam Smith’s contribution, see e.g. Deane 1978:11; Gordon 1989:133).

Before going into these analogies in detail, two points need to be emphasized. The first is that, insofar as it is the clearest expression of the Newtonian paradigm in macroeconomics, Hicks’s ‘pure theory’ provides the benchmark for our analysis.<sup>4</sup> The second is that I am fully aware that pure theory as we normally understand it does not correspond to macroeconomics. It includes, for example, microeconomics and a full-blown disaggregated general equilibrium model with  $n$  firms and consumers. However, Hicks claims that in *Value and Capital* a bridge exists between this standard notion of pure theory and macroeconomics (or what I refer to in this book as ‘pure theory’). As we shall see, this bridge is represented by the device of the representative agent, which allows a smooth transition from micro- to macroeconomics.

### Atomism

#### *Analogies between Hicks’s ‘pure theory’ and the mechanistic model*

It is possible to underline a few significant analogies between the atomism underlying the mechanistic model and that underlying Hicks’s ‘pure theory’.

In the first place, just as the mechanistic model defines the position and speed of individual particles, so *Value and Capital* is built on axioms which concern the behaviour of individual agents. A close link exists between Hicks's axiomatic approach and that of Hayek and Robbins, who were with him at the LSE in the early 1930s. In the first part of *Value and Capital*, Hicks develops what Hayek (1937) calls the 'pure logic of choice', dealing with the basic principles of standard value theory and the maximizing behaviour of consumers and firms. According to Hayek, insofar as it consists of deductions from a set of self-evident propositions based on universal facts of experience derivable from simple introspection—for instance, that people have preferences and can arrange them in order—this is the truly a priori part of his economic analysis. As a set of self-evident propositions, the pure logic of choice is only subject to internal consistency and is not directly applicable to the explanation of real-world phenomena. As Hayek points out:

The logic of choice applies only to persons who have to allot limited means among a variety of ends. And for the field so defined our propositions would again become a priori true. But for such a procedure we should lack the justification which consists in the assumption that the situation in the real world is similar to what we assume it to be.

(Hayek 1937:46)<sup>5</sup>

Let us now turn to the second analogy between the two models. Just as the atoms of classical physics are independent from the 'environment', in the sense that there is no interaction between matter and space (the latter has autonomous existence with respect to the former, see e.g. Einstein 1952: 310), Hicks regards agents' preferences as being private in nature and autonomous or context-independent elements. This view accounts for the conception of rationality which underlies the logic of choice. This logic implies that the individual agent follows the canons of 'perfect' or 'absolute' rationality: no problems of imperfect knowledge and computational ability can ever arise in the rational calculation or the adaptation of means to ends due to the tautological nature of the analysis which rules out a priori contamination with realworld phenomena.

A third analogy between the atomism of the classical model and Hicks ultimately encompasses essentialism. As Popper (1972:167–8) notes, this is nothing other than the view that atoms are unchanging bits of matter which represent a fundamental level of reality and the basis of any ultimate explanation. It is important to stress that this view implies a clear-cut distinction between the primary and secondary qualities of particles as well as large bodies. Primary qualities are extension, persistence, impenetrability and so on, which constitute the only proper object of analysis.<sup>6</sup>

Hicks's reference to the standard concept of *homo economicus* also, arguably, implies a sort of essentialist view. Accepting the principles of methodological individualism, he regards the individual agent, characterized by unchanging preferences and purposes, as the bedrock, the very foundation upon which economics has to be built (e.g. Hodgson 1989:53). Just like atomism in physics, Hicks too relies on a clear-cut distinction between the primary and secondary qualities of agents. For example, in his timeless logic of choice, he focuses exclusively on what can be regarded as the primary quality of individual agents—namely, the pursuit of self-interest governed by context-independent preferences in conditions of certainty and stability—thus neglecting the other (secondary) qualities of agents, such as the ones typical of a 'real-world' context (for example, the need to form expectations and interact with other agents).

In my view, Hicks's retention of essentialism is not called into question by the fact that he, like Pareto and Robbins, develops the ordinalist approach to consumer behaviour, attempting to separate the axioms of individual rationality from the concept of cardinal utility which underlies the first versions of marginalist theory.<sup>7</sup> This ordinalist move is, admittedly, to some extent in contrast with the old paradigm. Indeed, by relying on the axiomatic method and dropping the reference to the metaphysical concept of utility as a substance or essence of value, Hicks is in tune with the modern epistemological developments which began with the discovery of non-Euclidean geometry in the mid-nineteenth century and gave rise to a vast anti-mechanistic movement.<sup>8</sup> It seems fair to say, however, that these new developments lead Hicks not to make major conceptual changes with respect to the original general equilibrium model and its atomistic core, but simply to provide a more rigorous version of the same model, purged from many of the realistic claims or unnecessary concessions to utilitarianism made by Walras.<sup>9</sup> In particular, it can be argued that Hicks's innovation is that he changes the way of representing the individual's choices (e.g. the rejection of cardinal utility and the adoption of indifference curves), not the central role that the individual plays in the analysis.

### *Implications for the interpretation of Keynes*

As far as the interpretation of Keynes is concerned, Hicks's atomist view is relevant insofar as it accounts for his rejection of the aggregate concepts used in the *General Theory*. In line with the views of Robbins and Hayek (e.g. Deane 1978:146; Mirowski 1989:337; Popper 1961:103, 122, 1966:297), Hicks points out that the only legitimate approach to economic analysis is 'pure theory' which is based on concepts directly relating to individual behaviour and aims at logical precision: 'In order to get clear-cut results in economic theory, we must work with concepts which are directly dependent on the individual's scale of preference' (Hicks 1946:177).<sup>10</sup> In spite

of their familiarity, macroeconomic aggregates such as income, saving and investment should not, on the contrary, be used in 'pure theory' since, being the product of ordinary language and everyday business life, they are not logically precise:

There is far too much equivocation in their meaning. At bottom, they are not logical categories at all; they are rough approximations, used by the business man to steer himself through the bewildering changes of situation which confront him. For this purpose, strict logical categories are not what is needed; something rougher is actually better.  
(Hicks 1946:171)

Another reason which Hicks stresses for avoiding the use of aggregates is that they have no direct significance for the conduct of the individual agent—the sole concern of 'pure theory'.<sup>11</sup> This much is clear from Hicks's analysis of the concept of income, especially when he passes from a consideration of individual income to one of social or national income. The former is defined in *ex ante* terms; as a subjective concept, dependent on the particular expectations of the individual in question. It is 'the maximum value which he can consume during a week, and still expect to be as well off at the end of the week as he was at the beginning' (Hicks 1946:172). However, if the expectations of different individuals are not consistent, the aggregate of their incomes has little meaning. Hicks thus stresses that the only way to rescue the notion of national income is to consider it as an *ex post* magnitude:

Income *ex post* equals the value of the individual's consumption *plus* the increment in the money value of his prospect which has accrued during the week; it equals Consumption plus Capital accumulation. This last very special sort of 'Income' has one supremely important property. So long as we confine our attention to income from property; ... Income *ex post* is not a subjective affair...it is almost completely objective... [and] can be directly calculated. Since the income *ex post* of any individual is thus an objective magnitude, the income *ex post* of all individuals composing the community can be aggregated without difficulty.

(Hicks 1946:178–9)

However, Hicks also emphasizes that while the concept of national income in *ex post* terms may prove to be very useful in applied work, it should not be extensively used in economic theory:

*Ex post* calculations of capital accumulation have their place in economic and statistical *history*; they are a useful measuring-rod for

economic progress, but they are of no use to theoretical economists, who are trying to find out how the system works, because they have no significance for conduct... The income *ex post* of any particular week cannot be calculated until the end of the week... On the general principle that 'bygones are bygones' it can have no relevance to present decisions.

(Hicks 1946:179)

On these grounds, Hicks draws the conclusion that 'the concept of income [is] one which the positive theoretical economist only employs in his arguments at his peril. For him, income is a dangerous term, and it can be avoided' (1946:180).

### Hicks's constructive method

#### *Analogies between Hicks's 'pure theory' and the mechanistic model*

A few significant analogies can also be found between the constructive or compositive method underlying the mechanistic model and the one followed by Hicks in *Value and Capital*. While atomism in classical physics stresses the existence of unchangeable particles whose position and speed can be accurately stated, the constructive method shows instead that these particles constitute the simplest elements to which all physical phenomena should be reduced.<sup>12</sup> Two aspects of this method need to be stressed. The first is its universal applicability. As Einstein pointed out:

The great achievements of mechanics in all its branches, its striking success in the development of astronomy, the application of its ideas to problems apparently different and non-mechanical in character, all these things contributed to the belief that it is possible to describe all natural phenomena in terms of simple forces between unalterable objects.

(Einstein and Infeld 1938:57–8)

The second aspect is that the method attempts to explain all phenomena on the grounds of extremely simplified models resulting from the aggregation of the elementary particles. In particular, the laws of the mechanistic model are formulated with respect to 'good' or 'well-behaved' frames of reference, that is, inertial frames of reference. Hicks's approach seems to be in line with both of these aspects. On the one hand, it tries to account not only for remote stationary conditions but also for the most significant phenomena of the 'changing, progressing, fluctuating economy' or 'the real world in disequilibrium' (Hicks 1936:86). On the other hand, it does so by setting

out from the highly simplified model of the logic of choice described in the first part of *Value and Capital*.<sup>13</sup>

*The transition issue: Hayek's view*

In this book, Hicks seems to believe in the possibility of making a relatively smooth transition from the pure logic of choice to the analysis of real-world phenomena such as those dealt with by Keynes. When discussing the transition from the static theory of the first part of his book to the more dynamic theory of the second, he argues for instance: 'There is a way of reducing the dynamic problem into terms where it becomes formally identical with that of statics. Thus the results of static theory can be used after all' (Hicks 1946:119). However, the transition turns out to be much more problematic than Hicks's words would appear to suggest. As Hayek (1937) pointed out, some serious problems arise in 'pure theory' when the focus is no longer on isolated individuals as in the logic of choice, but on the interaction of agents as in the dynamic part of the theory. One major problem is that the analysis of competitive equilibrium implies the focus on time and individuals' plans and expectations. In particular, Hayek points out that general equilibrium requires:

- that all individuals formulate their plans on the grounds of the same set of external events;
- that individual plans be consistent;
- assumptions about how individuals obtain the relevant information to explain the way equilibrium is actually brought about (the stability issue).

The fulfilment of these conditions is not at all easy. The point is that the generalization of individual equilibrium to systemic equilibrium requires the consideration of different types of data with respect to those which appear in the pure logic of choice. While the latter are purely individual data—data, that is, which only exist in the mind of the individual, the former are objective and involve the relation between an individual's mind and the external world, that is, other agents and/or objective (physical) reality.

Two points about Hayek's view are worth underlining. The first is that his emphasis on objective data is consistent with the interpretation of economic theory as the analysis of the unintended consequences of human actions, which implies going beyond the focus on individual psychology and behaviour. The second point is that to solve the problem of transition from the logic of choice to dynamic competitive equilibrium, Hayek calls for some auxiliary simplifying assumptions, such as the Weber's 'ideal types' of market forms (perfect competition, for example):



While in the field of the Pure Logic of Choice our analysis can be made exhaustive, that is, while we can here develop a formal apparatus which covers all conceivable situations, the supplementary hypotheses must of necessity be selective, that is, we must select from the infinite variety of possible situations, such ideal types as for some reasons we regard as specially relevant to conditions in the real world.

(Hayek 1937:46)

It should be clear, however, that the ideal-type methodology, while allowing for the interpretation of causal processes in real-world conditions, does so only in a rather peculiar way. More specifically, it is correct to stress that it presupposes a break with some of the key features of the positivist methodology dominant in the nineteenth century. It seems to imply, for example, a weakening of the realist claims underlying the models of the British Classics or the early Neoclassical writers such as Walras or Marshall, as well as a critique of the role the mechanistic model plays in the social sciences. Indeed, according to Weber the use of ideal types is the most important difference between the natural and the social sciences. To grasp this point it is sufficient to note two key features of the ideal-type methodology.

First, according to this methodology, models are certainly not arbitrary constructions as they are constructed with reference to what is empirically given, such as facts of experience concerning individuals (for example, that they have preferences). However, they are not 'true' descriptions of the world. They are in the nature of hypothetical or pure cases, limiting concepts which overcome all forms of correspondence or necessary linkage between theoretical concepts and reality such as that postulated by positivism. It can be noted, for example, that the *homo economicus* abstraction takes the rationality postulate to an extreme, purifying it of all unnecessary elements.

Two important consequences follow from this feature of ideal types. One is that they should not be confused with average concepts or types. While the latter focus on aspects that show maximum frequency insofar as they seek to reproduce actual economic action either in its universal tendencies or in its prevailing motives, ideal types are pure combinations of selected aspects which hardly ever arise in reality. The other consequence is that what matters for the validity of ideal types is not their descriptive adequacy but only their internal consistency. Strictly speaking, the construction of ideal types involves a kind of trade-off between realism and precision. It is because they are relatively contentless that they can be formed rigorously. The more they are rigorous and precise, the further they are from the world, the better they play their role. In other words, ideal types are only of heuristic relevance and do not claim to reproduce the complexity of real-world economies. Insofar as they are formed by a one-sided accentuation of one or more points of view, they are mental as opposed to descriptive constructs. Last of all,

they incorporate a selection of complexity, and hence their validity is conditional upon the particular viewpoint assumed.<sup>14</sup>

Second, despite their lack of realism, ideal types are not useless. They can still be used as a benchmark to check the rationality of actual decisions. In particular, the behaviour of actual individuals is explained by determining the extent to which it is not ideal or perfectly rational (for example, because of the existence of imperfections in their knowledge of the data or their irrationality). In Weber's view, the construction of hypothetical processes as a benchmark (which may be termed a conditional type of explanation) is in contrast with the view underlying classical physics—namely that scientific explanations are necessary. Moreover, scientific approaches in the social sciences based on ideal types do not rely on universal or general laws as in the natural sciences, but upon what might be called 'singular explanatory statements' (e.g. Huff 1984:69).

In my view, however, it would be wrong to draw the conclusion that the ideal-type methodology involves *per se* a total emancipation from the mechanistic model. While it certainly reflects an important change in the form of explanation with respect to the model, it does not necessarily imply a rejection of its atomistic core and the central role played by the individual in the analysis.

### *Hicks's temporary equilibrium method*

On these grounds it is easier to understand Hicks's stance on the transition issue. There can be no doubt that, like Hayek, Hicks is fully aware that a wide gap exists between the logic of choice and the dynamic theory of Keynesian phenomena. However, he also makes rather strong simplifying assumptions which bypass some of the problems raised by Hayek. Let us start from the first issue. The temporary equilibrium approach in *Value and Capital* is actually developed along the lines suggested by Hayek and other economists such as Lindhal, Lundberg and Myrdal in the early 1930s (e.g. Ingraio and Israel 1987:207–36; Weintraub 1979:55–9). Much as they do, Hicks emphasizes the major innovations implied by the transition from the logic of choice to dynamic theory.

First, Hicks argues that in the latter the economy is to be studied as a temporal sequence of plans, choices and equilibrium states. In particular, he assumes that the planning horizon of agents extends over several periods so that they have to form expectations about the future values of prices, in line with the assumption of perfect competition. Second, he notes that by adding expectations to the other data ordinarily assumed in static theory (such as tastes and resources), it is possible to use equilibrium analysis 'not only in the remote stationary conditions to which many economists have found themselves driven back, but even in the real world, even in the real world in disequilibrium' (Hicks 1936:86). Third, Hicks emphasizes that an

important consequence of this innovation is that it implies a departure from the notion of long-run equilibrium used by the traditional static theory. The latter explains the working of the economic system in ‘normal’, long-run or stationary conditions, where an abstraction can be made from temporary disturbances that cause booms and slumps and where all variables have had time to adapt to changes and the future is entirely predictable. However, in this way too many important features of a real world economy—such as money, uncertainty and people’s expectations—are neglected. This is why, from the standpoint of *Value and Capital*:

It is no longer allowed that ordinary [static] theory can give a correct analysis of even normal conditions. But if there is no norm which we have understood, it is useless to discuss deviations from it. The changing, progressing, fluctuating economy has to be studied on its own, and cannot usefully be referred to the norm of a static state.

(Hicks 1936:86)

Fourth, Hicks draws the conclusion that in order to analyse the most significant dynamic features of the economy it is necessary to regard the notion of equilibrium as referring to an instant of time rather than to the stationary state. In the end, he stresses that the temporary equilibrium method of *Value and Capital*, while involving equilibrium between current demand and supply on every market, does not guarantee equilibrium over time. To meet the need to account for Keynesian issues this method incorporates one ‘realistic’ feature of the economy, namely, the lack of forward trading. In order to grasp this point, it is necessary to refer briefly to the characteristics of equilibrium over time. One of the conditions for such an equilibrium to occur is that expectations be fulfilled in each period, a condition which would be met in an economy where everything is fixed up in advance by the device of forward trading—the institutional set-up which Hicks refers to as the ‘futures economy’ (1946:136).<sup>15</sup> Hicks points out that such an economy ‘can have no claim to be a good approximation to reality, for it would be only in a world where uncertainty was absent and all expectations definite, that everything could be fixed up in advance’ (ibid.: 140). He thus stresses that in order to deal with uncertainty and some of the phenomena studied by Keynes, it is better to focus on a ‘spot economy’, where only spot transactions occur and, as in the real world, there is no adjusting mechanism guaranteeing equilibrium over time so that future plans may not be achieved. Hicks thus allows for the coexistence in his work of both temporary equilibrium and intertemporal disequilibrium.

### *Expectations as data*

Let us now focus on Hicks’s simplifying assumptions to see how he manages to turn Hayek’s theory into macroeconomics. These assumptions concern

expectations and the use of the representative agent device. As for the former, instead of analysing how people get the relevant information and develop expectations as suggested by Hayek, Hicks introduces expectations as data along with preferences. It could be argued that, in his view, this step is not a simplification but a great innovation and an important link between his dynamic analysis, the *General Theory* and the work of the Swedish economists. Hicks emphasizes this link at various points. He already acknowledges it in his review of the *General Theory* (1936). After noting that the method of expectations is one of the book's most relevant features, in his review he stresses that Keynes's approach should be regarded as being very similar to that of the Swedish economists, who placed the emphasis on short-term expectations and the distinction between *ex-ante* and *ex-post* variables (see e.g Hicks 1936:86). A similar view has also been put forward in a recent reassessment of his work in the 1930s (Hicks 1982; Kregel 1982), where Hicks underlines, for example, that both *Value and Capital* and the *General Theory* focused on the behaviour of an economy during a period:

that had a past, which nothing that was done during the period could alter, and a future, which during the period was unknown. Expectations of the future would nevertheless affect what happened during the period...expectations in our models were strictly exogenous... Subject to these *data*—the given equipment carried over from the past, the production possibilities within the period, the preference schedules, and the given expectations—the actual performance of the economy within the period was supposed to be determined as an equilibrium performance with respect to these data.

(Hicks 1982:319)

However, there is little doubt in the literature that, beyond this broad analogy, Hicks's more specific treatment of expectations leaves much to be desired. In particular, what seems objectionable is that he reduces expectations to 'physical' reality—that is, current market situation or structure. There are at least three problems with this approach. The first is that Hicks ends up by accepting what Popper calls the 'logic of the situation', according to which 'our actions are to a very large extent explicable in terms of the situation in which they take place' (1966, II:96):

One can argue that it is the seller's *knowledge* of a buyer's presence in the market, and their hope of getting a higher price—in other words, psychological factors—which explain the repercussions described. This is, of course, quite true; but we must not forget that this knowledge and this hope are not ultimate data of human nature, and that they are, in their turn, explicable in terms of *social situation*—the market situation.

(Popper 1966, II:96; original emphasis)

While it is true that in this way Hicks makes an anti-psychologicistic move in line with Hayek's view of economic theory as the analysis of unintended consequences of human action, he also reduces expectations to the 'kingdom of necessity', an approach not unlike that of old-fashioned determinism.<sup>16</sup> This, it should be noted, does not clash with the fact that Hicks appears to be aware that individuals' expectations are uncertain (e.g. Hicks 1946: 125). On the one hand, he reduces uncertainty to risk:

If we are to allow for uncertainty of expectations...we must not take the most probable price as the representative expected price, but the most probable price + or - an allowance for the uncertainty of the expectation, that is to say, an allowance for risk.

(Hicks 1946:125-6)

On the other, as Laplace has already stressed, determinism and the probability calculus are not inconsistent since probability allows approximation to the ultimate truths (e.g. Geymonat 1975, IV:78-80).

The second problem with Hicks's approach is that it is vulnerable to the charge of circularity, as he was to recognize in later writings:

During the 'week' (as I called the single period) production and consumption proceed at prices that are established by trading on its first 'day' (Monday). Monday's trading proceeds until prices are established that equate demands and supplies, for goods and services to be delivered within the 'week' ... While they are being found, expectations are adjusting themselves to the information that comes up in the course of this trading... In this equilibrium prices and price expectations are, at least to some extent, reciprocally, determined. Such reciprocal determination is, however, a piece of telescoping; in dynamic analysis, telescoping is dangerous. It is essential to keep the time-sequence right. Though changes in actual prices do affect expectations, and changes in expectations do affect actual prices, cause precedes effect. The lag may be short, but (in principle) it is always there.

(Hicks 1985:69-70)

The third problem is that, even granting the legitimacy of the link between expectations and current experience, Hicks develops it in a rather mechanical or *ad hoc* fashion. Strictly speaking, to be consistent with his generalization project as implied by the constructive method, Hicks should have introduced expectations not as data but as variables to be explained on the grounds of the same principle that accounts for other endogenous variables: namely, the standard rationality postulate. As we saw above, in Neoclassical theory this postulate plays the role of the unifying principle

to which everything, except individual tastes, resources and other institutional givens, has to be reduced. Instead of doing this, Hicks provides only a formalistic solution to the problem of modelling the expectations' formation mechanism by introducing the notion of elasticity of expectations: 'I define the elasticity of a particular person's expectations of the price of a commodity X as the ratio of the proportional rise in the expected future prices of X to the proportional rise in the current price' (Hicks 1946:205). If prices are expected to rise more in the future than at present, then expectations are classified as elastic. Now as pointed out, for example, by Lachmann (1943:19) the problem with this classification is that it does not explain why the elasticity should take on a particular value. A similar critique is made by Katona (1946) who argues that the Hicksian notion of elasticity is of a mechanical kind because it is not linked to the process through which agents come to form expectations. Hicks's analysis is thus consistent with the view that agents' expectation formation follows a few simple rules of thumb. According to Radner (1989:314), this shows that the temporary equilibrium method is an example of the 'bounded rationality' approach which implies a retreat from the hypothesis of the fully rational behaviour of agents made by Hicks in the first part of *Value and Capital*.

### *The representative agent device*

Having analysed the first type of simplifying assumption introduced by Hicks with respect to Hayek, we can now deal with the second. This consists of his use of the device of a representative agent which allows him to achieve a smooth transition from the pure logic of choice (micro) to the dynamic analysis of Keynesian phenomena (macro):

It is one of the most exciting characteristics of the method of analysis we are pursuing in this book that it enables us to pass over, with scarcely any transition, from the little problems involved in the detailed study of the behaviour of single firms, or single individuals to the great issues of the prosperity or adversity of...a whole economic system. The transition is made by using the principle, already familiar to us in statics, that the behaviour of a group of individuals, or group of firms, obeys the same laws as the behaviour of a single unit... The laws of market behaviour, which we have laboriously elaborated for those tenuous creatures the representative individual and the representative firm, thus become revealed 'in their own dimensions like themselves' as laws of behaviour of great groups of economic units, for which we can readily evolve the laws of their interconnexions, the laws of behaviour of prices, the laws of the working of the whole economic system.

(Hicks 1946:245)

It should be clear why the use of this device together with the perfect competition assumption involves a drastic simplification of economic analysis and allows Hicks to construct a pure theoretical approach to macroeconomics which bypasses the issue of coordination of different agents raised by Hayek altogether. Suffice it to consider that this device implies that all agents are alike and hold the same expectations so that systemic equilibrium turns out to be nothing but a magnification of the individual equilibrium studied in the logic of choice. This is, after all, the significance of Hicks's claim that in his book the essentials of the static model can still be used in dynamics.

### Hicks's direct forces paradigm

Another feature of the mechanistic model with a precise counterpart in Hicks's analysis is its emphasis on simple forces acting directly among individual particles—as in Newton's principle of gravitational attraction, for example. Hicks's concern for the direct forces acting among individuals is deeply rooted in the history of economic thought; it goes back to Adam Smith in particular. As Gordon pointed out:

The counterpart of Newton's principle of gravitational attraction in the modelling of social phenomena, so Adam Smith would appear to believe, is some universal property of human nature. Here we encounter a difficulty that has been the object of much attention by historians of social science. In the *Moral Sentiments* the Newtonian property, so to speak, is what Smith calls 'sympathy': man's capacity for, and disposition to, the exercise of 'fellow feeling' towards other persons. In the *Wealth of Nations*, however, the Newtonian property is man's 'self-interest'.

(Gordon 1989:133; see also Deane 1978:11)

In line with the Neoclassical revolution and the basic premisses of general equilibrium analysis, Hicks follows Smith's *Wealth of Nations* and focuses exclusively on 'self-interest' and competition, dropping the 'sympathy' or 'cooperation' issue altogether. It is important to reflect on the implications of this exclusive focus on self-interest. Indeed, in my view, it accounts for key features of the Neoclassical theory of value: first, for the explicit treatment of agents' maximizing behaviour as a postulate, in contrast with the British Classical economists, for example, who consider it only in implicit terms;<sup>17</sup> second, for the view that the forces of demand and supply must be treated in symmetrical terms on all markets—meaning, in particular, that the market demand and supply curves for an individual good reflect the individual maximizing behaviour of consumers and firms respectively and that both are functions of price; third, the view that prices play a direct

adjusting role on each market (more specifically, under conditions of perfect competition, flexible prices are always assumed to affect individuals' behaviour directly and correct any market imbalance automatically, thus granting the attainment of equilibrium and the realization of all individuals' plans).

It is important to note that, in general equilibrium theory, the adjusting role of prices becomes a postulate itself. Suffice it to think of the fact that this theory is forced to impose coordination on the market through the intervention of the auctioneer who successfully regulates the tatonnement process. All of which means that the attainment of equilibrium is taken for granted in the theory. Hicks strongly emphasizes these points in his attempt to simplify the analysis and construct his pure theoretical approach to macro. As for the equilibration process he notes that:

Since we shall not pay much attention to the process of equilibration which must precede the formation of the equilibrium prices, our method seems to imply that we conceive of the economic system as being always in equilibrium... It is quite true that we assume the economic system to be always in equilibrium. Nor is it unreasonable to do so. There is a sense in which current supplies and current demands are always equated in competitive conditions.

(Hicks 1946:131)

In his analysis, Hicks also stresses the necessary role of the perfect competition assumption. It is, after all, only thanks to the latter that the smooth working of the price mechanism can be granted and become a postulate: 'it has to be recognized that a general abandonment of the assumption of perfect competition...must have very destructive consequences for economic theory' (1946: 83–4).

Another typical feature of Neoclassical value theory is the view that a persistently excess demand or supply on any real-world market can only be due to imperfections in the price mechanism. For example, unemployment is due to rigid money wages. This standard conclusion can also be found at the end of *Value and Capital*. Moreover, for Hicks this conclusion also applies to Keynes's theory:

So far we have been assuming that prices are perfectly flexible... This assumption...must now be dropped, for it is of course highly unrealistic. In most communities there are a large number of prices which...are fairly insensitive to economic forces, at least over short periods. This rigidity may be due to legislative control, or to monopolistic action... It may be due to lingering notions of a 'just price'. The most important class of prices subject to such rigidities are wage-rates; they are affected by rigidity from all three causes. They



are particularly likely to be affected by ethical notions, since the wage-contract is very much a personal contract, and will only proceed smoothly if it is regarded as ‘fair’ by both parties... These rigidities are undoubtedly phenomena of great economic importance; for their existence explains why disturbances of the sort we are considering produce not only large changes in prices, but also large changes in production and employment. Mr. Keynes goes so far as to make the rigidity of wage-rates the corner-stone of his system.

(Hicks 1946:265–6)

This passage shows once again the crucial benchmark role that the ideal type of perfect competition plays in Hicks’s analysis. In particular, it allows him to analyse the behaviour of real-world economies in terms of deviations from the type as a result of empirical imperfections which impair the smooth working of the price mechanism.

### Concluding remarks

This chapter has sought to define one of the two basic paradigms of modern macroeconomic theory: namely, Hicks’s ‘pure theory’ as developed in *Value and Capital*. Despite its various weaknesses, this book still stands as the finest programme of Newtonian macroeconomics. In it, Hicks relies on three general equilibrium canons—atomism, the constructive method and the emphasis on direct forces—which have an almost precise counterpart in the old mechanistic model. This set of postulates performs two functions. First, it establishes macroeconomics as the study of unintended consequences of individual choices. Not surprisingly, Hicks, like all general equilibrium theorists, relies on the auctioneer to account for the impersonal action of the market (the invisible-hand paradigm). The second function is to allow Hicks to adopt the simplifications needed to construct macroeconomics. Atomism, for example, greatly simplifies the treatment of preferences by reducing them to exogenous data, whereas the representative agent device, together with the auctioneer imposes coordination on the economic system and, as a result, both the smooth working of the price mechanism and the attainment of full equilibrium become a matter to postulate (meaning that flexible prices imply market clearance). In the next three chapters, I move on to analysis of the alternative macroeconomic paradigm built by Keynes in the *General Theory*.

## KEYNES'S ANTI-ATOMISM

One of the aims of this book is to show that at the root of modern macroeconomics there is a contrast between two basic paradigms. One is Hicks's 'pure theory', the other is developed in Keynes's *General Theory*. The existence of this contrast is confirmed by Keynes's rather negative comment on *Value and Capital*:

I have now finished reading Hicks's book. I don't think I have ever read a book by an obviously clever man, so free from points open to specific criticism, which was so utterly empty. I do not, at the end, feel a penny the wiser about anything. He seemed able to decant the most interesting subjects of all their contents, and to produce something so thin and innocuous as to be almost meaningless, and without mistakes. But about nothing whatever. Simple things are made to appear very difficult and complicated, and the emptiest platitudes paraded as generalizations of vast import. A most queer book.

(quoted in Moggridge 1992:553)

Keynes's conception of macroeconomics rests on principles which are the opposite of those followed by Hicks. In particular, it may be argued that Keynes is anti-atomist, holds a 'theory of principle' view and places the emphasis on indirect forces. In the next three chapters, I attempt to demonstrate that these features are very similar to those underlying Einstein's theory. Hence, the *General Theory* may be plausibly regarded as the manifesto of Einsteinian macroeconomics.

This chapter focuses on Keynes's rejection of atomism. The reason why Hicks's atomism is in contrast with the *General Theory* is not due to the fact that Keynes neglects individual behaviour, advocates endogenous preferences, rejects the maximization assumption or is concerned with empirical or policy issues only (as suggested, for instance, by Moggridge 1992:553). No, the real reason is that atomism rules out Keynes's alternative way of dealing with individual behaviour. More specifically, it can be argued that while his aggregates are certainly not in tune with Hicks's 'pure theory',

they are much more than empirical concepts or simple expression of individual ones. Instead, they embody an alternative theoretical approach and imply a view of individual behaviour which is in sharp contrast with that held by the defenders of *a priorist* views. In this chapter I argue that this claim may be supported by making reference to one of the most significant features of Einstein's general relativity theory: namely, the concept of field, which provides an alternative method of dealing with individual particles with respect to the mechanistic model.<sup>1</sup> In particular, I show that there is a close structural or formal correspondence between the basic features of the field model and Keynes's aggregate model.

### Conception of economic reality

#### *Einstein*

A first link between the two models is that both involve different, unorthodox conceptions of reality. The field theory implies a different view of matter from the mechanistic model. While the latter regards matter as substance or inertial mass and focuses on the primary qualities of bodies—i.e. characteristics such as extension, persistence and impenetrability—the former implies instead a kind of 'dematerialization' of the concept of matter. The point is that Einstein rejects the concept of substance and places the emphasis on the concept of force or energy.<sup>2</sup> It is important to note that this change had its roots in Berkeley and Mach's critique of the essentialism underlying classical physics. In particular, they called into question atomism and its clear-cut distinction between the primary and secondary qualities of bodies. As Popper pointed out:

They were both convinced that there is no physical world of primary qualities, or of atoms...behind the world of physical appearances... Both believed in a form of the doctrine nowadays called phenomenism—the view that physical things are bundles, or complexes, or constructs of phenomenal qualities, of particular experienced colours, noises, etc... While Berkeley says that there can be nothing physical behind the physical phenomena, Mach suggests that there is nothing at all behind them.

(Popper 1972:173)

Albeit subscribing to these views, Einstein does not go all the way towards constructing a phenomenalist physics. Unlike Mach, he allows for non-observable factors and hierarchical levels of explanation, not only for surface matter. In particular, Einstein is not opposed to the reality of atoms.<sup>3</sup> In his view, the changing field of forces becomes as important as material atomic

particles (see also Popper 1972:82)<sup>4</sup> and turns out to be an autonomous tool of description. It is worth noting that this view took some time to assert itself. At first, the field was introduced to the mechanistic model as an auxiliary assumption. It was used in particular to describe one state of matter (e.g. temperature). Faraday and Maxwell started to divorce the field from matter when they used it in their description of electrical processes. At the beginning of the twentieth century, however, the field was still regarded as a state of a kind of matter, known as ether. It was only after Einstein's special relativity theory ruled out ether from physics that the field ceased to be treated as a state of matter and became an irreducible element of physical description (Einstein 1952:302–6).

Two points about the relation between matter and field need to be emphasized. The first is that the field concept involves a fundamental theoretical innovation; namely, that space can have certain properties which are independent of the existence of material particles. In other words, the field is a spatial distribution of energy; using the field concept, energy 'is portrayed as being in the space and not necessarily in the material bodies that occupy the space' (Mirowski 1989:66). Phenomena which are classified in terms of 'electric field' or 'magnetic field' can occur even in empty space. Referring to Maxwell's equations defining the structure of the electromagnetic field, Einstein, for example, notes that: 'All space is the scene of these laws and not, as for mechanical laws, only points in which matter or charges are present' (Einstein and Infeld 1938:152). The second point is that the difference between matter and the field of energy is only quantitative. While classical physics regarded matter and energy as two different substances, relativity theory envisages no essential difference between them (Einstein and Infeld: 206–7); in particular, we have matter if the concentration of energy in the field is extremely high. As Einstein points out:

From relativity theory we know that matter represents vast stores of energy and that energy represents matter. We cannot, in this way, distinguish qualitatively between matter and field, since the distinction between mass and energy is not a qualitative one. By far the greatest part of energy is concentrated in matter; but the field surrounding the particle also represents energy, though in an incomparably smaller quantity.

(Einstein and Infeld 1938:256)

### *Keynes's phenomenological approach*

These remarks are also relevant for Keynes's aggregate model. It can be argued that it too implies a different view of reality with respect to orthodoxy. While for Hicks, as for Neoclassical theory in general, the 'economic man' abstraction is the essence or basis of ultimate explanation

in economic analysis in line with the canons of methodological individualism, Keynes instead carries out a kind of ‘dematerialization’ of the concept of economic reality similar to the one which underlies Einstein’s work. He rejects the exclusive or fundamental role of the individual in the analysis and places the emphasis on aggregates defined on the grounds of conventional factors, such as the propensity to consume or liquidity preference.<sup>5</sup>

The rationale behind this view is that, like Mach and Einstein, Keynes calls into question the clear-cut distinction between primary and secondary qualities and stresses the need to take into account bundles of phenomenal qualities or complexes of elements. In this sense it is right to regard his approach as ‘phenomenological’ (e.g. Carabelli 1988:168; Mini 1974:254; Mirowski 1989:262).<sup>6</sup> In terms of economic analysis, this means that Keynes focuses directly on economic agents in their ordinary business life. Instead of simply considering—as Hicks does in his timeless logic of choice—the primary qualities of individual agents, such as the pursuit of self-interest governed by context-independent preferences in conditions of certainty and stability, Keynes deals also with the secondary qualities of agents, namely those which are typical of a real-world context and are regarded as ‘accidents’ by pure theorists. For example, he takes into account the need of agents to interact with the rest of the world, form expectations and seek a kind of ‘coordination’ with other agents by following conventional rules of conduct in conditions of uncertainty. In Keynes’s (1937) article ‘The General Theory of Employment’, he mentions the following three techniques:

(1) We assume that the present is a much more serviceable guide to the future than a candid examination of past experience would show it to have been hitherto. In other words, we largely ignore the prospect of future changes about the actual character of which we know nothing. (2) We assume that the existing state of opinion as expressed in prices and the character of existing output is based on a *correct* summing up of future prospects, so that we can accept it as such unless and until something new and relevant comes into the picture. (3) Knowing that our own individual judgement is worthless, we endeavour to fall back on the judgement of the rest of the world which is perhaps better informed. That is we endeavour to conform with the behaviour of the majority or the average. The psychology of a society of individuals each of whom is endeavouring to copy the others leads to what we may strictly term a *conventional* judgement.

(Keynes 1937a:114; original emphasis)

It is reference to these rules that leads Keynes to focus directly on aggregates; for example, his emphasis on conventional judgement entails transcending the atomist perspective.

A few key points about Keynes's perspective need to be clarified. First, his rejection of atomism does not imply that individuals disappear from his theory or become irrelevant. Quite the opposite is true. Just as atoms are recognized by Einstein, so individuals play a fundamental role in the *General Theory*. What Keynes's anti-atomism actually implies is a refusal of the representative agent, i.e. a separate theory of individual behaviour based on the exclusive consideration of the primary quality of self-interest and used as a bridge between micro and macro. For Keynes, there is no such a bridge. Indeed, as he points out in a famous passage of his book, one thing is the study of the individual agent (firm or consumer) in partial equilibrium analysis, which may be dealt with as in standard theory, another is the study of individual agents in macroeconomics: 'The right dichotomy is, I suggest, between the theory of the individual industry or firm...on the one hand, and the theory of output and employment *as a whole* on the other hand' (1936:293; original emphasis).

In macroeconomics, individuals must be studied according to a systemic perspective right from the outset. This means that they enter the picture as empirical or ordinary agents, thus appearing not as utility-maximizers defined on a priori grounds, but as members of some large group or aggregate defined on the grounds of some specific, time-contingent, characteristic. Suffice it to note, for example, that one of the most famous chapters of the *General Theory*—Chapter 12—focuses on the working of actual financial markets based on the interplay of different groups or types of investors holding different views about the future. From the standpoint of macroeconomics and the working of actual markets, what matters is not the expectation held by a representative individual, but the number of agents holding a particular opinion or the degree of uniformity of expectations across the market. In other words, it can be argued that Keynes holds a 'statistical' view of aggregates. I analyse this point in greater detail in the section that follows.

Second, it must be emphasized that, notwithstanding the phenomenological roots of his approach, Keynes does not go all the way towards constructing a purely phenomenalist economics. He builds an alternative theory and allows for non-observable factors and hierarchical levels of explanation. In particular, this means that he does not consider aggregates simply as bundles of empirical individuals. Just as Einstein did not stop at the surface of things and accepted the reality of atoms, Keynes finds it legitimate to talk about individuals, if need be, in abstract terms. This is testified by his acceptance of the assumption of maximization as an abstract representation of individual self-interest.<sup>7</sup> The important thing to note, however, is that, for him, the consideration of the primary quality of self-interest cannot be separated from that of other, secondary, qualities. This is precisely what makes aggregates appear to Keynes as an irreducible tool of analysis—much as the representative agent is for Hicks. What is often

described as a compromise, namely the coexistence in the *General Theory* of both aggregates and the maximization assumption, simply reflects the fact that Keynes refuses to make a clear-cut distinction between primary and secondary qualities. Instead, he treats them on a par, resisting any temptation to reduce one type to the other.<sup>8</sup>

### *Differences from other types of aggregate analysis*

It must be stressed that Keynes's conception of aggregates has taken a long time to assert itself. Just like the field concept, aggregates had already appeared in the literature many years previously—in the works of the physiocrats or British Classical economists such as Smith and Ricardo, for example. However, the latter justify aggregate analysis on the grounds of the Newtonian approach. This justification is possible since, in the view of these authors, economic theory overlaps with a more general theory of society (e.g. Deane 1978:7). It can be argued that in this theory the reference to atomism is obfuscated by the interplay between the different dimensions of human behaviour. Adam Smith, for instance, stressed both the economic motives of individual behaviour, such as self-interest, and social motives, such as benevolence or sympathy. This view accounts for the fact that in the political economy approach the individual economic agent is not considered as such but is seen as being subject to social relations (e.g. classes, division of labour), which are as objective and necessary as natural laws and exist independently of the will of individuals.<sup>9</sup> It should now be clear that this perspective is not in line with Keynes who, for example, refers not to social classes but only to 'functional' aggregates, such as 'consumers' and 'firms', which are not based on ideological ties. In his view, the links between individuals are not necessary (depending on class position and economic structure), but based on expectations and conventions.

The link between Keynes's aggregates and some of Marshall's concepts, such as that of a representative firm, is, apparently, stronger. By using this concept in his long-period theory of the supply side, Marshall shows his dissatisfaction with the mechanistic model and may be said to subscribe to a phenomenological approach similar to Keynes's (see Mirowski 1989:262). As pointed out by many authors (e.g. Boland 1992:34–5; Hodgson 1993: 101–2), Marshall's representative firm differs from the standard concept underlying Hicks's analysis. It is partly an organic concept and partly mechanical. To see this, it is sufficient to consider that Marshall is aware of the intrinsic limits of the tools of his theory of value. In particular, he is uncomfortable with static long-run equilibrium analysis built on the mechanical scheme of the balance of the forces of demand and supply, which degenerates into the fiction of the stationary state, in which change is ruled out and everything is constant. This is why he tries to reconcile dynamic reality with long-period analysis by adopting

biological concepts relating to organic forces, such as vitality and decline. More specifically, Marshall regards individual firms as units which go through a life cycle, growing and declining like trees in the forest. On these grounds, it is possible to see why he introduces the device of the representative firm to his analysis. It allows him to reconcile his analysis of the small industry, based on the tools of value theory, with that of the individual firms which go together to compose it, based on direct observation of the actual historical conditions relating to firms of different size and efficiency (see Moss 1984:508). Marshall sees a sort of gap between these two levels of analysis as he does not regard industry as simply reflecting the behaviour of an individual firm:

Thus the history of the individual firm cannot be made into the history of an industry any more than the history of an individual man can be made into the history of mankind. And yet the history of mankind is the outcome of the history of individuals and the aggregate production for a general market is the outcome of the motives which induce individual producers to expand or contract their production. It is just here that our device of a representative firm comes to our aid.

(Marshall 1961:459)

In particular, he uses this device to solve the problem of the compatibility of the phenomenon of increasing returns with the assumption of perfect competition, which has no solution in the static long-run analysis of the industry.<sup>10</sup> As Marshall puts it:

Of course we might assume that in our stationary state every business remained always of the same size... But we need not go so far as that; it will suffice to suppose that firms rise and fall, but that the 'representative' firm remains always about the same size as does the representative tree of a virgin forest and that therefore the economies resulting from its own resources are constant.<sup>11</sup>

(Marshall 1961:367)

A few key points about Marshall's approach should be stressed. First, like Keynes's concepts, Marshall's representative firm is an aggregate concept in that it is used to represent industry as a whole rather than atomistic firms.<sup>12</sup> In particular, it is used to summarize or describe market equilibrium conditions, not how the equilibrium of individual firms came about as in the standard theory of market forms. In other words, it is an *ex-post*, not an *ex-ante* concept. To understand this feature of Marshall's analysis, it is necessary to remember that both the modern notions of perfect and imperfect competition are partly the result of a long process of 'purification' of Marshall's theory and did not exist at his time.<sup>13</sup>



Second, unlike Hicks's representative agent, its Marshallian counterpart is not an ideal type. It is a fiction insofar as it is a theoretical abstraction which finds no direct counterpart in the real world—where only individuals make decisions. Yet it is also a kind of average concept which attempts to capture the prevailing characteristics of a multitude of real, heterogeneous firms, in contrast with Hicks's concept, which implies that agents are all alike. For this reason, Marshall considers market outcomes as due to the interplay between conflicting views and types of behaviour, thus anticipating Keynes's 'statistical' conception of aggregates.

However, this similarity between Keynes and Marshall is for several reasons deceptive. The first is that while Marshall follows biological metaphors, Keynes's views are consistent with Einstein's physics. As we shall see in the next sections, the latter is static even though time enters the analysis in an essential fashion. The second is that Marshall does not clearly refer to conventions as forces holding agents together. While placing the emphasis on the concept of time and expectations, he fails to refer to aggregate psychological data, such as Keynes's. A further reason is that Marshall ultimately defines the representative firm in relation to long-run equilibrium in which all the 'disturbing' factors emphasized by Keynes disappear. Thus we find ourselves back in a situation not unlike the Hicksian logic of choice.

In conclusion, it can be argued that, before Keynes, aggregates did not exist as autonomous or irreducible elements of description of the economy; either because economics was still linked to social theory—the case of the British Classical economists—or because they turned out to be a kind of auxiliary assumption within a theoretical context based on the traditional core of Neoclassical theory, namely Marshallian long-run equilibrium.

### *Implications for monetary analysis*

So far I have analysed how the use of aggregates leads Keynes to dematerialize the standard concept of economic reality in a fundamental sense: by calling into question the role of the individual agent as the substance of economic analysis. However, there is also a second sense in which one can argue that Keynes's aggregate analysis achieves dematerialization. This occurs as he shifts the focus of his economic analysis from a real exchange to a monetary economy. While the former focuses on production and consumption of physical goods, the latter is concerned, instead, with abstract value not embodied in specific goods.<sup>14</sup> The reason why Keynes makes this shift is to be found once again in his rejection of the clear-cut distinction between the primary and secondary qualities underlying the general equilibrium model, which appears in terms of the well-known dichotomy between value theory and monetary theory. While, in general equilibrium theory, physical goods and their relative prices as determined by value theory are regarded as primary qualities of the economy,

money appears as only a secondary property. It is a neutral link which fails to affect the real economic process. It is worth noting that this distinction between the primary and secondary qualities of goods is closely linked to the one concerning individuals which we analysed above. Hicks's pure logic of choice is strictly formulated in real terms, with individual agents making choices among bundles of physical goods or inputs. By stressing the need to take into account bundles of phenomenal qualities, Keynes has to override the dichotomy. Right from the outset, he thus considers the bundles of goods not in physical terms but as homogeneous wholes expressed in monetary terms.

Although, as noted by Schumpeter, the link between money and aggregates analysis is not Keynes's discovery, but runs through the whole history of monetary analysis,<sup>15</sup> he is the first major economist to treat money as a truly essential dimension of aggregate analysis. Indeed, as pointed out by Rogers and Rymes, after the *General Theory*, 'there could be no such thing, outside an imaginary or Robinson Crusoe world, as real equilibria, dependent only on preferences, technology and endowments, independent of monetary phenomena' (Rogers and Rymes 1997:304). This view accounts for two basic features of Keynes's analysis. First, money is never neutral. He stresses, for example, that he is dealing with:

an economy in which money plays a part of its own and affects motives and decisions and is, in short, one of the operative factors in the situation, so that the course of events cannot be predicted, either in the long period or in the short, without a knowledge of the behaviour of money between the first and the last. And it is this which we ought to mean when we speak of a *monetary economy*.

(Keynes 1973a:408–9; original emphasis)

Second, according to Keynes it is wrong to rely on concepts which imply a separation of 'physical' from 'monetary' features of the economy. For example, he rejects Wicksell's natural interest rate concept seeking to divorce physically determined returns from monetary returns. Indeed, as noted by Kregel, for him, 'there was no identifiable relationship between the difference between money costs and money receipts, and the conditions which characterise the production process' (1997:263).

### Aggregates as purely conceptual constructs

#### *Einstein*

Another link between fields and aggregates is that they are both purely conceptual constructs. This point is by no means a straightforward one, since the two authors put forward a rather complex view of the relationship

between concepts and reality. Einstein starts by noting that the field is not simply a useful concept, but also possesses a real aspect. As he points out when describing the origin of the new concept:

It was realized that something of great importance had happened in physics. A new reality was created, a new concept for which there was no place in the mechanical description. Slowly and by a struggle the field concept established for itself a leading place in physics and has remained one of the basic physical concepts. The electromagnetic field is, for the modern physicist, as real as the chair on which he sits.

(Einstein and Infeld 1938:158)

This quotation shows that Einstein is a realist. He believes in the existence of a physical world independent from our sensations and has a genuine concern for understanding it, as he revealed in his dispute with quantum physicists such as Max Born.<sup>16</sup> Einstein falls within the rationalist tradition according to which science is valued not just for its simplicity or practical achievements (as maintained by conventionalism or instrumentalism), but also for its informative content. More precisely, conjectures or theories may be in contrast with everyday common experience, yet also able to explain some aspects of it (e.g. Popper 1972:102). However, unlike the classical physicists, he advocates not a strong form of realism, but a modern or weak one in keeping with his view that science is not *episteme* (certain knowledge) but *doxa* (fallible knowledge) (e.g. Popper 1980:111). To clarify the point, let us start by recalling a few basic features of the mechanistic model. This model assumes that the relationship between the sensory image of the world and its physical interpretation is strong. There is, in other words, a continuity between the properties which are perceived by the senses and those which are not. Individual particles are supposed to behave like larger bodies (e.g. grains of sand or billiard balls) inasmuch as they are governed by the same laws which have been discovered for bodies in general. The apparent uniformity of a body can, therefore, be regarded as the sum of the individual uniformities of its particles. This also means that a visualization of physical phenomena — that is to say, a description of the course of phenomena that relies on visual images of particles in motion—is possible.

Einstein's model implies the opposite view. While claiming to be a realist, Einstein no longer attaches any ontological value to theory (i.e. it no longer reflects real structures) and drops the classical ideal of the description of nature altogether. The field concept actually leads him to reject the visual representation of particles in motion: 'A courageous scientific imagination was needed to realize fully that not the behaviour of bodies, but the behaviour of something between them, that is, the field, may be essential for ordering and understanding events' (Einstein and Infeld 1938:311–12).

It is not surprising, therefore, that Einstein regards the concept of field as a 'free' creation of thinking that does not look like anything which is perceived and cannot be derived inductively from experience (see Popper 1980:19).<sup>17</sup> He makes this clear when summing up his epistemological views. For him the scientist must appear:

As a *realist* insofar as he seeks to describe a world independent of the acts of perception; an *idealist* insofar as he looks upon the concepts and theories as the free inventions of the human spirit (not logically derivable from what is empirically given); as *positivist* insofar as he considers his concepts and theories justified only to the extent to which they furnish a logical representation of relations among sensory experiences.

(Einstein 1949:684; original emphasis)

### *Keynes*

These remarks might also apply to Keynes who, to a large extent, seems to share Einstein's scientific ideal. For him too, models are not just heuristic devices useful only for predictive purposes—as instrumentalists appear to imply—but might also be 'true' insofar as they tend to capture significant aspects of reality.<sup>18</sup> Keynes also accepts realism in the sense that, for him, knowledge is not an entirely subjective affair and a physical or economic reality exists independent of the knowing subject and observation tools.<sup>19</sup>

On the other hand, there also seems to be little doubt that Keynes does not subscribe to a strong form of realism, such as the one postulated by the British Classical economists whereby theory must tend to represent the essence of reality or things in themselves (suffice it to think of the labour theory of value). Yet he also departs from the kind of realism which underpins general equilibrium analysis, according to which the relationship between the visual image of the economy and its interpretation is a strong one. Just as atomism implies a kind of correspondence between the observable and unobservable levels of analysis, so the orthodox 'economic man' abstraction has a relationship with ordinary individuals and the observable market phenomena which result from their behaviour.<sup>20</sup> Indeed standard microeconomics is an attempt to provide a description of individual behaviour. Keynes holds the opposite view. While claiming to be a realist, he no longer attaches any ontological value to theory (i.e. it no longer reflects real structures). Like Einstein's field model, Keynes's aggregate model drops the classical ideal of description. In his view, it is misleading to focus on individual behaviour because a discontinuity exists between observable and unobservable levels of analysis; between conclusions which hold good for the individual and those which apply at the aggregate level. In particular, as I emphasize in the next sections, Keynes rejects the basic premiss of the descriptive analysis of individual behaviour—namely, that of a fixed level of income—which

constitutes the bridge between micro and macroeconomics in Neoclassical theory. If the problem is not to analyse individual behaviour under this assumption, but to determine the level of income itself, if we are to understand events, it is crucial to grasp not the behaviour of atomistic agents but what lies in between them—i.e. the aggregate defined on conventional grounds.

Like Einstein's fields, aggregates too can thus be regarded as 'free' creations of thinking which look nothing like what we perceive. Moreover, it seems fair to claim that they cannot be derived inductively either.<sup>21</sup> It is true that, as Hicks suggests, there is a close link between some of the concepts of the *General Theory* and the everyday practices of businessmen and government. However, it is also true that some of Keynes's definitions are completely counterintuitive and fly in the face of 'commonsense'. One instance is his view that, while saving and investment may be different for the individual, they must be regarded as identities from the standpoint of the economy as a whole.

## Simplification

### *Einstein*

A further link between Einstein and Keynes is that both aim at generality and heuristic simplicity. They share the view that models are forms of idealization and simplification of experience. According to Einstein, the field involves simplification with respect to the standard mechanistic explanation: in other words, it requires much less information. He stresses this feature in his analysis of one of the first versions of the field model (Maxwell's):

We remember how it was in mechanics. By knowing the position and velocity of a particle at one single instant, by knowing the acting forces, the whole future path of the particle could be foreseen. In Maxwell's theory, if we know the field at one instant only, we can deduce from the equations of the theory how the whole field will change in space and time. Maxwell's equations enable us to follow the history of the field, just as the mechanical equations enabled us to follow the history of material particles.

(Einstein and Infeld 1938:152)<sup>22</sup>

In other words, the field allows simplification because it no longer focuses on individual particles, but on some structural properties of the field as a whole. But this does not mean that individual particles are irrelevant. Just like the mechanistic model, the field model involves a theory of matter, which has to account for the movements of particles. The difference between the two models is that they involve two alternative methods for carrying out this task. To clarify the concept, let us use the metaphor of physicists-police as they seek

to control particles-thieves (e.g. Regge 1994:193). The first method works quite well only when there are a small and constant number of thieves in a small city. In this case, detectives follow each thief personally, describing their state and position at any given moment. This is the method which underlies the mechanistic model. The second method comes in useful when a large number of thieves are at work in a big city. In this case, it is better to place one policeman at every street corner to try to catch the thieves as they pass by. This method corresponds to the field theory and the detective's report on a particular area of the city is the value of the field at that point.

### *Keynes*

These arguments also apply to the dispute between Keynes and Neoclassical theory. As Hicks pointed out, Keynes's aggregates differ from pure theoretical concepts in that they allow simplification and practical conclusions. This is due to the fact that they require much less information than general equilibrium analysis. It is sufficient to consider, for example, that the use of aggregates allows Keynes to neutralize the problem of price theory (e.g. Mirowski 1989:345). All that matters for him is to state a few principles which hold for the economy as a whole. Not that this makes the study of individual agents irrelevant. Just like the general equilibrium model, Keynes's aggregate model involves a theory of the economy which has to account for individual behaviour. The difference between the two models is that they involve two alternative methods for carrying out this task. Just as the mechanistic model deals with individual particles, the general equilibrium model focuses on an individual agent and studies his rational behaviour under various circumstances. As we shall see in the next sections, this method applies only when we are operating in certain conditions which come close to the 'small city' situation—i.e. a stable environment.

Keynes's method is, instead, to view the economy from a particular perspective (each aggregate is like a certain street corner) and to state what must be true for the whole group of individuals falling within this perspective. This method is especially useful when a large number of agents are at work in an uncertain environment. The two methods do not normally lead to the same conclusions. In fact, one point which I endeavour to make in the next chapters is that uncertainty is bound to modify the laws of individual behaviour.

## **The whole-parts relationship**

### *Einstein*

The models of Einstein and Keynes involve a similar whole-parts relationship. As for the field, two points need to be made. First, it implies that the whole

comes before the parts, while for the mechanistic model the opposite is true. Second, the field deals with the whole-parts relationship in static terms.<sup>23</sup> This means that while this model considers the effects of each part of the matter on other parts, it seeks neither to explain the whole as being the result of the dynamic interaction of the parts and laws of composition, nor to analyse the internal constitution of the parts. Unlike atomist entities, the field thus appears simply as an emergent whole which is greater than the sum of its parts. This point is made clear by Piaget, who refers to the analogy between the field and Gestalt psychology and stresses the existence of two alternative stances, both opposed to atomism:

The first consists in simply reversing the sequence that appeared natural to those who wanted to proceed from the simple to the complex... The whole which this sort of critic of atomism posits at the outset is viewed as the outcome of some sort of emergence, vaguely conceived as a law of nature and not further analysed... When the Gestalt psychologists believed they could discern immediate wholes in primary perceptions comparable to the field effects that figure in electromagnetic theory, they did indeed remind us that a whole is not the same as a simple juxtaposition of previously available elements...but by viewing the whole as prior to its elements... they simplified the problem to such an extent as to risk bypassing all central questions—questions about the nature of a whole's laws of composition. Over and beyond the schemes of atomist association on the one hand and emergent totalities on the other, there is, however, a third, that of operational structuralism. It adopts from the start a relational perspective, according to which it is neither the elements nor a whole that comes about in a manner one knows not how, but the relations between the elements that count. In other words, the logical procedures or natural processes by which the whole is formed are primary, not the whole, which is consequent on the system's law of composition, or the elements.

(Piaget 1971:8–9)

### *Keynes and the Gestalt theory*

These remarks are quite relevant to Keynes. In his aggregate method, it is also true that the whole comes before the parts and that a static relationship exists between the parts. To see precisely what this means for Keynesian macroeconomics, Piaget's reference to Gestalt psychology is very useful insofar as the latter was one of the first applications of field theory to the social sciences. The Gestalt theory calls into question the atomism of the old associationist psychology, according to which sensations are prior psychological data. It regards sensations only as structured not structuring

elements, due to the fact that the whole as a form of organization of sensations is what is given from the beginning. In other words, for Gestalt the whole is prior with respect to the parts. In particular, it maintains the primacy of the field or structure from an heuristic viewpoint: the field must already be formed for sensations to be perceived, which do not hit the brain individually. This implies that there is an intrinsic link, as opposed to a simple juxtaposition, between the parts. Perception of the Gestalt is, moreover, immediate. This is why it is rather misleading for Gestalt theorists to search for individual elements and their laws of composition. The composition of forces takes place almost instantaneously and transformations are immediate. This view leads these theorists to regard physiological processes as equilibrium systems which tend to be simple, regular and symmetric (e.g. Geymonat 1975, VI: 34–5).

This summary of Gestalt theory allows me to clarify the claims I made above about the relationship between the whole and parts in Keynes. First, the claim that the whole comes before the parts may be taken to imply an emphasis on the macrofoundations of microeconomics: namely, the fact that the behaviour of individuals is somehow structured by the whole and not vice versa, as suggested by Hicks in his atomist perspective. Second, the claim that the relationship between the parts is static means essentially that, in contrast with atomism, an intrinsic link exists between individuals which is not subject to analysis (and, more specifically, is not the result of composition processes), but is simply 'given' in its immediacy. It is important to stress, though, that this perspective implies neither interactionism nor organicism—in contrast with the thesis put forward by many interpreters in recent Keynesian literature.

### *A critique of interactionism and organicism*

The interactionist perspective has been proposed by a number of writers (e.g. Davis 1989, 1994a; Lawson 1985a). Seen through this lens, the important part of Keynes's contribution is his focus on the interrelations among individuals. As Davis pointed out:

On this conception, interdependent decision-making contexts might be likened to what recent game-theoretic literature treats as coordination problems... Individuals making independent yet interdependent decisions are said to be capable of coordinating their separate and sometimes conflicting objectives...by arriving at a system of concordant mutual expectations of the first and higher orders regarding each other's aims and thinking...for Keynes and this more modern literature, then, a principle issue concerns the specification of those conditions that make such coordination possible.

(Davis 1994a:137)



That this relational perspective clashes with the field model, on which both the Gestalt theory and Keynes rely, is clearly pointed out by Piaget above. Let us see why. It is true that Keynes's aggregate model implies interaction between objective and subjective factors—i.e. between an individual and the objective situation he has to address (which may include other individuals). In particular, this means that the model contains neither a prior definition of the individual in terms of given preferences nor definition of the situation irrespective of the individuals on which it acts. The peculiarity of Keynes's contribution, however, is not that he focuses on this interaction, but that he takes it as the premiss of his analysis. He actually summarizes this interaction in the aggregate psychological data which underlie each aggregate. What matters to him at the analytical level is not the interaction between individuals but the one between aggregates or markets.

The organicist perspective has also been recently put forward by a large number of scholars (e.g. Brown-Collier 1985; Brown-Collier and Bausor 1988; Carabelli 1988; Dow 1991; Hillard 1992; Rotheim 1988, 1989; Winslow 1989). This perspective differs from that stressing simple interdependence or interaction because it emphasizes the existence of internal links between individual agents which impair the possibility of regarding them as autonomous, as in standard theory.<sup>24</sup> As Rotheim has pointed out:

Davis contends that interdependence, per se, does not imply an organic perspective, especially if the focus of attention is still the autonomous individual. But what distinguishes Keynes' brand of organic reasoning is that his focus on interdependence also undermines the premise of an autonomous individual...an a priori individual whose actions are always and only seen as the cause of economic outcomes and whose being is never determined by these outcomes.

(Rotheim 1989:321)

In my view, this perspective rests on a drastic simplification of Keynes's discourse. While it is true that he makes claims which emphasize the intrinsic links between individuals and that 'the whole can be different from the sum of its parts', they are not by themselves sufficient to regard his theory as being organicist. It is possible to clarify this point by referring to an important distinction which Popper (1961:77) makes in his analysis of the Gestalt theory. He points out that the term 'whole' can mean two different things: (a) the totality of aspects or features of something, and especially the relation between its parts; (b) a choice of certain features or aspects—i.e. those that give it the appearance of an organized structure rather than a chaotic whole. Wholes of type (b) can be the object of scientific studies. The Gestalt theory focuses on this type of whole, singling out one aspect of a complex reality and, only when referring to this aspect, drawing the conclusion that 'the whole is greater than the sum of its parts'. As Popper puts it:

If, with the Gestalt theorists, we consider that a melody is more than a mere collection or sequence of single musical sounds then it is *one of the aspects* of this sequence of sounds which we select for consideration. It is an aspect which may be clearly distinguished from other aspects, such as the absolute pitch of the first of these sounds, or their average absolute strength.

(Popper 1961:77; original emphasis)

Following the analogy between the *General Theory* and the Gestalt theory, it can be argued that Keynes too focuses on wholes of type (b), which means that, rather than seeking to provide an organic vision of the world, he deals only with one particular problem: namely, to determine the level of activity. To solve this problem, it is necessary to take into account only one dimension of individual behaviour for which alone it is true that there is an intrinsic link between agents.

### *The dual nature of economic agents*

To make this point clear, it is necessary to set out from an important assumption—the fact that economic agents have a dual nature—which underlies the whole history of economic thought and is also reflected in Keynes's analysis. This means that it is necessary to make a distinction between two aspects of the economic behaviour of agents. The first is the 'self-interest' underlying competitive behaviour. The second is 'coordination', the attempt made by individuals to coordinate their efforts with those of others. While the first is relatively obvious, the second has been treated in various ways by different authors, especially those belonging to the tradition of political economy. In Adam Smith, for example, we find that the coordination issue is dealt with in his *Theory of Moral Sentiments* in terms of 'sympathy', the fellow feeling, a natural and original propensity of men to cooperate with each other. Keynes, instead, refers to it when he sets out the principle of effective demand (reflecting the fact that although individual firms are competitors, they are also concerned with forming 'common' prospects, such as those embodied in short-term and long-term expectations, for the economy as a whole).<sup>25</sup>

Yet there is an important difference between the analysis of this issue by Keynes and Smith. The crucial point is that Smith did not consider coordination in purely economic terms. Since in his view economic theory was only a part of a broader social theory, he did not regard sympathy as an economic concept. He set out not from an abstract theory of economic agents, but from a theory of man in general, attempting to account for the behavioural patterns of real people within the constraints of existing institutions (e.g. Deane 1978:8–10; Gordon 1989:117–36). According to

this general theory, the fiction of the individual in isolation which underpins social contract theories such as Hobbes's has to be rejected.<sup>26</sup> Man is not a closed world: albeit autonomous and moved by self-interest, he is also a social being, existing only in relation to others. It is also possible to detect a precise hierarchy between these two dimensions of individual behaviour. As Campbell (1981: 98) pointed out, according to Smith moral sentiments give rise to social rules which direct self-interest. After the Neoclassical revolution, this approach apparently gets lost. Political economy becomes economics and the scope of economic science narrows down, focusing only on self-interest.<sup>27</sup> It is only in Keynes's *General Theory* that it comes into fashion again, albeit in a different form. For Keynes, as for the Neoclassicals, economics is no longer a part of a general theory of society, but an autonomous subject. Keynes's distinctive contribution is to translate the Smithian theme of sympathy into economic terms. The aspect of coordination comes into his theory when he talks about the need of agents to follow conventions. Much like Smith's moral sentiments, the latter play a crucial role in guiding self-interest. Indeed, conventions in Keynes's theory can be regarded as the means of achieving the goal of individual rationality.<sup>28</sup>

It is important to stress that the two aspects remain distinct. Thus, while it is true that conventions show that individuals are strictly linked and coordinate their efforts, it is also true that they do not determine individual decisions completely.<sup>29</sup> For Keynes, individual agents actually remain autonomous, as his reference to maximization and animal spirits demonstrates.<sup>30</sup> It is thus possible to argue that organicism is wrong insofar as it tends to conflate the two aspects. It talks about 'internal relations' without taking self-interest into due account, thus providing a chaotic image of the whole— similar to that of type (a) as described by Popper—rather than a determinate analysis.

### *Keynes's top-down strategy*

In defence of organicism, one might mention that Keynes focuses on the coordination aspect, leaving competition and the self-interest aspect in the background in the form of an institutional assumption (i.e. given competitive conditions). Yet, in my view, it would be wrong to conclude that such conditions are irrelevant to his analysis. This procedure merely shows the scientific character of Keynes's approach, namely the fact that he deals with wholes of type (b). The point is that for the problem in hand (the determination of the level of activity), Keynes believes that the conventional factors which underlie aggregate demand play a predominant role; in other words, firms' short-run and long-run expectations will determine the amount of production they are prepared to sell. Structural conditions and competition also matter for him, but they play a more

limited role. For example, they make sure that this expected level of production is also an equilibrium level. In this respect, it is enough to state market equilibrium conditions (for example, that prices equal costs or the equalization of the rates of return of different types of investment) without actually deriving them from models of individual firms' maximizing behaviour in specific market forms.<sup>31</sup>

It is vital to emphasize that these models are not directly relevant to the problem addressed in the *General Theory* but seek to solve an entirely different type of problem (i.e. to determine the individual firm's market share). Indeed, this is the meaning of Keynes's right dichotomy argument, according to which, one thing is 'the study of the individual industry or firm on the assumption that the aggregate quantity of employed resources is constant' and another is the theory 'of what determines output and employment as a whole' (1936:293). Keynes makes it clear that it is quite simply wrong to generalize the conclusions derived in partial equilibrium accounts of the behaviour of representative agents to the system as a whole, as Hicks and modern microfoundations approaches tend to do:

I have called my theory a *general* theory. I mean by this that I am chiefly concerned with the behaviour of the economic system as a whole, —with aggregate income, aggregate profits, aggregate output, aggregate employment, aggregate investment, aggregate saving rather than with the incomes, profits, output, employment, investment and saving of particular industries, firms or individuals. And I argue that important mistakes have been made through extending to the system as a whole conclusions which have been correctly arrived at in respect of a part of it taken in isolation.

(Keynes 1936:xxxii; original emphasis)

It is possible to draw at least two important conclusions from this. The first is that Keynes's approach is in line with the hierarchical view or top-down strategy followed in the field model and the natural sciences in general (e.g. Lawson 1997:124; Simon 1981:36). Just as the latter emphasize that, at each level, the system depends only upon a very rough, abstract, simplified characterization of the systems at the level immediately below (e.g. the safety of the bridge does not depend upon the rightness of the model of the structure of elementary particles), Keynes's aggregate model relies upon a rough representation of market structure and as such does not require any explicit modelling of the competitive behaviour of firms.

The second conclusion is that Keynes's analysis of the economy as a whole provides a perfectly coherent micro-macro analysis, as becomes apparent when we realize that, for him, 'microeconomics' is not standard micro theory, but rather a 'systemic' account of individual behaviour, based on his macrofoundations view. Standard micro theory, based on Hicks's logic of

choice, belongs to a different level of analysis which may be justified for certain purposes but certainly not for offering insights into the working of the economy as a whole.

## Conclusions

### *Einstein*

A further significant link between the field and aggregate models is that they both allow the two authors in question to draw novel conclusions with respect to orthodoxy. The field allows Einstein to draw conclusions which differ considerably from those derived from the standard mechanistic model. At least four types of differences may be emphasized. First, the field prompts him to redefine old concepts:

But it would be unjust to consider that the new field view freed science from the errors of the old theory of electric fluids or that the new theory destroys the achievements of the old. The new theory shows the merits as well as the limitations of the old theory and allows us to regain our old concepts from a higher level.

(Einstein and Infeld 1938:158)

Second, the field also allows Einstein to recognize that new theory does not start from scratch. On the contrary, old theories may still be valid within their own limits of application—i.e. as particular cases of the new one:

In our case, we still find, for example, the concept of the electric charge in Maxwell's theory, though the charge is understood only as a source of the electric field. Coulomb's law is still valid and is contained in Maxwell's equations from which it can be deduced as one of the many consequences. We can still apply the old theory, whenever facts within the region of its validity are investigated. But we may as well apply the new theory, since all the known facts are contained in the realm of its validity. To use a comparison, we should say that creating a new theory is not like destroying an old barn and erecting a skyscraper in its place. It is rather like climbing a mountain, gaining new and wider views, discovering unexpected connections between our starting-point and its rich environment. But the point from which we started out still exists and can be seen, although it appears smaller and forms a tiny part of our broad view gained by the mastery of the obstacles on our adventurous way up.

(Einstein and Infeld 1938:158–9)

Third, the field model offers new answers to old questions, such as: How can we explain change? Quite simply, Einstein does not explain change, as the atomist model does, through the spatial movement of unchanging bits of matter but through changing intensities of fields (e.g. Popper 1972:46). Fourth, the field opens the door to analysis of new phenomena which would be inexplicable within the mechanistic model: 'the concept of field reveals its importance by leading to new experimental facts' (Einstein and Infeld 1938:138). One example might be the discovery of the electromagnetic wave (ibid.: 154–5).

### *Keynes*

The same remarks can also be made about Keynes. His aggregate model allows him to draw a number of novel conclusions with respect to those of Hicks's general equilibrium model. First, it certainly implies a redefinition of standard Neoclassical concepts. For instance, while it is true that Keynes makes reference to the standard maximization assumption, in his theory it plays a different role from that in Hicks, as we shall see in the next sections. Second, the aggregate model of the *General Theory* does not start from scratch; although it claims to be more general than standard Neoclassical theory, the latter may still be valid within its own limits of application (e.g. full employment). Third, Keynes's model provides new answers to old questions. It can be argued, for example, that it explains unemployment as being due to a lack of effective demand, while Hicks's temporary equilibrium model emphasizes the role of rigid wages. Fourth, as Leontief (1947:234–5) pointed out, Keynes's aggregate model allows him to draw conclusions—for instance, the existence of involuntary unemployment—which would be impossible within the standard framework.

### **Language**

Keynes and Einstein are both aware that their models imply a new language. The field implies a different language with respect to the mechanistic model. As Einstein puts it:

The field...began as something placed between the source and the magnetic needle in order to describe the acting force. It was thought of as an 'agent' of the current, through which all action of the current was performed. But now the agent also acts as an interpreter, one who translates the laws into a simple, clear language, easily understood.

(Einstein and Infeld 1938:143)

That this is also true of Keynes's aggregates is clearly evidenced by Hicks when he underscores the contrast between the concepts of 'pure theory' and

those of the *General Theory*. While the former reflect the search for a precise or ideal language by unambiguously referring to individual behaviour, the latter are in tune with agents' actual practices and are useful in summarizing actual experience about the economic system as a whole. There seem to be good reasons for believing that this assessment is an apt one. However, although it is difficult to deny the existence of a contrast between the two types of language, to suggest that Keynes's concepts are those used directly in business life—i.e. pure and simple ordinary language—as Hicks and some followers of the 'late' Wittgenstein (e.g. Carabelli 1992:4; Coates 1990:92, 226, 1997; Davis 1994a: 95)<sup>32</sup> would have us believe, or that they defy reduction without loss of meaning to the primitives of logic and mathematics (e.g. Coates 1990:78, 94), is quite misleading.

Two points are worth stressing here. In the first place, Keynes does not criticize the use of mathematical methods as such. Although he is famous for his critique of formalism,<sup>33</sup> it can be argued that he does not give up the rules of logic and abstraction underlying all scientific discourse or the need to deal with quantitative analysis (e.g. O'Donnell 1997:146). As Bradford and Harcourt (1997:116) have pointed out, Keynes, for example, recognizes that one of the problems that his theory has to overcome is the definition of appropriate 'units of quantity' and stresses that 'our quantitative analysis must be expressed without using any quantitatively vague expressions' (Keynes 1936:39; for a comment see also Gerrard 1997:198–9; O'Donnell 1997:149). One might also posit that Keynes's concepts are not absolutely definite in ordinary language terms, that he uses expressions which are as abstract as their Neoclassical counterparts. So, despite the fact that he uses language for practical purposes and, like Marshall, conceives of economics as the study of mankind in the ordinary business of life, it is also true that in his view scientific explanation is not the same thing as the ordinary experience of man.

Which is why it seems plausible to suggest that, when Keynes criticizes the formalism of Neoclassical theory, his aim is by no means to reject the use of mathematical tools. In particular, he seems to question the basic principles of atomism and the constructive method with a view to proposing an alternative theory. This is particularly clear, for example, in his critique of the Benthamite calculations which have been introduced to standard theory to provide an atomist account of agents' behaviour under uncertainty. As I argue in the next chapter, where I analyse this critique in greater detail, Keynes's aim is not to rule out the use of probability theory and statistical tools of analysis in economics, but to put forward an alternative theory of behaviour, one which defies atomism insofar as it is based on the crucial role of conventions and the use of aggregate concepts. On these grounds, it thus appears legitimate to draw the conclusion that the true contrast between Keynes and Hicks is not so much a contrast between ideal language and ordinary language or

'commonsense' economics, but, instead, between two alternative theoretical approaches.

In the second place, although Keynes's language may seem 'vague' compared to Hicks's,<sup>34</sup> it is still of a scientific type. That 'vague' language (with respect to some 'ideal' standard) does *not per se* imply rejection of science is, for example, forcefully argued by Popper,<sup>35</sup> according to whom the scientist uses terms which he finds useful without thinking about precision or being concerned with the meaning of terms:

Science does not use definitions in order to determine the meaning of its terms, but only in order to introduce handy short-hand labels. And it does not depend on definitions; all definitions can be omitted without loss to the information imparted. It follows from this that in science, *all the terms that are really needed must be undefined terms...* a science like physics which worries hardly at all about terms and their meaning, but about facts instead, has achieved great precision. This, surely, should be taken as indicating that...the importance of the meaning of terms has been grossly exaggerated... We are always conscious that our terms are a little vague (since we have learned to use them only in practical applications) and we reach precision not by reducing their penumbra of vagueness, but rather by keeping well within it, by carefully phrasing our sentences in such a way that the possible shades of meaning of our terms do not matter. This is how we avoid quarreling about words. The view that the precision of science and scientific language depends upon the precision of its terms is certainly very plausible, but it is none the less, I believe, a mere prejudice. The precision of a language depends, rather, just upon the fact that it takes care not to burden its terms with the task of being precise.

(Popper 1966, II:18–19; original emphasis)

Popper even goes so far as to stress the importance of purely metaphysical ideas in science: 'I am inclined to think that scientific discovery is impossible without faith in ideas which are of a purely speculative kind, and sometimes even quite hazy; a faith which is completely unwarranted from the point of view of science, and which, to that extent, is "metaphysical"' (Popper 1980:38).

### Aggregates as operative tools

Another link between Keynes and Einstein is that both regard their models as operative tools. Einstein's field is the result of a new conception of matter with respect to that underlying the mechanistic model. Whereas, in this model, matter appears as an object of knowledge which is 'given out there' and must be purely mirrored or observed, for Einstein it is something to



modify through action (e.g. Geymonat 1975, VI:494). As we shall see at greater length in the following sections, this operative conception, which considers the observer as part of the subject matter, is linked to the fact that in Einstein's theory space and time are not 'natural' entities but the result of measurement and transformation of coordinates.<sup>36</sup>

A similar operative conception also underlies Keynes's theory. Aggregates too are the result of an alternative conception of reality with respect to orthodoxy. In contrast with Hicks's pure theory, Keynes conceives of the economy not as an object of analysis which is 'natural' or 'unchangeable' and must be purely mirrored or observed, but as something to modify through action. There are two points to note here. In the first place, aggregates can be easily measured and for this reason the *General Theory* is closely linked with the rise of national accounting. Second, Keynes's concepts are defined on the grounds of given aggregate propensities which are not natural entities like the data of Neoclassical theory of value (resources and preferences), but are conventional factors that can be shaped by policy-makers.<sup>37</sup>

### Concluding remarks

This chapter has dealt with one of the key features of Keynes's 'Einsteinian' macroeconomic approach as developed in the *General Theory*: namely, its anti-atomism. I have shown that, by stressing the analogies between Einstein's concept of field and Keynes's concept of aggregate, it is possible to obtain at least two important results. The first is to provide a rather coherent account of individual behaviour; one which is alternative to that underlying Hicks's 'pure theory'. Two points may be emphasized. First, it can be argued that by rejecting the clear-cut distinction between the primary quality of self-interest and the secondary quality of 'coordination' which underlies the *homo economicus* of standard theory, Keynes focuses on individuals in their ordinary business life. He stresses that in order to make decisions in the real-world economy they need to follow certain conventions. This is why he regards aggregates, rather than atomistic agents, as the elementary unit of analysis. Second, by adopting an aggregate model Keynes chooses not to neglect individuals, but to deal with them in a 'systemic' way. This means two things. One is the emphasis on the macrofoundations of individual behaviour: i.e. the fact that this behaviour is somehow influenced by the whole, rather than the other way round as in the standard approach. The other is reliance on a 'statistical' view of aggregates. What counts to understand the working of real-world markets is not how a representative agent behaves, but, for example, how many individuals hold a certain view.

The second result of the analogy between the field and the aggregate is that it has allowed me to highlight a few key properties of Keynes's model. I have noted, for example: that it should not be regarded as a descriptive

model; that it helps to simplify the analysis with respect to the general equilibrium model; that it relies on a top-down strategy; that it allows Keynes to draw novel conclusions which were impossible within the old framework; that it rests on a new language which cannot be reduced to that of Hicks's 'pure theory'; and, finally, that it involves an operative conception which underlies the rise of national accounting and state intervention in the economy.

## KEYNES'S *GENERAL THEORY* AS 'THEORY OF PRINCIPLE'

This chapter focuses on the second basic feature of Keynes's approach: namely, the view that the *General Theory* must be regarded as a kind of 'theory of principle'. This view implies the rejection of the constructive method followed by Hicks in *Value and Capital*. It should be clear that the reason why this method is in contrast with the *General Theory* is not that Keynes rejects the analytical approach developed in the western scientific tradition—i.e. the description and interpretation of any object in terms of its simplest elements—as suggested, for example, by those who stress his critique of formalism (e.g. Carabelli 1988:153, 1991:120). As already noted, Keynes accepts the basic features of this scientific tradition. Moreover, the contrast is not due to the fact that he talks about 'fallacies of composition' or argues that 'the whole is more than the sum of its parts'; as Hodgson (1988:69) pointed out, these claims are also made by many methodological individualists. The true reason for the contrast is instead that Hicks's compositive method rules out Keynes's alternative view of what constitutes the simplest elements of economic analysis. In line with Einstein's field model, Keynes places the emphasis on aggregates rather than on representative agents as irreducible realities of economics. This implies an important change with respect to Hicks's 'pure theory'. As Keynes's aggregates reflect his phenomenological view and thus imply reference to agents in their ordinary business life, the *General Theory* must be regarded as an instance of 'theory of principle' in that it does not 'construct' its object of analysis by first assembling the various parts (dealt with in logic of choice fashion) and then discussing the properties of the resulting 'whole'. Instead, it focuses on these properties from the start, and then proceeds to analyse the individual parts. This important aspect of Keynes's method can be analysed by referring once more to Einstein's relativity theory. The latter too is a kind of 'theory of principle' which turns out to be in contrast with the constructive method underlying the mechanistic model.

## The definition of the 'theory of principle' view

*Einstein*

The first important analogy between Keynes and Einstein is that both define their approach in opposition to the constructive method. Einstein rejects the two main features of the method. On the one hand, he questions its universal applicability, arguing that the presumption that all phenomena can be explained in mechanistic terms is to be rejected:

In the attempt to understand the phenomena of nature from the mechanical point of view, throughout the whole development of science up to the twentieth century, it was necessary to introduce artificial substances like electric and magnetic fluids, light corpuscles, or ether. The result was merely the concentration of difficulties in a few essential points, such as ether in the case of optical phenomena. Here all the fruitless attempts to construct an ether in some simple way, as well as the other objections, seem to indicate that the fault lies in the fundamental assumption that it is possible to explain all events in nature from a mechanical point of view. Science did not succeed in carrying out the mechanical programme convincingly, and today no physicist believes in the possibility of its fulfilment.

(Einstein and Infeld 1938:124–5)

On the other hand, as we shall see in the next sections, general relativity theory leads one to regard the simplified models used in the mechanistic approach (i.e. the inertial frames of reference) as playing only a limited role. The proper definition of relativity theory as theory of principle is provided by Einstein (1919) in his article in the *London Times*, carefully analysed by Pais as follows:

It will be helpful to recall a distinction which (Einstein) liked to make between two kinds of physical theories... Most theories, he said, are constructive, they interpret complex phenomena in terms of relatively simple propositions. An example is the kinetic theory of gases, in which the mechanical, thermal, and diffusive properties of gases are reduced to molecular interactions and motions: 'The merit of constructive theories is their comprehensiveness, adaptability, and clarity.' Then there are the theories of principle, which use the analytic rather than the synthetic method: 'Their starting points are not hypothetical constituents but empirically observed general properties of phenomena.' An example is the impossibility of a perpetual mobile in thermodynamics. '[The merit of] theories of principle [is] their logical perfection and the security of their foundation'. Then

Einstein went on to say, 'The theory of relativity is a theory of principle.'

(Pais 1982:27)

An important feature of Einstein's theory of principle approach is that, by rejecting the well-known, simple ingredients of the mechanistic recipe, it emphasizes the role of creative intuition in the discovery of universal laws. As Popper puts it:

There is no such thing as a logical method of having new ideas, or a logical reconstruction of this process. My view may be expressed, by saying that every discovery contains 'an irrational element', or 'a creative intuition' ... In a similar way Einstein speaks of the 'search for those highly universal laws...from which a picture of the world can be obtained by pure deduction. There is no logical path', he says 'leading to these...laws. They can only be reached by intuition, based upon something like intellectual love...of the objects of experience.'

(Popper 1980:32)

Einstein's emphasis on intuition is also reflected in his non-axiomatic style of mathematical reasoning (e.g. Geymonat 1975, VI:506; Kuhn 1970). He does not provide an axiomatic formulation of his theory for at least three reasons. First, he views mathematics merely as a tool. He appears to subscribe to Poincaré's view that axiomatization is not synonymous with mathematics or theory, but just one special form of it. Second, he has no wish to express a complete and perfect theoretical building, apparently aware of the intrinsic limits of the axiomatic method. As Gödel has shown, no complete consistency can ever be achieved, so it is always necessary to rely on some auxiliary assumptions not substantiated by formal reasoning. In particular, reliance on insight and intuition continues to be indispensable (see Hodgson 1988: 46–7). Third, Einstein accepts the view of a Babylonian use of mathematics as dealing with particular cases drawn from empirical evidence, in contrast with a Greek use of mathematics which is more general (see Geymonat 1975, VI:506).

### *Expectations and money as data of Keynes's analysis*

Keynes seems to be well in tune with Einstein on these issues. He too criticizes the universal applicability of the constructive method and regards the simplified models of Neoclassical theory as covering only a particular case. Let us deal here with the first point. There can be no doubting Keynes's refusal to apply the constructive method. In particular, he clearly rejects the view that phenomena like money and expectations should be accounted for in terms of formal models based on individual optimizing behaviour, as

attempted at least to some extent by Hicks in the dynamic part of *Value and Capital* and in other works of the 1930s. As for expectations, one can refer here to Keynes's critique of the treatment of expectations in probabilistic terms (suggested also by Hicks), which was meant to reconcile uncertainty with the atomistic structure of explanation in Classical theory:

At any given time facts and expectations were assumed to be given in a definite and calculable form... The calculus of probability...was supposed to be capable of reducing uncertainty to the same calculable status as that of certainty itself...I accuse the classical economic theory of being itself one of these pretty, polite techniques which tries to deal with the present by abstracting from the fact that we know very little about the future.

(Keynes 1937a:112–15)

Moreover, in a letter to Shove, Keynes seems to rule out a priori the possibility of formalizing the expectations' formation mechanism:

You ought not to feel inhibited by a difficulty in making the solution precise. It may be that a part of the error in the classical analysis is due to that attempt. As soon as one is dealing with the influence of expectations and of transitory experience, one is, in the nature of things, outside the realm of the formally exact.

(Keynes 1973b:2)

This aspect of Keynes's approach has been underlined especially by Post-Keynesian authors such as Shackle and Davidson, who, for example, notices:

Unlike a general equilibrium system which is closed once tastes and endowments are given, Keynes's dynamic model is open with constantly changing and unpredictable expectations driving the system onward through calendar time. Economists...are stuck with an open system...*economists cannot use the mechanistic approach to expectation formation*; with the passage of time, not only can expectations change, but the manner in which they are formed can change.

(Davidson 1978:387; emphasis added)<sup>1</sup>

As for money, Keynes's critique of constructive method is clearly stated when he argues that Classical theory cannot accommodate the store of wealth function of money:

Money...serves two principal purposes...it facilitates exchanges... In the second place, it is a store of wealth. So we are told, without a smile

on the face. But in the world of the classical economy, what an insane use to which to put it! For it is a recognised characteristic of money as a store of wealth that it is barren... Why should anyone outside a lunatic asylum wish to use money as a store of wealth?

(Keynes 1937a:115–16)

According to Keynes, the failure of Classical theory to answer this question is not difficult to explain: the actual possession of money is inconsistent with the basic premisses of this theory. The point is that agents hold money rather than buy goods because uncertainty makes it impossible for them to follow the standard rules of maximizing behaviour or even the ordinary conventions. As he puts it, ‘money as a store of wealth is a barometer of the degree of our distrust of our own calculations and conventions concerning the future’ (Keynes 1937a:116).

Keynes’s unwillingness to analyse money in terms of optimizing behaviour has been well stressed by Shackle in his comment on Hicks’s (1935) suggestion that the theory of money should be marginalized (which we shall analyse at greater length in Chapter 6):

Hicks’s ‘Suggestion’ is to marginalize the theory of money. But is that Keynes’s suggestion? If a man feels sure that the prices of bonds and shares are going to fall fast and far, there will be no margin at which he will be happy with his portfolio, short of selling the whole of it for money.

(Shackle 1967:223)

At this point it is necessary to ask the question: if money and expectations cannot be subject to the constructive method, what is the proper way of dealing with them? One might argue that Keynes’s suggestion is to take these phenomena as primary data instead. As Howitt among others has noted, Keynes takes the expectations schemes adopted by real-world agents as given: ‘Keynes...used his own insights and experience of actual behaviour in financial markets to characterize the way people form beliefs’ (Howitt 1997:250). He is consistent with an approach that treats ‘customs, conventions, institutions and forecasting schemes not as wild animals to be captured in a rational expectations model, but as mere state variables whose initial conditions are given by history’ (ibid.: 241). Likewise, as Colander has noted, Keynes should agree with those who argue that money is a social convention which enters the economy not as ‘a component of individual utility, or even aggregate production functions’, but as ‘part of the macrofoundations structure of the economic system, and must be modelled as such’ (Colander 1996a:62).

That Keynes takes money and expectations as given is the reason why it makes sense to regard his theory as a ‘theory of principle’. This does not

mean of course that he refuses to analyse these phenomena in terms of individual behaviour; quite the opposite. Keynes actually provides an account of individual motives for holding money and for forming expectations about the future, which is, arguably, the most famous part of the *General Theory*. Yet there is an important difference between Keynes and the standard approach to this issue, often overlooked in the microfoundations literature (a tragic mistake of such literature being that it regards any discussion of individual behaviour as implying reference to standard choice theory). According to Keynes, analysis of individual behaviour must be carried out within a systemic or macrofoundations perspective. The emphasis should be placed on those elements which affect the behaviour of individuals without being under their control. Such elements, which we call 'systemic', are crucial for our understanding of the role of money and expectations and explain why they must be taken as given in the analysis. As we shall see below, one key systemic element is uncertainty, which is due to inescapable features of real-world economies, such as the lack of future markets.

### *Keynes's definition*

As for the definition of *General Theory* as an instance of 'theory of principle' in contrast with Hicks's constructive method, Keynes makes the following, extremely effective statement:

I have called my theory a *general* theory. I mean by this that I am chiefly concerned with the behaviour of the economic system as a whole—with aggregate income, aggregate profits, aggregate output, aggregate employment, aggregate investment, aggregate saving rather than with the incomes, profits, output, employment, investment and saving of particular industries, firms or individuals. And I argue that important mistakes have been made through extending to the system as a whole conclusions which have been correctly arrived at in respect of a part of it taken in isolation.

(Keynes 1936:xxxii; original emphasis)

In this passage Keynes clearly states that his aggregates must be regarded as original elements, not logically derived from the basic components of standard theory. That this approach is actually in contrast with the constructive method endorsed by Hicks has not been totally neglected in the literature. Boland, for instance, stresses that, 'there are two ways to go in the direction leading to macroeconomics... One is the *direct* aggregated demand and supply analysis which Keynes introduced.' The other is the Hicksian analysis, according to which, 'the market, by textbook definition of the market functions, is an aggregation of the planned demand and supplies' (Boland 1982:84; emphasis added).<sup>2</sup>



*The role of intuition*

Another feature that Keynes's 'theory of principle' approach shares with Einstein is the rejection of the fixed, simple rules of axiomatic model building. On the one hand, as Dow (1985:14–15) has suggested, he too adopts the Babylonian mode of thought; while not disregarding logic, Keynes is suspicious of long chains of deductions and usually starts with direct reference to contemporary problems. On the other, he places the emphasis on the role of intuition in analysis as a powerful means of deducing likely truth (e.g. O'Donnell 1989:209–12)<sup>3</sup> and exercising the art of persuasion:

It is, I think, a further illustration of the appalling state of scholasticism into which the minds of so many economists have got which allow...them to take leave of their intuitions altogether. Yet in writing economics one is not writing either a mathematical proof or a legal document. One is trying to arouse and appeal to the reader's intuitions; and if he has worked himself into a state where he has none, he is helpless.

(Keynes 1979:150–1)

**The rejection of absolute time and space**

*Einstein*

A second analogy between the theories of Keynes and Einstein concerns the rejection of the notion of absolute time and space. This feature has obviously been recognized as the core of relativity theory. To formulate the latter, Einstein relies on an analytical method which leads to the elimination of those absolute concepts—such as the ones which underlie the mechanistic model—that are independent from any observation and verification and regarded as the ultimate truths. As noted for instance by Reichenbach and Petzold, Einstein's relativity theory is not aprioristic: that is, it does not, rely on axioms or a priori concepts. It can, instead, be regarded as a phenomenistic theory of motion, closer to sense data than Newton's (see Geymonat 1975, VI:495). Einstein makes this plain in his analysis of the notion of 'simultaneous facts':

In classical physics, we had one clock, one time flow, for all observers in all c.s. (coordinate systems). Time, and therefore, such words as 'simultaneously', 'sooner', 'later', had an absolute meaning independent of any c.s. Two events happening at the same time in one c.s. happened necessarily simultaneously in all other c.s.

(Einstein and Infeld 1938:188)

In his special relativity theory of 1905, Einstein starts his critique of this notion of absolute simultaneity by pointing out that in order to talk about 'simultaneous facts' one needs a method of observing the simultaneous occurrence thereof. The problem is that knowledge of distant facts cannot, as classical physics implies, be obtained instantaneously—there being no known method of signalling faster than light! It is here that Einstein makes his crucial departure from the mechanistic model and demonstrates the significance of his claim that relativity theory is a 'theory of principle'. Time is not a secondary feature that can be added at a secondary stage, but an entity that enters the picture from the very beginning. To show this, he makes two new key assumptions. The first is that the speed of light has the same value relative to any inertial frame of reference and in all directions. As March pointed out (1978:107–9), Einstein's statement on the constant speed of light was not totally new. Poincaré, for example, had also reached the same conclusion. Einstein's crucial innovation was to use the argument as the starting point of his analysis, not as its conclusion. The second assumption is that the true laws of nature are invariant in different inertial frames of references. Basing his argument on such laws, Einstein reaches the conclusion that 'two events which are simultaneous in one c.s., may not be simultaneous in another c.s.' (Einstein and Infeld 1938:188). It is thus necessary to speak of the relativity of simultaneity. In general it can be argued that:

Whenever two observers are associated with two distinct inertial frames of reference in relative motion to each other, their determinations of time intervals and of distances between events will disagree systematically, without one being 'right' and the other 'wrong' ...if they compare their respective clocks, each will find that his own clock will be faster than the other; if they compare their respective measuring rods (in the direction of mutual motion), each will find the other's rod foreshortened.

(Bergmann 1993:502)

Einstein makes it plain that relativity theory always applies but only at 'high speeds' has a substantial effect (i.e. a deviation from Newtonian theory). In particular, as the relative speed of one inertial frame of reference relative to another approaches the velocity of light effects such as contracting rods and slowing clocks will increase indefinitely. At 'low speeds', instead, the laws of the standard mechanistic model still apply. According to Einstein, this shows that his theory is more general than the standard theory, and that classical mechanics is a limiting case of his relativistic mechanics:

This more general theory does not contradict...classical mechanics. On the contrary, we regain the old concepts as a limiting case when the

velocities are small. From the point of view of the new theory it is clear in which cases classical physics is valid and wherein its limitations lie. It would be just as ridiculous to apply the theory of relativity to the motion of cars, ships, and trains as to use a calculating machine where a multiplication table would be sufficient.

(Einstein and Infeld 1938:202)

### *Keynes's rejection of absolute concepts*

These features of relativity theory find a clearcut counterpart in the *General Theory*. Like Einstein, Keynes too speaks from a phenomenological standpoint, according to which analysis should seek to erase those absolute concepts—such as those underlying the Neoclassical model—that are independent from any observation and verification and regarded as ultimate truths. Although Keynes often stresses that a priori thought is necessary for the establishing of generalizations (e.g. the psychological law of consumption), his theory does not rely on axioms or a priori concepts, in the sense of absolutely valid concepts, like Newtonian space and time. Like Einstein, Keynes endorses a modern form of rationalism, which appears to be quite similar to the one proposed by Popper, according to whom there are no a priori valid concepts, hence knowledge must be regarded as *doxa* (conjectural) as opposed to *episteme* (certain), insofar as it is fallible and open to correction in the light of experience.<sup>4</sup>

One of the concepts of Neoclassical theory which Keynes seeks to eliminate is that of 'absolute' time. There is a striking analogy between Keynes and Einstein on this particular point. Like Einstein, Keynes sets out from empirical evidence which appears to be in contrast with standard theory. He implicitly relies on an assumption which plays the same role as the constant speed of light in relativity theory. In line with Einstein, who argues that this constant undermines the possibility of instantaneous speed allowed by the mechanistic model, Keynes seems to suggest (although he does not explicitly say so) that there is one constant feature of the real-world economy that sets a limit on the realization of one of the key postulates of the basic general equilibrium model: namely, the possibility of making instantaneous and simultaneous decisions and transactions.<sup>5</sup> This feature is represented by the existence of a finite number of futures markets: i.e the fact that in modern capitalist economies 'futures markets are rare, and contingent futures markets even rarer' (Tobin 1997:8).

A few points need to be emphasized. First, the assumption of the lack of markets is logically connected by Keynes to the fact that the modern economy is a monetary economy. To grasp this point, it is sufficient to recall the distinction between a monetary and a barter economy. It is not difficult to see that a barter economy is equivalent to the assumption that all markets exist. As noted by Pasinetti, for example, in this economy, 'any decision to

save today is *ipso facto* a decision to consume a specific good at a specific later date' (Pasinetti 1997b:201). In a monetary economy:

Decisions to save and decisions to invest are carried out independently, by different people. Any decision to save is simply a decision *not to spend*, with the desire to hold a corresponding amount of abstract purchasing power to be exerted in the future, without, however, any commitment either to demand any specific commodity or to demand it at any specific time.

(Pasinetti 1997b:201–2)

Second, the lack of futures markets, together with the existence of money, is at the root of the principle of effective demand. In particular, according to Keynes, the fact that decisions not to spend on goods and services now are not coupled with any definite orders for future or contingent deliveries of goods and services has negative implications for the level of aggregate demand:

An act of individual saving means—so to speak—a decision not to have dinner today. But it does *not* necessitate a decision to have dinner or to buy a pair of boots a week hence or a year hence or to consume any specified thing at any specified date. Thus it depresses the business of preparing to-day's dinner without stimulating the business of making ready for some future act of consumption. It is not a substitution of future consumption-demand for present consumption-demand, it is a net diminution of such demand.

(Keynes 1936:210; original emphasis)

Third, the lack of futures markets also accounts for the crucial role that time plays in Keynes's economics:

Time usually elapses, however, and sometimes much time—between the incurring of costs by the producer (with the consumer in view) and the purchase of the output by the ultimate consumer. Meanwhile the entrepreneur...has to form the best expectations he can as to what the consumers will be prepared to pay when he is ready to supply them...after the elapse of what may be a lengthy period; and he has no choice but to be guided by these expectations, if he is to produce at all by processes which occupy time.

(Keynes 1936:46)

Indeed, it is precisely because there are only a limited number of futures markets in the real-world economy that individuals are compelled to face uncertainty, form expectations and make decisions and transactions in a

sequential fashion, at discrete intervals of time. It should be noted that the fact that production takes time is not significant *per se*; if there were enough futures markets, one firm might, for example, sell all future production in advance. In other words, it is because Keynes set out from the assumption of a lack of futures markets that time and expectations are primary features of his analysis and that the *General Theory* can actually be regarded as a ‘theory of principle’.

### *The deformation of economic tools*

The analogy between Keynes and Einstein can be pushed even further. I have shown that the constant speed of light implies a deformation of physical measurement tools (watches and rulers), and thus leads Einstein to make—for the first time in physics—a critical assessment of such tools, as well as the role of the observer and his possibilities. In my view, a similar kind of reasoning holds for the lack of futures markets. This implies a deformation in the economic measurement or calculation tools and thus prompts Keynes to make a critical assessment of these tools as well as the behaviour of economic agents. This is the crucial point at which he departs from Hicks. We have already seen that the temporary equilibrium method of *Value and Capital*, like the *General Theory*, implies a lack of futures markets. However, for Hicks this feature is a conclusion of the analysis which comes only after investigation of the implications of his logic of choice. Not surprisingly, therefore, while allowing for the possibility of intertemporal disequilibrium due to the fact that individuals’ expectations are not coordinated, it leaves the analysis of equilibrium during the week and the standard notion of rational behaviour essentially unaffected, even though agents have a more limited planning horizon than the ‘futures economy’, where there is a complete set of futures markets. This is a bit like introducing the constant speed of light in classical physics and assuming that it does not affect the basic postulates of the theory.

On the contrary, for Keynes the lack of futures markets is a crucial assumption, the starting point of his analysis, just like the constant speed of light for Einstein. Its one crucial consequence is the alteration of agents’ computational capabilities in the face of uncertainty. In particular, Keynes manages to show how the ‘internal’ limitations on individual behaviour in a real-world context actually arise and lead to a revision of the standard conception of rational behaviour. Unlike Hicks, he points out that uncertainty cannot be reduced to risk and affects the capability of agents to make the kind of calculations—such as maximization (e.g. Benthamite calculations)—demanded by the canons of rational behaviour. To grasp this point, it is sufficient to consider the comparison between Einstein and Keynes once more. Just as Einstein asserts that temporal and physical distances are entities which are not absolute but relative to each frame of

reference (there is no absolute frame of reference), Keynes suggests that agents' perception of time is relative to each context or state of the environment. In particular, while in the logic of choice agents' decisions have a fixed temporal structure in different contexts due to the simultaneous nature of decision-making, for Keynes instead this structure may change due to agents' variable perception of time in relation to the state of uncertainty. Time for agents living in a very uncertain environment runs faster than for agents living in conditions of certainty. Different types of behaviour may then arise. Just like Einstein's 'high speeds', high uncertainty in a rapidly changing situation may 'shorten' the horizon over which individuals form expectations. In particular, Keynes stresses that, under these conditions, agents do not rely on Benthamite calculations and are compelled to adopt certain conventional rules which help them to make decisions. The 'deformation' of economic behaviour which occurs in these conditions is well captured by Howitt, who regards it as implying a departure from what he calls the Walrasian code:

The implications of uncertainty...involve the very foundations of decision-making. People are simply not in a position to act according to conventional decision theory if they cannot attach numerical probabilities to all possible consequences of their decisions. As Keynes argued, they tend to cope by falling back on custom and convention.

(Howitt 1997:240–1)

The picture is quite different when the system works at 'low speeds', i.e. when uncertainty is low in a stable situation. In this case, which can be regarded as normal, for example, when the income level can be taken as given or a pure allocation problem is addressed, agents' behaviour may be accounted for by Neoclassical theory. Keynes's theory is not relevant, just as Einstein's theory is not relevant for the analysis of the motion of trains and ships.

### *Keynes's modelling strategy*

Keynes's 'relativistic' stance has a few major implications. The first is that it accounts for his departure from standard model building, a fact which would otherwise be difficult to explain. The crucial point Keynes seems to be making is that, when historical time characterized by genuine uncertainty is considered, individual behaviour cannot be defined on a priori grounds as individuals have a different perception of time. As a consequence, concepts relating to individuals must have observable foundations; the standard notion of 'economic man' based on private preferences and subjective data (which can be known only by introspection) is thus replaced by reference to actual patterns of behaviour or conventional rules followed by agents.

Two points need to be stressed. First, it is important not to confuse Keynes's relativism with the view that no formal or determinate analysis is possible. While it is true that conventions may vary from time to time and from country to country, Keynes does not ultimately suggest that theory should be replaced by an accurate description of actual historical conditions. His true contribution is that he shows us how to account for historically contingent elements such as conventions in macroeconomic theory. He does so not by describing actual conventions, but by stressing that they give rise to the aggregate psychological data which underlie the key aggregates of his theory. On the grounds of these data, a determinate analysis of the relationships between aggregates can be built.

Second, Keynes's relativism does not imply acceptance of the view that agents' behaviour is irrational. By emphasizing the dual nature of economic agents, I have already pointed out that he regards agents' reliance on conventions as necessary for the pursuit of self-interest—i.e. to make rational decisions possible. His relativistic view accounts, instead, for another, more significant departure from standard theory. Rather than relying, as Hicks does, on maximization as a simple, universal canon of rationality, Keynes ultimately holds a pluralist view, which allows for different forms of rationality. His concern for the relativity of time and situations prompts him to regard maximization only as a possible criterion of individual rationality, one which makes sense under precise circumstances. In particular, he seems to believe that, while it is useful to account for firms' behaviour inasmuch as they are exposed to market competition, it is not useful in the case of workers, consumers or professional investors on financial markets. Although he still regards the latter as attempting to do the best they can, in his view their behaviour is based on other criteria.

This point is stressed by Harrod (1937) in his review of the *General Theory*, where he notes, for instance, that Keynes's conclusions on the behaviour of the labour supply 'are vitally dependent on his observation of real conditions' (Harrod 1937:598). A similar remark is also made by Leontief (1936b, 1947), who stresses that instead of relying on the set of unifying principles of Classical theory, Keynes makes the phenomena studied objects of separate postulates. He makes one separate assumption about the labour supply and another on the relation between an individual's income and his propensity to consume. He does not derive both from the same set of general propositions. Leontief (1947:246) points out that, in this way: 'Keynes imparts to his system the freedom to deal with assumed situations which from the point of view of the orthodox approach are clearly logically impossible and theoretically unmanageable.' He is thus able to state the possibility of underemployment equilibrium and that the labour supply is a function of the money wage rather than the real wage. On these grounds, it is possible to see why Keynes regards aggregates as the elementary unit of macroeconomics. Just as in Einstein's model, each type of field is defined

with respect to a given characteristic, so in Keynes's theory each aggregate relies on a different principle of behaviour.

Third, even when assuming that firms maximize profits, Keynes does not conceive of this assumption in the same way as Neoclassical theory. Whereas the latter regards maximization as an axiom, Keynes views it as a derived assumption. In view of his emphasis on the dual nature of economic agents, maximization makes sense only within a particular context or frame of reference; it is, in short, a kind of black box whose actual contents cannot be decided on a priori grounds. Rather than implying a definite, fixed pattern of behaviour as in the standard approach, it may be consistent with different types of phenomic rules of behaviour followed by agents in the various circumstances. These rules may be in line with standard principles in stable situations, but may turn out to be very different in uncertain conditions, when it is necessary to simplify the task of making the necessary calculations.

This point has been made by Simon in his discussion of the notion of bounded or procedural rationality in contrast with the standard notion of substantive rationality, such as the one which underpins Hicks's logic of choice:

We can expect substantive rationality only in situations that are sufficiently simple as to be transparent... In all other situations, we must expect that the mind will use such imperfect information as it has, will simplify and represent the situation as it can, and will make such calculations as are within its powers.

(Simon 1976:80–1; see also 1958:160–2)

It must be noted that it is not simply the maximizing/satisfying dichotomy which is at issue here. According to Simon, maximizing behaviour itself can also be in tune with procedural rationality, provided that agents adopt convenient strategies to simplify the calculus. He points out, for example, that the 'demands of computability led to two kinds of deviation from classical optimization: simplification of the model to make computation of an "optimum" feasible; or, alternatively, searching for satisfactory, rather than optimal choices' (Simon 1976:77).<sup>6</sup>

Simon's view allows me to specify my claim that conventions in Keynes play an instrumental role in individual rationality. In particular, it can be argued that conventions do not rule out maximization, but make it feasible by simplifying the calculus. In other words, the fact that the individual relies on conventions to reach a judgement places a constraint on the kind of models to be used in macroeconomics, not on the possibility of talking about maximization in a macro context. Thus, while Keynes rules out the representative agent model, his views are consistent with the claim that firms as a whole maximize in the context of his aggregate model. However, when the shift is made from one model to the other, the meaning of the



maximization assumption undergoes a crucial change. In particular, it becomes appropriate to describe market equilibrium (in line with a Marshallian *ex-post* type of analysis), rather than the way the individual firm achieves equilibrium or responds to changes in the data (in line with a Walrasian *ex-ante* approach).

### *Keynes's relativistic stance and money*

Another implication of Keynes's relativistic stance is that it helps us to understand why his analysis sets out directly from aggregates expressed in monetary form, and hence why he bridges the traditional gap between monetary and value theory. We have already noted that the relativity of time concept favours the shift from an a priori view of the individual to a more operational view. Now at least two considerations are in order. First, this view naturally lends support to the use of aggregates expressed in monetary form. On the one hand, aggregates can be measured, and statistics are obviously much more easily available for aggregates than for individual subjective data. On the other, it is true that the measurability of aggregates is linked to their expression in monetary form as money converts heterogeneous bundles of goods into homogeneous value substances, and real aggregate variables do not exist at all (e.g. Brown-Collier and Bausor 1988).

Second, for Keynes money is an 'operational' device in that it helps people to act in conditions of uncertainty. As noted, for example, by Davidson (1989: 15), the uses of money as a unit of account and standard of deferred payments are institutions through which people cope with uncertainty without having to rely upon imperfect predictions of the future.<sup>7</sup>

### Keynes's static model

#### *Einstein*

A third analogy between Einstein and Keynes concerns the static character of their approach. For Einstein, an important consequence of relativity theory is four-dimensional space-time. The idea Einstein borrows from the Russian mathematician Minkowski is that space and time should be thought of as comprising a single four-dimensional continuum, space-time. Events, localized in both space and time, are the natural four-dimensional analogues of points in ordinary three-dimensional geometry. It is important to understand the implications of this feature of Einstein's theory. On the one hand, it is true that, as Popper pointed out, by relying on four-dimensional space-time this theory appears to be static and deterministic:

In a sense no change occurs in Einstein's four-dimensional block-universe. Everything is there just as it is, in its four-dimensional *locus*;

change becomes a kind of 'apparent' change; it is 'only' the observer who as it were glides along his world-line and becomes successively conscious of the different loci along this world-line; that is, of his spatio-temporal surroundings.

(Popper 1972:80)

Einstein himself explains why relativity theory implies a rational preference for static analysis:

The world of events can be described dynamically by a picture changing in time and thrown on to the background of the three-dimensional space. But it can also be described by a static picture thrown on to the background of a four-dimensional time-space continuum. From the point of view of classical physics the two pictures, the dynamic and the static, are equivalent. But from the point of view of the relativity theory the static picture is the more convenient and the more objective. Even in the relativity theory we can still use the dynamic picture if we prefer it. But we must remember that this division into time and space has no objective meaning since time is no longer 'absolute'.

(Einstein and Infeld 1938:220)

On the other hand, however, space-time theory implies that space and time are no longer independent entities as they were in classical physics. This does not mean that time is absent but that, in line with the 'theory of principle' approach, it comes into play as an 'essential' feature of the model and prompts one to question the standard distinction between primary and secondary qualities. Nor does Einstein rule out the analysis of change. However, he does not, like the atomist model, explain it by the spatial movement of unchanging bits of matter, but rather by changing intensities of fields (e.g. Popper 1972:146).

### *Keynes*

These aspects of relativity theory find a counterpart in Keynes's theory. While, in the second part of *Value and Capital*, Hicks offers a dynamic description of the economy based on a sequence of temporary equilibria, Keynes relies instead on static analysis. Why he does this should be immediately clear. It can be argued that Hicks's dynamic analysis is linked to the conception of time as absolute, which implies that time and the situation which agents address are independent entities, just like space and time in classical physics (according to the latter, the four-dimensional continuum in which events are described in each frame of reference can be partitioned into the three-dimensional continuum of space and the one-

dimensional continuum of time). This means that, while Hicks assumes that the economic system can be described in terms of a sequence of static pictures changing at discrete intervals of time, these pictures are not themselves affected by time in an essential fashion.<sup>8</sup> This is why he can claim that the temporary equilibrium method preserves the basic lines of the pure logic of choice.

Hicks's approach is inconsistent with Keynes's. As noted by many authors, one of the key features of the latter is to reconcile static and dynamic analysis. In particular, while using the tools of static equilibrium analysis, Keynes actually manages to provide a 'dynamic theory driven by the impact of the future upon present decisions' (Kregel 1997:262). How is this reconciliation possible? The point is that, the *General Theory*, like relativity theory, is formally static because it assumes for the economy something like the space/ temporal continuum in physics; namely, that the situation and time are not separate entities. This means that time is a structural or essential element of the analysis which must be accounted for from the beginning, in line with Keynes's phenomenological view and his rejection of a clear-cut distinction between primary and secondary qualities.<sup>9</sup> The reason why, for Keynes as for Einstein, a dynamic description is to be ruled out is that time is not homogeneous or absolute, so that the comparison between pictures taken at different periods of time has no objective value.

This view accounts for key features of Keynes's theory, such as his focus on equilibrium at a point in time as opposed to long-period equilibrium, his misgivings about time-series analysis in econometrics or the emphasis he places on expectations as autonomous elements. This latter is a crucial difference from the temporary equilibrium method. Three remarks are in order. First, while it is true that this method is innovative insofar as it takes into account secondary qualities, such as time and expectations, which were deemed to be out of place in the old deterministic version of Neoclassical theory, it cannot however be regarded as similar to Keynes's. The point is that Hicks does not really overcome the clear-cut distinction between primary and secondary qualities underlying the deterministic model. It is sufficient to note that he is compelled by his constructive approach to regard expectations as individual data, which must be added only in a second stage to the other data of the logic of choice, such as preferences and resources, leaving them quite unaffected. By contrast, in Keynes's theory of principle approach, expectations are the truly original element of the analysis.

Second, it is only by introducing expectations as aggregate data that Keynes manages to consider them as autonomous and essential aspects of his model. The point is that Keynes's phenomenological model does not imply any reference to individual preferences and expectations as separate arguments of its functions; the latter are formulated directly in aggregate terms instead of being derived as the summation of individual functions

because of the role played by the conventional factors. This approach thus solves the problem of the coexistence of the two types of data or qualities since it does not allow for two different stages; i.e. the logic of choice or microeconomics on the one hand, and dynamic theory or macroeconomics on the other. Individuals do of course have preferences, but the distinct problem of allocating resources for which specification of these preferences is necessary does not arise in Keynes's theory. For the kind of problems which Keynes deals with—namely, the determination of the level of activity—it is enough to focus, as he does, on aggregates defined in relation to a given point in time.

Third, the fact that time for Keynes is not an 'external' dimension merely to be 'added' to the standard dimensions also explains why he does not need to develop a formal dynamic analysis to account for change. Instead of explaining change by focusing on a sequence of states of the economy at different periods of time, as Hicks does, he considers the changing intensities in the way conventional factors operate and affect individual behaviour at a single point in time.

### Generality of Keynes's theory

#### *Einstein*

A fourth analogy between Keynes and Einstein concerns the generality of their theories. At the beginning of his analysis, Einstein argues that it is necessary to specify the frame of reference (or coordinate system, c.s.) in which physical laws hold. In particular, the laws of the standard mechanistic model do not hold universally, but only with respect to certain 'good' frames of reference—i.e. so-called inertial frames of reference:

We shall make the slightly incorrect assumption that in every c.s. rigidly connected with the earth the laws of classical mechanics are valid.... Let us begin with a simple example. A c.s. moves uniformly, relative to our 'good' c.s., that is, one in which the laws of mechanics are valid. For instance, an ideal train or a ship sailing with delightful smoothness along a straight line and with a never-changing speed. We know from everyday experience that both systems will be 'good', that physical experiments performed in a uniformly moving train or ship will give exactly the same results as on the earth. But, if the train stops, or accelerates abruptly, or if the sea is rough, strange things happen. In the train, the trunks fall off the luggage racks; on the ship, tables and chairs are thrown about and the passengers become seasick. From the physical point of view this simply means that the laws of mechanics cannot be applied to these c.s., that they are 'bad' c.s.

(Einstein and Infeld 1938:164–5)

General relativity theory attempts, instead, to formulate laws of physics which apply to any frame of reference, not just to inertial frames as was the case with the special theory and the standard mechanistic model: 'Can we formulate physical laws so that they are valid for all c.s., not only those moving uniformly, but also those moving quite arbitrarily, relative to each other? ... This is indeed possible!' (Einstein and Infeld 1938:224).

According to Einstein, there are at least two reasons for freeing physics from its dependence upon inertial frames of reference. The first is that they are mere fictions. In his view, a representative classical physicist would say that an inertial frame is 'merely a useful fiction and I have no idea how to realize it. If I could only get far away from all material bodies and free myself from all external influences, my c.s. would then be inertial.' (1938: 221). It is important to see why Einstein rejects 'fictions'. At first sight, his might appear a somewhat incoherent stance since he too accepts the use of fictions, given his acceptance of a weak form of realism involving the lack of correspondence between concepts and reality, as well as his concern for the heuristic simplicity and generality of theories. However, for Einstein there is one crucial difference between his fictions and those used in the mechanistic model; it concerns the kind of empirical assumptions which underlie the two models. Whereas the mechanistic model implies reference to certain primary qualities of atoms, for Einstein the relevant empirical assumption is the finite speed of light, which is a kind of systemic constraint on the behaviour of bodies and implies a revision of the standard laws of classical mechanics.

The second reason for rejecting reliance on inertial frames of reference is that they lead classical physics to make a clear-cut distinction between 'good' and 'bad' frames of reference, according to which either we have a 'good' one or a 'bad', 'forbidden' one in absolute motion where Euclidean geometry and standard mechanical laws no longer apply. According to Einstein, the problem with this distinction is that it justifies attempts to save Euclidean geometry and classical physics by invoking imperfections which impair the possibility of forming a simple and coherent picture of reality:

To save the Euclidean geometry, we should accuse the objects of not being rigid, of not exactly corresponding to those of Euclidean geometry. We should try to find a better representation of bodies behaving in the way expected by Euclidean geometry. If, however, we should not succeed in combining Euclidean geometry and physics into a simple and consistent picture, we should have to give up the idea of our space being Euclidean and seek a more convincing picture of reality under more general assumptions about the geometrical character of our space.

(Einstein and Infeld 1938:239)

Einstein counters that all frames of reference are to be treated on a par, that there is no privileged reference system. This implies that the notion of

absolute motion must be dropped altogether, and that only relative motion is allowed for. He does not deny the existence of frames of reference in which Euclidean geometry and the standard laws do not apply. However, in his view these frames are generated not by absolute motion but by the gravitational field:

We can eliminate 'absolute' motion...by a gravitational field. But then there is nothing absolute in the non-uniform motion. The gravitational field is able to wipe it out completely. The ghosts of absolute motion and inertial c.s. can be expelled from physics and a new relativistic physics built...the problem of the general relativity theory is closely connected with that of gravitation.

(Einstein and Infeld 1938:234–5)

One of Einstein's key assertions is that his approach to the gravitation problem is more general than Newton's. Newton laws are not wrong but cover only a particular case (i.e. when gravitational force is weak):

It is clear that the solution of the gravitational problem in the general theory of relativity must differ from the Newtonian one. The laws of gravitation must, just as all laws of nature, be formulated for all possible c.s., whereas the laws of classical mechanics, as formulated by Newton, are valid only in inertial c.s.

(Einstein and Infeld 1938:235)

Einstein stresses the link between his general solution to the gravitation problem and non-Euclidean geometry: 'The gravitation field, being directed toward the outside of the disc, deforms any rigid rods and changes the rhythm of my clocks. The gravitation field, non-Euclidean geometry, clocks with different rhythms are, for me, all closely connected' (1938:244).

### *Keynes's rejection of steady state analysis*

Keynes's views are strikingly similar to Einstein's. In particular, Keynes too stresses the need to specify the context in which a theory holds and regards this specification as an important step towards an effective critique of the dominant orthodoxy. Keynes's critique of (contemporary) Neoclassical theory is that its propositions do not hold generally or universally, but only with respect to certain 'good' states of the economy, such as the long-period equilibrium or steady state, while it tends to break down in other 'bad' states, such as those characterized by involuntary unemployment and other 'disequilibrium' phenomena like frustrated expectations.

Keynes's *General Theory* attempts to formulate laws of economics which apply to all states of the economy, not just to steady states. In his view, there

are at least two reasons for freeing economics from exclusive concern with the latter. The first is that a steady state is a fiction whose characteristics 'happen not to be those of the economic society in which we actually live, with the result that its teaching is misleading and disastrous if we attempt to apply it to the facts of experience' (Keynes 1936:3). Like Einstein, Keynes holds this view not because he believes in a strong form of realism. His models, like those of Neoclassical theory, are also fictions in that they are abstract and descriptively false, even though they do start from empirical assumptions. He does so because his model relies on a type of empirical assumption different from the one underlying the standard Neoclassical model. In particular, while the latter model focuses on empirical assumptions concerning the individual (e.g. that he has preferences), Keynes sets out from assumptions about the economy as a whole—for example, that there is a lack of futures markets. This makes for a vast difference with respect to Hicks. Whereas, for the latter, that markets are missing is a conclusion of the analysis which leaves the logic of choice quite unaffected, for Keynes it serves as the starting point for the analysis which leads him to revise the standard laws of individual behaviour.

Keynes's second reason for dismissing the use of steady states is that they lead Neoclassical theory to draw a demarcation line between 'good' and 'bad' states of the economy, according to which it is possible to have either a well-behaved economy where the standard laws of economics apply or a 'forbidden' state in which they do so no longer (for example, a state characterized by high uncertainty or irrational behaviour). Keynes rejects this demarcation. More specifically, he calls into question the role of 'good' states as benchmarks or absolute reference points in the ideal-type methodology. What he really objects to is the two-stage approach which this methodology involves: namely, the definition of a pure case on the grounds of the postulate of perfect rationality on the one hand, and the use of the latter to check the rationality of actual decisions in the real world on the other.

### *A monetary economy as the original datum*

It is plausible to say that, in Keynes's view, this approach involves two problems. The first is that it seriously underestimates the difficulty of adapting the conclusions reached in relation to a pure case to real-world conditions. For example, Keynes forcefully emphasizes:

The idea that it is comparatively easy to adapt the hypothetical conclusions of a real wage economics to the real world of monetary economics is a mistake. It is extraordinarily difficult to make the adaptation... Accordingly I believe that the next task is to work out in some detail a monetary theory of production.

(Keynes 1973a:409–11)<sup>10</sup>

In line with his 'theory of principle' approach, Keynes thus underlines that a full-blown monetary economy is the original datum; there is simply no transition to be made from a simplified economy such as a real-wage economy to the real-world economy (for a comment, e.g. Davidson 1978:xiii).<sup>11</sup> The latter must be studied as 'it is' through a one-stage modelling approach in which the original dichotomy between value theory and monetary theory or that between primary and secondary qualities is actually overridden.

At least three major implications of this approach need to be emphasized. The first is that, in Keynes's analysis, there is no room for such ideal types as the assumption of perfect or imperfect competition. As Hayek stressed, the ideal types play a role in the transition from the pure logic of choice to the analysis of dynamic issues in general equilibrium analysis. Now, as the passage quoted above clearly testifies, Keynes cannot be regarded as making or even attempting this transition. This is his fundamental departure from the constructive method adopted by Hicks and our main reason for regarding him as pursuing a 'theory of principle' approach.

The second implication of Keynes's one-stage modelling approach is that he is forced to take all the key elements of his analysis into consideration *simultaneously*. For example, his view that the principle of effective demand is crucial to understand the working of modern economies actually follows from the joint consideration of such elements as the lack of futures markets, uncertainty, money and expectations. Indeed, these elements are inextricably intertwined (e.g. Davidson 1978:17). It is sufficient to consider that the lack of futures markets generates uncertainty, which, in turn, deforms economic tools, compelling agents to hold money (in order to lull unrest) and form expectations on the grounds of conventions. Expectations underlie the very definition of the principle of effective demand.

The third implication of Keynes's one-stage modelling approach is that it does not justify attempts to deal with his concepts in terms of pure or simplified contexts or ideal types, even if these are defined without reference to Neoclassical theory. In particular, it does not appear fair to discuss the principle of effective demand in terms of the notion of long-period equilibrium proposed, for example, by those Post-Keynesian economists like Garegnani (1978–9, 1983) and Pasinetti (1997a) who are trying to restate in modern fashion the views of the British Classics.<sup>12</sup> This operation can be criticized for at least two important reasons. First, it attempts to separate the principle of effective demand from some of the above key elements, which play no role in a long-period perspective. Garegnani argues, for example, that 'uncertainty and expectations...may be dispensed with when developing the implications of Keynes's principle of effective demand for long period analysis' (1983:74). This view, however, can be countered with the argument that, without these elements, the principle of effective demand itself makes no sense. Indeed, uncertainty accounts for why people hold money rather than buy goods and need to form expectations.



Second, and more generally, the basic feature of this perspective is that it rests on an attempt to single out a ‘fundamental’ or ‘natural’ level of investigation, focusing mainly on production conditions, from another, which I would refer to as ‘behavioural’, focusing on institutional detail and agents’ behaviour (e.g. Pasinetti 1997a:98). It is at the first level of investigation that the principle of effective demand is related to the views of the British Classics. Now it can be argued that this approach is not legitimate from Keynes’s standpoint, and that the distinction between these two levels of investigation is not unlike that between primary and secondary qualities underlying the mechanistic model. Even if it applies to the system as a whole rather than to individuals, as in the *homo economicus* abstraction, it also implies an essentialist stance; namely, the view that in analysing economic systems it is possible to isolate what belongs to some more basic level of ‘reality’ from some other secondary features, which, following the method of successive approximations, can be considered at a later stage.

As I have repeatedly stressed, however, at the root of Keynes’s view that a monetary economy is the original datum of analysis lies his phenomenological approach, which rules out any such distinction. All key elements must be dealt with simultaneously and on an equal footing—there is no fundamental level of analysis to pursue. In particular, for Keynes there can be no long-run equilibrium norm definable independently from individual behaviour. It is important to note that his perspective does not imply giving up the attempt to single out some ‘objective’ properties of the economy, separating them from other ‘subjective’ or arbitrary elements—an attempt which underlies all theorizing. The point is that while Garegnani and Pasinetti regard production conditions as the only true objective elements, Keynes instead, as I emphasize in the next sections, holds a quite different notion of ‘objectivity’, which leads him also to consider expectations as part of the objective reality, as opposed to mere subjective elements.

### *Keynes’s critique of the imperfectionist view*

Another problem which Keynes stresses about the ideal-type methodology is that it inevitably leads Neoclassical theorists to focus on various types of imperfections (e.g. irrational behaviour) to account for the deviations from the pure case. Like Einstein, Keynes rejects the emphasis on imperfections. He does so for at least two reasons. First and foremost, he does not rely on the ideal type methodology. As we saw above, Hicks’s use of an ideal type like perfect competition as benchmark for the analysis of real-world economies makes no sense in his perspective. Thus his critical approach does not consist of making a complicated list of deviations or ‘empirical’ exceptions to the standard postulates. Strictly speaking, this is not even a critique. Denouncing that the real world is in contrast with the

postulates is itself a defensive stance, and does not imply *per se* a rejection of the postulates. Indeed, quite the opposite is true. It is an operation which is implied by the second stage of the ideal-type methodology, a stage which emphasizes the normative role of the pure case—i.e. the fact that it helps us to understand the real economy by showing why the pure case departs from it. That Keynes rejects the ideal-type methodology is thus confirmed by his critique of those Neoclassical theorists who focus on this operation. In his view, the latter makes such theorists 'resemble Euclidean geometers in a non-Euclidean world who, discovering that in experience straight lines apparently parallel often meet, rebuke the lines for not keeping straight—as the only remedy for the unfortunate collisions which are occurring' (Keynes 1936:16).

Second, Keynes's perspective is not consistent with those who advocate that macroeconomics should be placed on the assumption of imperfect competition (e.g. Marris 1997). Strictly speaking, the defenders of this approach are not in tune with the ideal-type methodology since they regard imperfect competition as a 'realistic' assumption and seek to account for how actual economies work as well as provide microfoundations for Keynes's principle of effective demand. It can be argued, however, that they too rely on the ideal-type method because their diagnosis of what 'goes wrong' in the economy follows from the application of this method. They too focus on imperfections which can be such only in relation to a pure case such as that of perfect competition. They too, in other words, focus on empirical deviations from such a case. Their difference with respect to orthodox theorists is that, instead of regarding these 'empirical' phenomena as deviations, they choose to transform them into a 'normal' case, the object of a separate theoretical study.

As is well known, Keynes rejects any link between his theory and the assumption of imperfect competition, although he does not justify this rejection (e.g. Cottrell 1994; Shapiro 1997). We have already observed that he is not committed to a specific assumption about market forms, a stance which marks the autonomy of his macroeconomic approach. This point is stressed, for example, by Kregel (1987:531) who argues that, at the basis of Keynes's unemployment equilibrium, lies not so much an imperfection in the operation of the relative prices mechanism as an imperfection in agents' knowledge. This view about the inconsistency between imperfect competition and Keynes's theory can also be expressed by arguing that, for Keynes, the problem is not to explain deviations from the Neoclassical ideal norm, but to find a new norm in agents' actual behaviour. Thus, instead of making a list of exceptions to the standard postulates or showing that the exceptions are normal cases, Keynes actually suggests different postulates: 'Yet, in truth, there is no remedy except to throw over the axiom of parallels and to work out a non-Euclidean geometry. Something similar is required to-day in economics' (Keynes 1936:16).

*Keynes's non-Euclidean geometry*

As Rosenberg remarked: 'Keynesian theory represents as much of a conceptual revolution as non-Euclidean geometry did' (1983:440). It is thus perfectly legitimate to ask what is the equivalent of the axiom of parallels for Keynes. My answer is: the standard theory of rational behaviour. Keynes's non-Euclidean geometry is the construction of a more general theory of rational behaviour. It is the latter that leads Keynes, like Einstein, to reject the 'good-bad' distinction altogether. For him too, a general theory has to apply to all contexts. He thus stresses that the cases in which Neoclassical theory does not apply, such as those characterized by involuntary unemployment, are not 'bad' in the sense that they are not due to either imperfections or irrationality (e.g. money illusion or rules of thumb) as implied by Neoclassical theorists. This is the essence of Keynes's discussion in Chapter 2 of his book, where he argues that the role of the axiom of parallels is played in Neoclassical economics by the second postulate of its theory of employment, stating that the labour supply is a function of the real wage (e.g. Keynes 1936:17). Keynes's critique is that workers do not in fact behave as implied by this postulate insofar as they do not control the real wage, but only the money wage. The price level depends upon the forces of aggregate demand and supply.<sup>13</sup> Thus he claims that the existence of involuntary unemployment is not due to workers' irrationality or their refusal to work for less, but to a lack of effective demand. It can be thus argued that the principle of effective demand is the equivalent of Einstein's gravitational field.

On these grounds, it is also possible to draw an analogy between Einstein and Keynes *vis-à-vis* the relationship between particular and general cases. Just like Einstein with respect to Newton, Keynes too holds that his approach based on the law of the demand and supply as a whole is more general than Neoclassical theory. The latter is not necessarily wrong but covers only a special case. As he puts it: 'I shall argue that the postulates of the classical theory are applicable to a special case only and not to the general case, the situation which it assumes being a limiting point of the possible positions of equilibrium' (1936:3). In particular, it can be suggested that in 'good' states—i.e. when conditions of stability and low uncertainty prevail—the conventional factors underlying aggregate demand are 'weak' in that they favour a kind of behaviour which is also consistent with the principles of Neoclassical theory.

The role of conventional factors in determining the conditions of applicability of the theory was recognized by Keynes even before the *General Theory*. In *Essays in Persuasion*, for instance, he points out that the Neoclassical principle of abstinence, which justifies inequalities in income distribution since the rich save money and finance growth through investment, is not a 'universal' law of economics but depends on a particular

system of reference— i.e. on a peculiar set of conventional factors which he specifies as follows:

This remarkable system depended for its growth on a double bluff of deception. On the one hand the labouring classes accepted from ignorance or powerlessness, or were compelled, persuaded, or cajoled by custom, convention, authority, and the well established order of society into accepting a situation in which they could call their own little of the cake... And on the other hand the capitalist classes were allowed to call the best part of the cake theirs and were theoretically free to consume it, on the tacit underlying condition that they consumed very little of it in practice. The duty of 'saving' became 9/10ths of virtue and the growth of the cake the object of true religion.

(Keynes 1972a:12)

He goes on to stress that these conventional factors are very unstable and apply only to particular historical periods such as the pre-war years; they are unlikely, that is, to be recreated in the post-war period:

The war disclosed the possibility of consumption and the vanity of abstinence to many. Thus the bluff is discovered; the labouring classes may no longer be willing to forgo so largely, and the capitalist classes, no longer confident of the future, may seek to enjoy more fully their liberties of consumption so long as they last, and thus precipitate the hour of their confiscation.

(Keynes 1972a:13)

It is in 'bad' contexts such as this—i.e. states characterized by uncertainty—that conventional factors become 'strong' and justify Keynes's theory.

### A new conception of objectivity

#### *Einstein*

A further analogy between Keynes and Einstein regards their conception of objectivity. Let us start from relativity theory. It is important to stress that the latter has nothing to do with 'relativism'. Special relativity theory, for example, allows one to compare different inertial frames of reference just as in classical physics. However, it calls for a different type of transformation law with respect to those held by the classicists, namely the Lorentz transformation:

In classical physics...we had transformation laws for co-ordinates, transformation laws for velocities, but the laws of mechanics were the

same for two c.s. moving uniformly, relative to each other. We had transformation laws for space, but not for time, because time was the same in all c.s. Here, however, in the relativity theory, it is different. We have transformation laws different from the classical for space, time, and velocity. But again the laws of nature must be the same in all c.s. moving uniformly, relative to each other. The laws of nature must be invariant, not, as before, with respect to the classical transformation, but with respect to a new type of transformation, the so-called Lorentz transformation. In all inertial c.s. the same laws are valid and the transition from one c.s. to another is given by the Lorentz transformation.

(Einstein and Infeld 1938:198)

On these grounds, it is possible to note a crucial feature of Einstein's theory: namely, the fact that it does not drop the concept of objectivity, but only its mechanistic version whereby invariance of space and time was the true foundation of the reality of the object. Relativity theory is about the discovery of new true invariants which characterize the object. As the above passage shows, it transfers objectivity from phenomena to laws. The point is that while allowing for the variability of phenomena perceived by different observers, relativity theory establishes the invariance of the laws underlying those phenomena. In other words, the objectivity of physics does not lie in its reference to perceived uniformities or uniformities of things but in its reference to conceptual uniformities, such as constants, mathematical laws or geometric forms (e.g. Geymonat 1975, VI:486, 503).

It is possible to clarify this point by referring to Einstein's notion of curved space-time in his general relativity theory. This theory implies a different conception of space with respect to both classical physics and special relativity theory. In particular, it no longer allows for Newtonian space with its own abstract or autonomous existence, but envisages space interacting with matter:

According to classical mechanics and special relativity theory, space (space-time) has an autonomous existence with respect to matter or the field. In order to describe in general what fills the space and depends from coordinates, space-time must...already be conceived of as existing *a priori*, otherwise the description of 'what fills the space' would be meaningless. According to the theory of general relativity, instead, space has no separate existence with respect to 'what fills the space' ... There is no such thing as an empty space: i.e., space without the field. Space-time does not claim to have an autonomous existence, but only to represent a structural quality of the field.

(Einstein 1952:310–11; author's translation)

It must be noted that this apparent interaction between space and matter is not objective; in fact, for Einstein space and time are not 'objective' forms of matter. It is instead a unity of a geometric kind. In particular, it is the consequence of the geometrical innovation Einstein makes with respect to his special theory; namely, the introduction of the notion of 'curvature' in Minkowski's space-time, reflecting the assumption that the existence of large portions of matter in a given space region determine the curvature of that region.

### *Keynes's alternative concept of objectivity*

The above remarks also apply to the *General Theory*. For Keynes, as for Einstein, relativity of time does not mean relativism; that is to say, it does not mean that different states of the economy or different economies cannot be compared. Not unlike the Classics, Keynes holds that the laws of economics tend to apply in a rather general fashion. It may be argued, however, that, in line with Einstein's strategy, Keynes differs from the Classics in that he adopts a new way of comparing different states and thus granting the objectivity of analysis. In other words, rather than dropping the concept of objectivity *tout court*, Keynes drops only its Neoclassical version whereby invariance of time and environment or situation was the true foundation of the analysis. Like Einstein, Keynes is concerned with the discovery of new true invariants which characterize the object of analysis. In particular, he too transfers objectivity from phenomena to laws. The point is that, while allowing for the variability of phenomenal rules of conduct in the various states of the economy according to agents' changing perception of time, Keynes's theory establishes the invariance of the laws underlying those phenomena. In other words, for Keynes, as for Einstein, the objectivity of economics lies in its reference to conceptual uniformities, instead of perceived uniformities or uniformities of things.

The difference with respect to Einstein is that Keynes does not regard mathematical laws or geometrical forms as the invariant element, but certain laws concerning individual behaviour under uncertainty. This difference has to do with the different role played by mathematics in their respective subjects. In particular, while in modern physics theorizing implies mathematization (e.g. choice of the appropriate kind of geometry) so that theoretical innovations are strictly linked with innovations in the formal tools, in economics this applies only to a limited extent.<sup>14</sup> Thus, while Einstein's relativity theory relies on non-Euclidean geometry, Keynes does not need sophisticated mathematical tools to make his revolution. All he needs is to formulate his general theory of rational behaviour.

In line with our analogy, it can be thus argued that this general theory plays the same role in Keynes as non-Euclidean geometry in Einstein. Like the latter, it allows for a different conception of aspects of economic reality

with respect to the standard model. In particular, it allows the situation or space to be regarded not as an entity having autonomous existence, but as strictly interacting with ‘matter’, i.e. individual agents. That this view implies a sharp break from orthodoxy—from Hicks in particular—becomes clear if we focus once again on the problem of expectations. As I stressed above, Hicks sees a similarity between the method of expectations in *Value and Capital*, on the one hand, and that underlying the *General Theory* and the Swedish economists, on the other. In his view the problem of insertion of expectations in the analysis can be solved by reducing them to ‘physical’ reality—i.e. the current market situation or structure. The reason why this view is in contrast with Keynes is not that it reduces expectations to objective data. Although Hicks’s solution is open to the charge of circularity, Keynes concurs that expectations are not mere subjective data. For him too it is legitimate to make a link between expectations and reality. The true departure from Hicks is that Keynes holds a different notion of economic reality and thus of objectivity. In particular, instead of reducing expectations to ‘physical’ reality, he refers them to what can be regarded as ‘intersubjective’ reality.<sup>15</sup>

### *Popper’s world-3 conception*

To understand Keynes’s alternative conception of objectivity and expectations correctly, it may be useful to compare it with Popper’s. The latter is made clear especially in his solution to the problem of induction—i.e. what he calls the Hume problem. In particular, Popper makes a distinction between the logical and the psychological problem of induction. As for the former:

Hume’s problem of induction is the problem whether we are entitled to infer unobserved cases from observed cases, however many; or ‘unknown’ (unaccepted) statements from ‘known’ (accepted) statements, however many. Hume’s answer to this problem is clearly negative; and, as he points out, it remains negative even if our inference is merely to the probability of a connexion that has not been observed rather than to its necessity.

(Popper 1979:89)

While accepting Hume’s negative answer to the logical problem, Popper rejects his answer to the psychological problem:

Why, nevertheless, do all reasonable people expect, and *believe*, that instances of which they have no experience will conform to those of which they have experience? That is, why do we have expectations in which we have great confidence?

(Popper 1979:4; original emphasis)

According to Hume, the reason why most people believe in the validity of induction in spite of its lack of logical validity is that 'the psychological mechanism of association forces them to believe, by custom or habit, that what happened in the past will happen in the future' (Popper 1979:90). Popper stresses, however, that although this is a biologically useful mechanism (perhaps people could not live without it) 'it has no rational basis whatever. Thus, not only is man an irrational animal, but that part of us which we thought rational, *human knowledge*, including practical knowledge—is utterly irrational' (1979:90; original emphasis). Following Kant's and Russell's attempts to save human rationality from Hume's irrationalism,<sup>16</sup> Popper thus suggests a solution:

Not only can we reason rationally, and therefore contrary to the principle of induction, established as invalid by Hume, but that we can also act rationally; in accordance with reason rather than with induction. We do act not upon repetition or 'habit', but upon the best tested of our theories...it has to be added... that the rational standard of our practical actions often lags far behind the standard applied at the frontiers of knowledge: we often act upon theories which have long been superseded, partly because most of us do not understand what happens at the frontiers of knowledge.

(Popper 1979:95)

Popper's solution to Hume's problem is thus to allow 'theory' to play a distinct, autonomous influence on human behaviour. In particular, this means that in contrast with Hume's view of expectations as being formed through repetition or habits, for Popper expectations come before observation; they represent conjectures or theories that cannot be formed through repetition. This view leads him to formulate his 'world-3' conception, according to which 'theory' is an autonomous aspect of reality which must be sharply distinguished from the worlds of physical things and mental states:

The world consists of at least three ontologically distinct sub-worlds; or, as I shall say, there are three worlds; the first is the physical world or the world of physical states; the second is the mental world or the world of mental states; and the third is the world of intelligibles, or *ideas in the objective sense*; it is the world of possible objects of thought; the world of theories in themselves; and of problem situations in themselves.

(Popper 1979:154; original emphasis)

Having specified that the inmates of his 'third world' include theoretical systems, critical arguments, the state of a discussion or the state of critical



argument; and the contents of journals, books, and libraries, Popper underlines that:

*The understanding of objects belonging to the third-world...constitutes the central problem of humanities. This, it appears, is a radical departure from the fundamental dogma accepted by almost all students of the humanities...that the objects of our understanding belong mainly to the second world, or that they are at any rate to be explained in psychological terms.*

(Popper 1979:162; original emphasis)

In addition to his main theses, Popper then offers a few supporting theses. The first is that the third world is ‘a natural product of the human mind, comparable to a spider’s web’ (1979:113). The second is that the third world is:

largely *autonomous*, even though we constantly act upon it and are acted upon by it: it is autonomous in spite of the fact that it is our product and that it has a strong feed-back effect upon us; that is to say, upon us *qua* inmates of the second and even of the first world.

(Popper 1979:113; original emphasis)

Popper also makes clear that the third world is the unintended product of our effort: ‘A large part of the objective third world of actual and potential theories and books and arguments arises as an unintended by-product of the actually produced books and arguments’ (1979:117). The third supporting thesis is that ‘it is through this interaction between ourselves and the third world that objective knowledge grows’ (ibid.: 113).

### *Keynes and world-3*

Keynes seems to be in line with this view. This is not an obvious claim to make, since many aspects of his theory would appear to suggest the opposite. For example, there is no doubt that, as many writers have pointed out, his practical theory of the future—i.e. the description he provides of the conventional techniques followed by agents in the face of uncertainty, relies heavily on the inductive principle (Keynes 1937a:114). In particular, the first technique he mentions seems to refer to Hume’s psychological justification for induction:

We assume that the present is a much more serviceable guide to the future than a candid examination of past experience would show it to have been hitherto. In other words, we largely ignore the prospect of future changes about the actual character of which we know nothing.

(Keynes 1937a:114)

For Keynes, agents' expectations in general are thus formed once the convention of assuming continuity and stability in the existing state of affairs is accepted; past evidence will support some degree of belief in propositions about the near future (e.g. Carvalho 1988:79; Meeks 1991a:153; O'Donnell 1989:366, 1991a:41). But that is not all. There are reasons to believe that Keynes is aware of the limitations of induction.<sup>17</sup> There are a few crucial points to note in this respect. First, he does not always emphasize repetition or mere habit as a basis of decision-making.<sup>18</sup> For example, while repetition is relevant for decisions concerning how much to produce, it cannot play a crucial role in investment decisions. In his book, Keynes stresses that, while short-term expectations relating to production decisions can be reduced to observed reality as they are of an adaptive kind (e.g. Hoover 1997:222–3, 234), long-term expectations concerning investment cannot (see e.g. Davis 1994a:143; Vicarelli 1984a). Indeed, as pointed out by Carvalho (1988: 79), some of the premisses may be unknowable in investment decisions, so that they must be created *ex nihilo*. Second, according to Keynes the fact that long-term expectations are not of an adaptive kind explains why people do not have great confidence in expectations formed on conventional grounds.<sup>19</sup> In particular, they know that the future is not like the past. This is why the first technique is not enough and they are compelled to rely on others to help them to form the premisses for investment and other decisions where the future horizon is relevant. In particular, Keynes refers to the third technique:

Knowing that our own individual judgement is worthless, we endeavour to fall back on the judgement of the rest of the world which is perhaps better informed. That is to say we endeavour to conform with the behaviour of the majority or the average.

(Keynes 1937a:114)

It seems plausible to suggest that what Keynes argues here is that in forming their expectations agents tend not simply to follow 'mass psychology' as if they were in a stadium, but also refer to their cultural and professional milieu and the representations of reality which it generates—i.e. what we may call the 'popular' models or 'collective conjectures'. It can be argued that these are quite similar to Popper's world-3 inmates. To copy others is to copy others' thoughts; the links among individuals concern beliefs or theories. That Keynes, like Popper, recognizes the autonomous role played by 'theory' in shaping agents' behaviour and expectations is after all clearly shown by one of the most famous sentences of the *General Theory*:

The ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed the world is ruled by little else. Practical

men, who believe themselves to be quite exempt from any intellectual influences, are usually the slaves of some defunct economist. Madmen in authority, who hear voices in the air, are distilling their frenzy from some academic scribbler of a few years back.

(Keynes 1936:383)<sup>20</sup>

*Keynes's macrofoundations perspective*

This analogy between Keynes and Popper helps to clarify the differences between Keynes and Hicks *vis-à-vis* expectations. The first difference to note is that while Hicks regards expectations as individual or subjective data which are formed following a few simple rules of thumb, for Keynes they also depend on theories, so that they appear directly in the shape of aggregate psychological data.<sup>21</sup> This difference has several implications. First, as pointed out by Davis (1994a), stressing the difference between Keynes and a subjectivist such as Ramsey, in Keynes's view, expectations are in a sense objective:

Individual judgement as individual expectation takes the judgement of others at the very least as a point of departure, and 'opinion' and the 'actual beliefs of particular individuals' then very much factor into the formation of individual beliefs... This permitted an objectivity of sorts to judgement... Keynes's later view remained consistent with his insistence against Ramsey that one must still find something more substantial than mere belief to explain the nature of judgement. Ramsey's subjectivism, where only consistency of bets need obtain, falls short of what Keynes later believed assisted individual judgement in the form of a society's conventions and rules. For Ramsey, individuals were free from occasion to occasion to form whatever beliefs and convictions struck them as appropriate, so that a society's rules and conventions were at best rules of thumb they might consult, but which otherwise lacked any compelling quality.

(Davis 1994a:117)

Second, Keynes's emphasis on the role of aggregate psychological data in shaping individual expectations implies a crucial critique of traditional microeconomic theory: namely, that the latter lacks necessary macrofoundations.<sup>22</sup> As pointed out by Boland (1982:83): 'by denying the adequacy of the macrofoundations of traditional theory Keynes was simply arguing that microeconomic theory is false.' This is due to the fact that:

There are important non-individualist, non-natural givens facing the real-time individual decision-maker. A main thrust of Keynes's

argument is that these short-run macro variables are necessary for adequate explanations even in the usual neoclassical micro model. In particular, there are 'aggregate' variables such as GNP, the general price level and expectations which do not depend on any specific individual's psychological state but on the behaviour and expectations of all other individuals. At any point of time these are contemporaneously determined variables which the individual cannot choose, yet they are variables whose states affect the decisions made.

(Boland 1992:134)

This passage highlights a crucial feature of Keynes's macrofoundations perspective; namely, that it does not imply a smooth transition from the consideration of individual units to that of aggregates. According to him, there are macroeconomic factors, such as aggregate psychological data, which cannot be reduced to a sum of individual decisions. The point is that, in line with Popper's world-3 conception, these factors are the involuntary or unintended product of agents' interaction. They constrain individuals' actions without being affected by them: agents cannot change them individually (e.g. Dardi 1984:87; Dow 1985:17; Kregel 1987:527). On these grounds, it can be argued that Keynes's emphasis on aggregate psychological data has nothing to do with psychologism, as many authors seem to believe (e.g. Boland 1982:94, 1986:155). While psychologism is an attempt to explain the laws of historical and economic development solely in terms of human nature or individual motives (e.g. Popper 1966:117–21), for Keynes instead agents' expectations are not the ultimate data of human nature; they can, in turn, be explained in terms of social or economic factors which are the unintended consequence of individual behaviour.<sup>23</sup>

Third, Keynes's emphasis on the unintended products of agents' interaction as the proper objects of macroeconomics shows that he is quite foreign to the alternative posed in recent contributions on the concept of rationality; namely, that between the focus on the standard rationality postulate (i.e. Simon's substantive rationality) underlying Hicks's logic of choice, on the one hand, and the focus on agents' psychology, underlying weaker notions of rationality, such as Simon's procedural rationality, on the other. The point is that this type of rationality involves 'the direct psychologizing of economics, the explicit programme of economic behaviourism...an emphasis on detailed empirical exploration of complex algorithms of thought' (Simon 1976:84).

### *The autonomous role of expectations in the General Theory*

The second difference between Hicks and Keynes on the issue of expectations is that while Hicks ends up by reducing them to physical reality—i.e. to those parameters which characterize current market experience—and thus runs

into the problem of circularity (expectations are both a determining and a determined factor), for Keynes structural parameters do not affect an agent's expectations directly, but only through his aggregate psychological data. In this way Keynes avoids the problem of circularity altogether. This is due to the fact that these data while influencing market participants are to an important extent determined exogenously with respect to current market experience. In particular, for these data, Boland's position seems true: namely, that 'a major ingredient in every decision is the theories held to be true by the decision-maker and that in the absence of an inductive logic such theories cannot be reduced to the given nature of the physical world' (1982:175–6).

An important implication of this conception is that it accounts for the different causal role played by expectations in Keynes's model with respect to Hicks's. While expectations in *Value and Capital* are forced to be well behaved since they are ultimately determined by equilibrium prices, Keynes's expectations appear, instead, as a truly autonomous dimension of economic analysis. As stressed, for example, by Davidson:

Keynes spent considerable time discussing the formation of expectations...but he remained adamant that there was no uniform relationship between a set of observable events and the subsequent state of expectations. In Keynes's paradigm, the "indefinite character of actual expectations" is the free autonomous variables which govern everything else, rather than being governed by everything else.

(Davidson 1978:386)

On these grounds, it is easy to realize why Hicks's interpretation of the *General Theory* on this issue is seriously misleading. In particular, by emphasizing the link between *Value and Capital*, the *General Theory* and the Swedish theory, Hicks focuses essentially on short-term expectations concerning risk rather than uncertainty or the *ex-ante/ex-post gap* (see e.g. Visco 1985a:21– 2), whereas Keynes underlines expectations relating to world-3 objects like long-term expectations.

### *Keynes and the aggregation of individual expectations*

The third difference between Keynes and Hicks about expectations concerns the way of solving the problem of the coordination of individual expectations. While both seek to solve this problem on a priori grounds due to the simplifying nature of macroeconomics, they offer different solutions. On the one hand, Hicks is compelled to solve it in a rather *ad hoc* fashion—i.e. by simply introducing the notion of a representative agent. On the other, Keynes solves it by referring to conventions. It is important to see why this difference arises. The point is that while Hicks starts by considering expectations reflecting the structural conditions of the economy—i.e.

individual price expectations in perfect competition—and then focuses on the coordination problem, Keynes instead deals essentially with expectations reflecting popular models of the economy. This grants a priori coordination for the simple reason that, in line with his macrofoundations perspective, he does not focus on the competitive aspect of individual behaviour, but on its cooperative aspect.

It must be noted that, in contrast with the representative agent model, Keynes's approach does not imply that individual expectations are alike. The popular models are nothing but that sort of background knowledge which is common to a group of agents and constitutes only the premiss, the starting point for their competitive behaviour and the formation of expectations. Just because Keynes holds that individuals are autonomous, he has nothing to say on individual expectations and thus on 'structural conditions', which are merely taken as given. The only thing he says is that there may be a great diversity of expectations among individual agents in real-world markets about which there is nothing to say on a priori grounds. As noted by Hoover:

While Keynes recognizes the aggregate consequences of expectations for interest rates or national income, he does not aggregate expectations themselves. The expectations of individuals are heterogeneous— and fundamentally so. Thus, Keynes recognizes that it is only diversity of opinion about expected values of financial assets that permits trades without massive swings in asset prices.

(Hoover 1997:223)

Three remarks can be made on this point. First, this line of reasoning shows once again that Keynes's aggregate psychological data are not the simple sum of individuals' expectations as he shifts the focus from structural conditions determining competition between agents (which is the primary object of individual expectations) to the common premisses of their behaviour. Second, we are able to see a further reason why Keynes does not use Hicks's representative agent device. For him, this device can never replace aggregate behaviour as his expectations are still of an individual kind. Third, in line with his statistical view of aggregates, Keynes regards as important not the view held by any representative agent, but the distribution of individual views and their degree of diversity.

### Concluding remarks

This chapter has dealt with the second key feature of Keynes's 'Einsteinian' macroeconomics: namely, its reliance on the 'theory of principle' approach. I have shown that by stressing the analogies between Einstein and Keynes on this issue it is possible to highlight important aspects of the *General Theory*. First, we can understand why money and expectations must appear

as data of the analysis, rather than phenomena that should be accounted for in terms of individual optimizing behaviour as attempted by ‘pure theory’ on the grounds of its constructive method. This does not mean, however, that Keynes neglects the individual motives for holding money and forming expectations. His key difference with respect to standard theory is that he analyses these motives within a macrofoundations or systemic perspective.

Second, it is possible to single out the lack of future markets as the key empirical assumption underlying Keynes’s analysis. This allows him to break with general equilibrium theory and stress the link between uncertainty—causing the ‘deformation’ of the standard rules of behaviour, hence the need for agents to hold money to lull uneasiness and form expectations—and the principle of effective demand.

Third, we can understand why Keynes’s analysis is static. The point is that, in line with Einstein, he believes that time is an essential element which must be accounted for from the beginning. This leads him to emphasize the role of expectations and the aggregate psychological data influencing the economy at a given point in time, rather than to develop a formal dynamic analysis.

Fourth, it is possible to affirm the generality of Keynes’s analysis. This means, above all, that his conclusions apply to all states of the economy, not just to steady states. He actually rejects those kinds of analysis which rely on such fictions. In particular, he does not regard the transition from a real-exchange economy to a monetary economy, the original datum of the analysis, as being feasible.

Finally, we are able to realize that Keynes relies on a new concept of objectivity. In particular, he focuses on what Popper labels ‘world-3’ objects, such as the theories or popular models held by agents, rather than on the objects of physical reality. He is thus able to develop on his macrofoundations perspective and regard expectations as autonomous elements.

## KEYNES'S INDIRECT FORCES PARADIGM

This chapter focuses on the third basic feature of Keynes's approach: namely, his 'indirect forces' paradigm. This paradigm is in contrast with Hicks, who accepts the 'direct forces' view, implying that prices have a direct adjusting role. It should be clear that this contrast arises not because Keynes rules out competition or price flexibility, which, indeed, also play a role in the *General Theory*. The true reason is that for Keynes neither competition nor price mechanism works as in general equilibrium analysis, due to the fact that, in his view, agents' self-interest is not the only force that underlies the relations between individuals. Its influence is mediated by a social dimension: in fact, in order to pursue their self-interest agents need to coordinate their efforts with those of others; that is to say, to exercise Smithian 'sympathy' or 'fellow feeling' towards other persons. As I have pointed out, Keynes's contribution is to introduce this theme (which seems to be only of philosophical or sociological value in Smith) to economic analysis. Let us now see how it affects the working of the price mechanism and the notion of equilibrium. Once again the analogy between Keynes and Einstein is most instructive.

### The definition of indirect forces

Einstein replaces Newton's direct forces with the gravitation field:

If we pick up a stone and then let it go, why does it fall to the ground? The usual answer to this question is: 'because it is attracted by the earth'. Modern physics formulates the answer rather differently for the following reason. As a result of the more careful study of electromagnetic phenomena, we have come to regard action at a distance as a process impossible without the intervention of some intermediary medium. If, for instance, a magnet attracts a piece of iron, we cannot be content to regard this as meaning that the magnet acts



directly on the iron through the intermediate empty space, but we are constrained to imagine—after the manner of Faraday—that the magnet always calls into being something physically real in the space around it, that something being what we call a ‘magnetic field’. In its turn this magnetic field operates on the piece of iron, so that the latter strives to move towards the magnet. The effects of gravitation also are regarded in an analogous manner. The action of the earth on the stone takes place indirectly. The earth produces in its surroundings a gravitational field which acts on the stone and produces its motion of fall.

(Einstein 1920:63–4)

*Keynes’s departures from standard value theory*

On this point we find a strong analogy between Keynes and Einstein. It can be argued that Keynes supposes that something like Einstein’s gravitation field is at work in the economy. In order to see this point, let us start by considering how the fact that he accounts for both the self-interest and cooperation aspects of agents’ behaviour affects his analysis. The main consequence is that he departs from Neoclassical value theory in various important respects. We have noted, for example, that in the *General Theory* the view that agents maximize is accepted, but is not transformed into a universal postulate. However, there are at least two other points to stress. The first concerns symmetry. It is not difficult to see, for example, that although both the forces of demand and supply play a role in Keynes’s analysis, they are not always symmetrical. Suffice it to think of the relationship between saving and investment and that between aggregate demand and supply, which he postulates in the *General Theory*.

The second point concerns the role of prices. It may be argued that for Keynes prices are flexible as in Neoclassical theory, but do not exercise a direct adjusting role. This point deserves careful consideration as it is the source of some confusion. The key issue is that while, in Hicks’s model, price changes affect individual behaviour directly, in the *General Theory* a mechanism quite similar to Einstein’s gravitation field is supposed to be at work. In particular, price changes affect individuals only indirectly through conventional factors. For example, money wage changes play an adjusting role on the labour market not by affecting labour demand and supply directly, but only insofar as they affect the psychological data underlying aggregate demand. This view is in line with our claim that, in the *General Theory*, conventions represent an alternative way of coordinating agents’ behaviour with respect to the auctioneer in general equilibrium theory.

At least two major implications of this view are worthy of note. The first is that, for Keynes, the smooth working of the price mechanism is not granted

a priori as in general equilibrium. However, price rigidities are not the cause of maladjustments. While Hicks is forced to rely on money wage rigidities to account for unemployment (the latter would disappear if they were flexible), for Keynes this conclusion is misleading. Unemployment is caused, instead, by a wrong level of aggregate demand:

Thus the reduction in money-wages will have no lasting tendency to increase employment except by virtue of its repercussion either on the propensity to consume for the community as a whole, on the schedule of marginal efficiencies of capital, or on the rate of interest. There is no method of analysing the effect of a reduction in money-wages, except by following up its possible effects on these three factors.

(Keynes 1936:262)

### *Keynes's alternative concept of equilibrium*

The second implication of Keynes's view of the working of the price mechanism is that his conception of equilibrium undergoes a substantial change with respect to Hicks. While the latter places the emphasis on the market clearing concept of equilibrium, Keynes views equilibrium as a state of rest which can occur at any level of activity. Once the system reaches this state, it has no tendency to move (except when data change), even if demand and supply are not equal in all markets. Two points need to be made here. One is that this radical change is closely associated with the fact that Keynes shifts the focus of his analysis from the allocation of a given amount of resources to the determination of the level of activity. While the former is a generalization of the problem of individual choice whose equilibrium solution is necessarily optimal, the latter makes sense only for the system as a whole, which has to do with the unintended outcomes of individual choices and equilibrium solutions which may appear arbitrary or suboptimal, if considered from the standpoint of individual equilibrium.

The second point is that Keynes's concept of equilibrium can also be regarded as 'normal'. The epithet should be taken in a 'positive' as opposed to 'normative' sense. Keynes is not concerned with stating how individuals should behave for optimum adjustment to take place in some ideal state. He focuses instead on actual behaviour. In particular, he employs as a standard of reference what agents regard as 'normal' in the economies considered. It must be noted that Keynes is not the first social scientist to use the concept of a normal state. For example, it also underlies the work of positivist sociologists and economists of the last century, such as Durkheim, Marshall and the British Classical economists.

One detects a certain similarity, for example, between Keynes's concept of the 'normal' rate of interest playing the role of the exogenous norm for actual interest rates and Ricardo's concept of absolute value (defining a norm

for actual market prices) or his theory of the subsistence or customary wage. The existence of this similarity is forcefully stressed by Schumpeter (1954), who argues that Keynes's work is an instance of the Ricardian vice: namely, the habit of establishing simple relations between aggregates in order to achieve clear-cut results of direct, practical significance:

In order to get this [Ricardo] cut that general system to pieces; bundled up as large parts of it as possible, and put them in cold storage—so that as many things as possible should be frozen and 'given'. He then piled one simplifying assumption upon another until, having really settled everything by these assumptions, he was left with only a few aggregative variables between which, given these assumptions, he set up simple one-way relations so that, in the end, the desired results emerged almost as tautologies.

(Schumpeter 1954:472–3)

According to Schumpeter, what is negative about labelling something as a 'datum' is that this 'simply means that we give up the hunt for a purely economic explanation of whatever it is we so describe' (1954:665). He then goes on to make explicit reference to Ricardo's theory of wages based on the 'social minimum of existence', which amounts to 'accepting customary wages as an institutional datum' (*ibid.*: 665). Two comments are in order. In the first place, what Schumpeter regards as a vice must be considered instead as being at the root of one of the most significant contributions to economic theory, namely the foundation of macroeconomics as an autonomous subject. This autonomy is closely linked to the definition of an exogenous norm with respect to market occurrences; this norm alone supports the view of macroeconomics as the analysis of the unintended consequences of individual behaviour. To neglect it is to go back to the so-called conspiracy view according to which all results are intentional, and hence involves a kind of vicious circle in that, at the individual level, there must already be an 'anticipation' of the aggregate result.<sup>1</sup>

Second, while Schumpeter is right to suggest that Keynes retains one basic feature of Ricardo's analysis (i.e. the reference to a norm formed outside the market), he is wrong to suppose that he does so in exactly the same form. In line with Einstein's epistemological shift, Keynes rejects the Ricardian type of exogenous norms defined on the grounds of either the labour theory of value determining the natural prices, which are said to constitute the hidden or essential reality underlying market prices, or the broad sociological or institutional factors accounting for the subsistence wage. The problem with these norms is that they are by and large world-1 objects—i.e. objects of the 'physical' world.<sup>2</sup> Keynes, instead, regards world-3 objects, such as expectations and theories as the basic type of exogenous element.<sup>3</sup>

### The sequence method

Einstein underlines another important difference between Newton's gravitation laws and Maxwell's field laws:

With the help of Newton's laws we can deduce the motion of the earth from the force acting between the sun and the earth. The laws connect the motion of the earth with the action of the far-off sun. The earth and the sun, though so far apart, are both actors in the play of forces. In Maxwell's theory there are no material actors. The mathematical equations of this theory express the laws governing the electromagnetic field. They do not, as in Newton's laws, connect two widely separated events; they do not connect the happenings *here* with the conditions *there*. The field *here* and *now* depends on the field in the *immediate neighbourhood* at a time *just past*. The equations allow us to predict what will happen a little farther in space and a little bit later in time, if we know what happens here and now. They allow us to increase our knowledge of the field by small steps. We can deduce what happens here from that which happened far away by the summation of these very small steps. In Newton's theory, on the contrary, only big steps connecting distant events are permissible.

(Einstein and Infeld 1938:156–7; original emphasis)

The important point which Einstein stresses here is that the gravitation field leads to the replacement of Newtonian distance action, which can only be instantaneous with contiguity action, whose propagation can only occur in time. This is a consequence of the fact that the gravitational field propagates itself like the electromagnetic field, and thus at a finite speed.

Once again Einstein's view finds a counterpart in Keynes's analysis. I have already pointed out that Keynes starts from an empirical assumption, which is the equivalent of Einstein's finite speed of light: namely, that there is a lack of markets in real-world economic systems, and that this implies that individuals must form expectations and make decisions at discrete intervals of time following a sequence. We have also noted that this situation may lead to the 'deformation' of agents' calculation tools in the face of uncertainty. We must now push this analysis a bit further. It can be argued that there is a link between this deformation and the particular sequence of decisions and events underlying the *General Theory*. In the first place, Keynes's sequence is conceptually similar to Einstein's contiguity action in that it is a sequence of 'small steps' which occurs in historical time. Second, it is a sequence in terms of markets which occurs within a single period. In particular, there is a kind of market hierarchy which sums up the whole argument of Keynes's book. Among the determinants of this hierarchy, it seems plain that a key role is played by the principle of effective demand

and the aggregate psychological data which underlie it. These imply, in particular, a predominance of the goods market over the labour market. As I stressed in the previous chapters, this is due to the fact that the deformation of tools implies the impossibility for agents to follow the standard rules of behaviour, and thus their need to rely on conventions. When the latter break down, agents demand money to lull their uneasiness. In turn, the holding of money makes sense out of the principle of effective demand whereby only when people do not spend all of their income is a lack of aggregate demand a possible phenomenon.

This picture is in sharp contrast with the one which underlies Neoclassical theory. As I have already noted, this rests on the often implicit assumption which is the equivalent of Newtonian infinite speed—i.e. that a complete set of markets does exist. This assumption implies that the system works like a barter economy in which all decisions can be taken at once, and that competition works smoothly in all markets to bring about the ‘final’ outcomes instantaneously. The long run occurs in the very short run! In this case, there is no sequence of small steps, but only one long step (Newton’s distance action). As we shall see in the next sections, it is possible, however, to imagine a sequence corresponding to this ‘long-run’ picture, one that is determined by the structural parameters of the general equilibrium model and whose steps can only be distinguished for heuristic purposes to allow comparison with Keynes’s theory. It starts from the labour market, where the level of employment is determined on the grounds of technology and workers’ preferences. It then deals with the goods market, where the level of output is determined through the production function. Finally, it deals with the capital and money markets, which respectively determine the interest rate and the price level.

On these grounds, we are able to bring the difference between Hicks and Keynes into sharper focus. It is apparently true that, as pointed out by Hicks, both authors break away from traditional long-run equilibrium analysis and are somehow concerned with sequences of short-run equilibria, starting from the assumption that there are not enough futures markets to coordinate agents’ activity instantaneously for all their lifetimes. However, there is a crucial asymmetry in the way they get to this ‘dynamic’ stage. In *Value and Capital*, the lack of markets is not a true assumption but a conclusion of the analysis. It does not imply any transition to historical time and a true monetary economy because Hicks starts from ‘long step’ analysis in his logic of choice and tries to make the transition to ‘small step’ analysis by keeping the essentials of the former stage intact. In particular, agents are supposed to behave exactly in the same way as before. It is true that now they must form expectations. However, as the latter are well behaved and conform to physical world occurrences, the sequence of markets within each single period, within each week, has not really changed from one stage of analysis to the other. In each week the equilibrium is reached exactly in the same

way as in the logic of choice. The only true innovation that takes place in the dynamic part of *Value and Capital* is that there is now a sequence of weeks; a replica, that is, of 'long step' analysis every week, to allow for intertemporal disequilibrium. On the contrary, Keynes does not need to refer to a sequence of periods to affirm the novelty of his analysis. On the grounds of the view that the lack of markets is a true assumption, the true starting point of the analysis, he manages to refer to historical time directly. This leads him to revise the standard analysis concerning individual behaviour and thus imagine a new sequence of markets within a single period.

### Concluding remarks

This chapter has dealt with the third basic feature of Keynes's 'Einsteinian' macroeconomics—i.e. his indirect forces paradigm. I have shown that by stressing the analogies between Einstein and Keynes on the issue of indirect forces, it is possible to highlight important aspects of the *General Theory*. In the first place, we can understand Keynes's conception of the working of the price mechanism. While allowing for flexible prices, he rejects the standard Classical view that they work smoothly to clear all markets. This is due to the fact that, for him, prices play an adjusting role on the key markets of the economy essentially by affecting the aggregate psychological data underlying the functions of aggregate demand and liquidity preference rather than affecting directly individual agents as in standard theory. This is true, for example, for the effects of money wage changes on the labour market, as well as for the change in actual interest rates on speculators' behaviour.

Second, the indirect forces paradigm accounts for Keynes's notion of equilibrium. Unlike the standard notion, this is meant to refer to a state of rest rather than to a complete market clearance. Moreover, it is possible to regard this state of rest as a state of 'normal' equilibrium. While Keynes is not the first economist to use the concept of a normal state—indeed, there are significant links between him and the British Classics as well as Marshall on this issue—he is the first to conceive of the 'norm' as something relating to world-3 objects such as agents' theories.

The analogy between Keynes and Einstein on this point ultimately allows us to rationalize Keynes's sequence method, which implies a brusque departure from the Walrasian simultaneous logic. In particular, I have stressed that by starting from the key assumption that there is a lack of future markets in real-world economies, it is possible to derive the sequence of decisions and markets based on the principle of effective demand and the existence of money which underlies the *General Theory*.



Part II

THE NEOCLASSICAL  
SYNTHESIS





## HICKS'S 'MR. KEYNES AND THE "CLASSICS"'

The interpretation of Keynes offered by the Neoclassical Synthesis is based on the interplay of the three key features of general equilibrium which underlie 'pure theory' as defined in *Value and Capital*. However, these features are not normally found together in the works of the Neoclassical Synthesis. The most significant characteristic of these works is that they are the rather hybrid products of the mixture of one or more of the three basic features of general equilibrium theory with Keynes's concepts. This is why we label most models of the Neoclassical Synthesis as 'pragmatic' macroeconomics.

The famous IS-LM model, built in Hicks's (1937) article 'Mr. Keynes and the "Classics"', can also be interpreted along these lines. Indeed, it marks the beginning of 'pragmatic' macroeconomics. On the one hand, it seems to justify macroeconomics as an autonomous subject à la Keynes insofar as it focuses on the aggregates of the *General Theory* without making reference to atomism. On the other hand, IS-LM represents an exercise in 'translation' of Keynes's analysis in terms of the direct forces emphasized by general equilibrium theory.

In this chapter I make two points. The first is that this exercise in translation plays a crucial role in leading Hicks to his conclusion that the *General Theory* is nothing but a particular case of Classical theory, it being valid only in the unlikely event of the liquidity trap occurring. The second point is that this conclusion looks suspicious, largely because the IS-LM model can be called into question from two different standpoints. On the one hand, this model violates some canons of 'pure theory' and leads Hicks to draw conclusions which are inconsistent with the orthodox paradigm. On the other, it neglects the methodological background of the *General Theory* and forces Hicks to overlook vital aspects of the book, such as the principle of effective demand.

### The relationship between 'pure theory' and 'pragmatic' macroeconomics

Hicks's 'Mr. Keynes and the "Classics"' is one of the first instances of 'pragmatic' macroeconomics. While still relying on the notion of temporary

equilibrium, the paper shows several features which are at loggerheads with 'pure theory'. The most important of these is that it welcomes the use of aggregates. Two points can be noted here. First, Hicks stresses that aggregates play a useful role in macroeconomics:

A great part of Mr. Keynes's work may be regarded as an effort to cut through this tangle, by grouping complex factors together into bundles. This process is one of drastic simplification, but it is necessary if the theory is to become an instrument of practical thought.

(Hicks 1936:87-8)

Second, he treats aggregates as if they were autonomous. In particular, he rules out atomism insofar as he fails to take into account general equilibrium parameters, such as preferences and technology. However, 'Mr. Keynes and the "Classics"' does not break with 'pure theory' completely. In this paper Hicks does actually rely on the direct forces paradigm, as he seeks to demonstrate the formal equivalence between the theories of Keynes and the Classics and the conclusion that the former is a particular case of the latter. This attempt essentially implies an exercise in 'translation' of the key relations of the *General Theory* into symmetric terms and the emphasis on the direct adjusting role of prices. To make this clear, it is necessary to refer to the comparison of Keynes with the Classics which Hicks makes in his paper. For this purpose, he writes down the following two systems of equations:<sup>1</sup>

$$\begin{array}{lll} M=kY & I=C(i) & I=S(i, Y) \\ M=L(Y, i) & I=C(i) & I=S(Y)^2 \end{array}$$

The first system is meant to represent the Classical views, the second those held by Keynes. In both systems, the first equation describes the equality between supply and demand for money. The second equation represents the investment function, while the third describes the equality between investment and savings. On these grounds, Hicks derives the IS and LM curves which represent the equilibrium in the markets for goods and money in relation to various combinations of interest rates and levels of income.<sup>3</sup>

### Saving and investment as symmetric variables

That Hicks treats Keynes's theory in symmetric terms is plain from the way he deals with the relation between these two curves and the interpretation of the IS curve. On the one hand, he finds an analogy between the IS-LM diagram and the ordinary demand and supply analysis of value theory. He stresses that income and the rate of interest are determined together at the point of intersection of the curves IS and LM, 'just as price and output are

determined together in the modern theory of demand and supply. Indeed, Mr. Keynes's innovation is closely parallel, in this respect, to the innovation of the marginalists' (Hicks 1937:109).<sup>4</sup>

On the other, Hicks attempts to make a symmetric treatment of saving and investment at several points. First, he provides a narrow interpretation of Keynes's investment function. When comparing Keynes with the Classics, he regards the schedule of the marginal efficiency of capital defined in the *General Theory* as essentially equivalent to that of the marginal productivity of capital postulated by those versions of Neoclassical theory that rely on aggregate production functions (e.g. Pasinetti 1997b:198–9).<sup>5</sup> In particular, he describes it as inversely related to the rate of interest without attaching much weight to Keynes's long-term expectations. It is true that in Hicks's 1936 review he emphasizes that the latter can be regarded as independent variables, since 'as Mr. Keynes shows...they are wayward things. It is almost intractable to make good estimates of the state of the market years ahead and yet this is what an entrepreneur has to try to do' (1936:89). However, Hicks (1937) seems to assume implicitly that in the face of uncertainty the entrepreneur makes these estimates by simply looking at the past or current values of the relevant variables. This is quite clearly the implication of the attempt he makes to generalize the *General Theory* at the end of the article by also inserting current income as an argument of the investment demand function. This move is in line with the concept of marginal productivity of capital, because the latter is essentially static.

Second, although in his Keynesian system Hicks seems to account for the asymmetry between saving and investment in that he regards them as being determined by different factors, he also belittles this asymmetry. The point is that he stresses that Keynes's vital innovation with respect to the Classics is liquidity preference theory. While underlining the role of the multiplier in the construction of the IS curve,<sup>6</sup> he actually considers Keynes's neglect of any influence of the rate of interest on saving (so that the latter depends only upon the level of income) only as a minor amendment. Third, Hicks regards saving, like investment, as an *ex-ante* variable and the result of maximizing behaviour. In his recent reassessment of the IS-LM model, he claims, for example, that the equilibrium method which underlies this model implies that 'planned savings and realized savings are the same' (Hicks 1979:78), and that there is equilibrium in respect to saving when there is no 'failure to reach a utility optimum' (ibid.: 78). Fourth, in his 'generalization' exercise which leads him to regard Keynes as being in line with Wicksell, Hicks inserts the missing *i* in the saving equation and *Y* in the investment equation of the Keynesian system and ends up by having *i* and *Y* in all the equations as well as perfect symmetry between saving and investment.

Finally, the symmetry between saving and investment is also implicitly emphasized by Hicks in the analysis of the determination of the rate of

interest which he makes in his (1936) review of Keynes's book, but it is also relevant for IS-LM. Here he stresses the symmetry or formal equivalence between liquidity preference and loanable funds theory. This does not mean that he regards them as identical. He is aware that the two theories differ in important respects. In particular, they involve a different view of interest rate determination and a different sequence of events. As for the first question, while for liquidity preference theory the rate of interest is determined by the demand and supply of the stock of money, for the loanable funds theory instead the rate of interest is the price that equates the supply of loans or 'credit' (or the flow of saving *plus* the net increase in the amount of money during a period) and the demand for loans or 'credit' (or the flow of investment *plus* the net hoarding during the period). It can be argued that while Keynes holds a twofold margin view according to which the rate of interest affects only investment and liquidity preference (consumption is a function of income only), the loanable funds theory regards the rate of interest as a variable that plays a part in the determination of the equilibrium in the money and goods markets and operates simultaneously on the threefold margin of the individual's time preference (consumption decisions) and liquidity preference (decisions over the relative size of bonds and money holdings) and of the marginal productivity of capital (investment decisions).<sup>7</sup>

As for the sequence issue, the crucial difference between the two theories is whether the flows of saving and investment exercise a direct or an indirect influence on the interest rate. While the loanable funds theory stresses the direct influence, liquidity preference holds instead that the two variables affect the interest rate only indirectly through changes in the level of income. According to the *General Theory*, for instance, a fall in investment will tend to lower income, leading in turn to an excess supply of money, which is entirely reflected in an excess demand for bonds and a fall of the rate of interest.<sup>8</sup>

While Hicks seems to be aware of these differences, he believes that they are essentially formal in kind. He actually emphasizes that the two theories have significant common features. First, both regard the interest rate as an essentially monetary phenomenon in contrast with the traditional 'real' Classical theory, stressing instead that the interest rate affects only saving and investment.<sup>9</sup> Second, they turn out to be two formally equivalent ways of determining the rate of interest within an aggregate general equilibrium model. In particular, by making reference to a model composed of four markets (namely, those for goods, labour, money and bonds), Hicks argues that:

- The rate of interest cannot be determined in isolation. It is a price like all the other market prices and 'must be determined with them as a part of a mutually interdependent system' (1946:154);
- Walras's Law holds, so that if equations of supply and demand hold for goods, labour and loans, it will follow automatically that the demand for money equals the supply of money.

He thus notes:

The ordinary method of economic theory would be to regard each price as determined by the demand and supply equation for the corresponding commodity or factor; the rate of interest as determined by the demand and supply for loans. If we work in this way the equation for demand and supply of money is otiose—it follows from the rest... But we could equally well work in another way...we could allot to the rate of interest the equation for the demand and supply of money. If we do this, the equation for loans becomes otiose... 'Saving' and 'Investment' are therefore automatically equal. The latter method is the method of Mr. Keynes. It is a perfectly legitimate method, but it does not show other methods to be wrong. *The choice between them is purely a question of convenience.*

(Hicks 1936:92–3; emphasis added)

This analysis is also relevant for the basic IS-LM model. While it is true that this model captures only the liquidity preference sequence, it still implies the equivalence view. It is sufficient to note, for example, that in this model Walras's Law also holds, so that, for example, from the equilibrium of the goods and the money markets the equilibrium of the asset market can be derived.<sup>10</sup> Moreover, the equivalence view underlies Hicks's (1937) comments on liquidity preference. After stressing that the latter is Keynes's vital innovation, he makes another claim which appears to contradict the previous one, pointing out that since, in the *General Theory*, the demand for money depends not only on the interest rate but also on the level of income, Keynes's theory 'becomes hard to distinguish from the revised and qualified Marshallian theories' (Hicks 1937:108). The point is that for Hicks, while liquidity preference is a novelty with respect to those versions of the Quantity theory, like Fisher's, which neglect the influence of the interest rate on the demand for money, it is instead quite in line with the Cambridge version of this theory, based on the equation  $M=kY$ . Cambridge economists admitted the influence of the interest rate upon the demand for money long before the *General Theory*. In particular, Hicks quotes Lavington as being one of the anticipators of liquidity preference (Hicks 1937:106). However, the same applies to some extent also to Marshall, Pigou, Robertson and the Keynes of the *Tract on Monetary Reform* and the *Treatise on Money*. As the Cambridge approach relies on the loanable funds theory, Hicks's claim is tantamount to suggesting that liquidity preference is equivalent to it.

### The liquidity trap

The crucial result of Hicks's attempt to establish symmetry between the variables of Keynes's theory is to reduce it to a particular case of Classical

theory. Let us see how he achieves this result on the grounds of the basic IS-LM model. Hicks starts by suggesting that the essential difference between the two theories concerns their views about the shape of the LM curve. In particular, this curve tends to be: (a) nearly horizontal on the left as there is a minimum positive level of the rate of interest that can be reached at which the demand for money becomes infinite (this is the so called *liquidity trap*); (b) nearly vertical on the right as there is a maximum level of income which can be financed with a given amount of money. He then claims that if the curve IS intersects the LM curve where the latter slopes upward, the Classical theory will be a good approximation, so ‘an increase in the inducement to invest will raise the rate of interest, but it will also have some subsidiary effect in raising income and therefore employment as well’ (Hicks 1937:109). However, if the intersection of the two curves occurs where the LM curve is flat, Keynes’s theory becomes valid. A rise in the investment schedule will only increase employment and not raise the interest rate at all. At this point, the system is in a position of underemployment equilibrium as it is caught in the liquidity trap. Because of the influence of the speculative motive, the demand for money is infinitely elastic at a rate which is above the full employment interest rate, and a mere increase in the money supply will not force it down any further. Hicks thus draws the conclusion that the *General Theory* is the ‘Economics of Depression’ and turns out to be only a particular case of Classical theory.

On these grounds, it is easy to see the crucial role played by symmetry. Hicks’s claim that a rise in the rate of interest following a shift in the IS curve is a result which is consistent with Classical theory can only make sense if the equivalence between direct and indirect ways of influencing the rate of interest is maintained. Although IS-LM describes the liquidity preference sequence, Hicks’s view is that this result could also have been achieved on the grounds of more orthodox methods, such as that underlying the loanable funds theory. It is only in the liquidity trap case that the symmetry between the two theories in terms of conclusions breaks down, so that Keynes’s special theory becomes valid.

Despite Hicks’s emphasis on the heterodox nature of the liquidity trap, it would be quite wrong to regard the latter as clashing with the canons of general equilibrium analysis. On the contrary, it still represents a rationalization of Keynes’s contribution in terms of the direct forces underlined by this analysis. In particular, by stressing the role of the interest rate rigidity in Keynes’s theory, Hicks identifies an analogue of money wage rigidity in Classical theory. He is able to show that Keynes adopts the same type of explanation of unemployment held by the Classics; namely, one that places the emphasis on the direct adjusting role of prices. An obvious implication of this explanation is the prediction that whenever the normal conditions of full price flexibility are not met due to some exogenous causes,

such as institutional factors or agents' irrationality, phenomena like misallocation or underutilization of resources are most likely to occur. Therefore, Hicks is completely in line with this perspective when putting the blame on the downward rigidity of a price like the interest rate for Keynesian unemployment. In his view, it is also true for the *General Theory* that if the interest rate were flexible, monetary policy could still push the economy towards full employment and its investment-saving analysis be proxied by that of Classical theory.

### Critiques from a Classical standpoint

As already pointed out, IS-LM is a hybrid product as it seeks to reconcile the 'direct forces' view with Keynesian concepts. It is not, therefore, surprising to find that it can be attacked from a 'pure' Classical standpoint. The crucial point to emphasize is that Hicks's basic IS-LM is not really suitable to account for Classical theory.<sup>11</sup> Restoring symmetry among Keynes's relations is not enough to obtain a coherent representation of this theory. The fact that Hicks relies on 'autonomous' Keynesian aggregates impairs his attempt to do so. In order to see this point, it is sufficient to note that the neglect of general equilibrium parameters, such as preferences and technology, leads Hicks to overlook the crucial role played by the labour market in Classical theory. This omission explains why he makes several statements which are inconsistent with the orthodox paradigm. First, Hicks does not tie Classical theory to the assumption of full employment. In particular, he holds that this theory is compatible with a situation where an increase in the money supply does not determine a price rise, but only raises real income and the level of employment (Hicks 1937:104–5). That this situation is not in tune with the Classical paradigm was noted by Keynes himself when he was asked to comment on Hicks's (1937) article:

From one point of view you are perhaps scarcely fair to the classical view. For what you are giving is a representative belief of a period when economists had slipped away from the pure classical doctrine without knowing it and were in a much more confused state of mind than their predecessors had been. But if you were to go further back...you would have found a school of thought which would have considered this an inconsistent hotch-potch. The inconsistency creeps in, I suggest, as soon as it comes generally agreed that the increase in the quantity of money is capable of increasing employment. A strictly brought-up economist would not, I should say, admit that. We used formerly to admit it without realising how inconsistent it was with our premisses.

(Keynes 1973b:79)



Second, Hicks assumes given money wages. While being in line with a large part of Keynes's analysis, this assumption is in contrast with 'pure theory' that considers price and wage flexibility as a postulate.<sup>12</sup> It must be noted that to amend this mistake, Hicks (1957) in his review of Patinkin's book, *Money, Interest and Prices*, makes a distinction between a short-run and a long-run version of Classical theory, which is absent in 'Mr. Keynes and the "Classics"'. The short-run version allows for money-wage rigidity and for a temporary increase in employment due to an expansion of the money supply. In the long-run version all prices are flexible and full employment is the rule.

Third, Hicks implicitly assumes that the aggregate saving and investment equations taken together determine the level of activity. While reflecting to a large extent the principle of effective demand, this view is in contrast with 'pure theory', where the level of activity is determined by the general equilibrium parameters. This point is made clear by Harrod (1937) in his review of the *General Theory*. He argues that the level of activity in Keynes's view is dependent on the level of aggregate demand expected by the entrepreneurs; it is no longer assumed to be:

dependent, as in orthodox theory, on the preference schedules of the various factors expressing their willingness to do various amounts of work in return for income and on the schedules expressing the relation between the amount of work done and income accruing from it (laws of return).

(Harrod 1937:600)

Fourth, Hicks argues that the price level is determined by marginal costs. As stressed again by Harrod, this assumption is consistent only with Keynes's theory. In line with the Quantity theory, the Classics may instead regard the price level as being determined only by the money supply:

In the traditional theory the supply and demand schedules of all the factors stand on the same footing; the level of activity is an unknown, but the price level is determined by the monetary equation. This determination of the price level enables the level of activity to be determined by the factors' money supply schedules, and by their marginal productivity schedules. In Keynes's theory, the level of activity is determined by the equations governing the saving/interest complex. In the general field, in which we are now only concerned with the demand and supply of prime factors, the level of activity is conceived as determined *ab extra*. It is a known quantity. But the price level is conceived to be completely malleable. If it were not, the system in the general field would be overdetermined. Thus the monetary equation is shorn of its former powers. The level of activity

being a known quantity the price level is determined by the money cost of production.

(Harrod 1937:600–1)

In the final analysis, in his basic IS-LM model Hicks regards an increase in investment determining a rise in the interest rate even at less than full employment as the Classical case. While this is consistent with Keynes's theory, it is not in line with the Classical paradigm, where it occurs only under the assumption of full employment income. In his letter to Hicks, Keynes makes this point very clearly. In particular, he notes that Hicks's so-called Classical case is only the outcome of an increase in the level of income and the demand for money when the money supply is fixed; a case which turns out to be thoroughly consistent with the *General Theory*:

From my point of view it is important to insist that my remark is to the effect that an increase in the inducement to invest *need* not raise the rate of interest. I should agree that, unless the monetary policy is appropriate, it is quite likely to. In this respect I consider that the difference between myself and the classicals lies in the fact that they regard the rate of interest as a non-monetary phenomenon, so that an increase in the inducement to invest would raise the rate of interest irrespective of monetary policy.

(Keynes 1973b:80; original emphasis)

### A critique from Keynes's standpoint

The fact that IS-LM turns out to be in contrast with Classical theory and contains some Keynesian features does not imply that it is entirely in line with the *General Theory*. Hicks's use of 'autonomous' aggregates is not enough to build a model which is compatible with this book. His neglect of some features of Keynes's methodological background, such as the indirect forces paradigm, leads him to break with key aspects of the theory. First, Hicks's symmetric treatment of saving and investment is at loggerheads with the principle of effective demand (e.g. Pasinetti 1974, 1997a). Second, Hicks's emphasis on the liquidity trap rules out Keynes's alternative vision of the working of the price mechanism.

### *On the symmetry principle*

The principle of effective demand actually implies an asymmetric link between saving and investment. This is made clear by Keynes in his letters to Hicks dealing with the IS-LM paper. Having noted that he finds this article very interesting and really to have 'next to nothing to say by way of criticism'

(Keynes 1973b:79; see also Young 1987:31–2), Keynes makes at least two important critical remarks which underline this asymmetric link. One concerns the arguments of the two functions; the other the equivalence view. As for the former, Keynes objects to the introduction of income in the investment function carried out by Hicks in order to generalize the *General Theory*:

The objection to this is that it overemphasises current income. In the case of the inducement to invest, expected income for the period of investment is the relevant variable...whilst it may be true that entrepreneurs are over-influenced by present income, far too much stress is laid on this psychological influence, if present income is brought into such prominence. It is of course, all a matter of degree. My own feeling is that present income has a predominant effect in determining liquidity preference and saving which it does not possess in its influence over the inducement to invest.

(Keynes 1973b:80–1)

It should be clear why Keynes makes this objection. The point is that the emphasis on current income restores the symmetry between the two variables. In Keynes's view it is because investment does not depend on current income that it may change independently of saving, while the opposite is not true. There are two further remarks to make on this point. One is that the contrast between Hicks and Keynes on the analysis of investment decisions concerns how to model expectations. While Hicks's emphasis on current income implies that they are 'well-behaved'—i.e. static and depending on 'physical reality' like those of *Value and Capital*—Keynes's critique of Hicks justifies instead the view that long-term expectations are autonomous and refer to the popular models of the economy.

The second remark is that Keynes's critique is valid not only against the generalized IS-LM model, but also applies to the basic IS-LM. It is true that in the latter Hicks includes only the rate of interest as an argument of the investment function, while leaving saving to depend only on income, a move which appears to be in line with the multiplier and the principle of effective demand. However, the fact remains that Hicks's definition of the IS curve as implying the equilibrium of saving and investment actually clashes with this principle. The point is a simple one. While, as stressed, for example, by Pasinetti (1974), effective demand theory implies a one-way, asymmetric, causal link from investment to saving, so that the latter is created by the former, according to the standard definition of equilibrium, the latter occurs between two independent and symmetric variables, such as demand and supply for an individual good and is verified only for certain values of the equilibrating variables, not for all.

There seems, therefore, to be a built-in contradiction in the very construction of the IS-LM model. On the one hand, Hicks refers to the multiplier in his definition of the IS curve. On the other, however, he stresses that saving is an autonomous and independent variable as implied by his reference to the notion of *ex-ante* saving. This contradiction can only be solved by either giving up the IS-LM model or ruling out the principle of effective demand. It can be thus argued that, from Keynes's standpoint, the IS-LM model is open to criticism similar to that made against the Classical theory of the interest rate in the *General Theory*: namely, that Classical saving and investment schedules could not shift independently from one another as there is interdependence between them (e.g. Carabelli 1991:122).

It is not difficult to show that, in his saving/investment analysis, Keynes is much more consistent than Hicks. In line with his principle of effective demand, he sticks to an asymmetric view throughout. On the one hand, while emphasizing the freedom of individual choices and the fact that, at the individual level, saving and investment may well differ, he treats the equality between aggregate saving and investment as an identity, given that the former cannot change without the latter (e.g. Keynes 1936:84; Lange 1938; Snippe 1985; Young 1987:153). This is due to the fact that the principle of effective demand implies a mechanism which works only at the systemic level, quite independently of individuals' will, in line with the perspective that macroeconomics deals with the unintended outcomes of individual behaviour. On the other hand, Keynes rejects *ex-ante* saving. He notes, for example, that '*ex-ante* saving [is] a very dubious concept; the decisions don't have to be made' (Keynes 1973b:183; see also Chick 1983: 182–3). This is confirmed by the fact that, in the *General Theory*, while the investment rests on maximizing behaviour, saving does not.

It is important to note that Keynes's emphasis on the asymmetric link between saving and investment does not imply his refusal to consider equilibrium on the goods market. As we see in the following chapters, the point is that he provides a different definition of the equilibrium condition; namely, one that does not involve the equality of *ex-ante* saving and investment, but the equality of expected and realized aggregate demand.

### *The rejection of the equivalence view*

Another objection which Keynes raises against the symmetric treatment of saving and investment implied by the IS-LM construction centres on the supposed equivalence between liquidity preference and loanable theory of the interest rate within a general equilibrium model as stated by Hicks. In his first letter, he asks Hicks what he means by his claim:

I do not really understand what you were driving at. In particular, where you say 'It is a perfectly legitimate method, but it does not prove

other methods to be wrong', what exactly are the other methods which you have in mind?

(Keynes 1973b:81)

In a second letter, he argues that:

I do not really understand how you mean interest to be determined by saving and investment... However, I am trying to bring the whole thing to a head by a short article...commenting on Ohlin's exposition of the Swedish theory of interest regarded as determined by the demand supply for loans...I am accusing you of agreeing with the Swedes in this matter.

(Keynes 1973b:83)

The reason why Keynes calls into question Hicks's equivalence view is that liquidity preference is actually incompatible with the general equilibrium model (e.g. Chick 1983:179–92; Keynes 1937b; Rogers 1989:106–9; Snippe 1985). The point is that Keynes' theory implies the predominance of the stock principle, whereby all flow variables can only play a minor role in the determination of the interest rate. As Townshend (1937) stressed, since in most cases the volume of existing loans of any one type is large compared to the volume of new loans of the same type, and since the price of new and the existing loans must be the same, the influence of expectations about the value of existing loans held by speculators is usually the predominant causal factor in the determination of the common price. Townshend also asserts that the revaluation of old bonds may take place at each and any moment in time and that their price can change without any new flotation of bonds. If opinion is unanimous, this price can change without any actual exchange or movement of money.

What is important to stress here is Townshend's conclusion, according to which Keynes's strong emphasis on the role of speculators' expectations implies that 'the interest rate is an independent variable in the scheme of economic causation' (Townshend 1937:157). This means that, contrary to Hicks's Walrasian view, it can actually be determined in 'isolation'; that is to say, it cannot be uniquely inferred either from the 'fundamental' values of real flow variables, such as the level of income, or from commodity prices. In this way, it is possible to justify Pasinetti's conclusion that the basic scheme of the *General Theory* can be expressed in terms of one-way causal links.

One implication of Townshend's analysis is that the autonomous role of the interest rate is a 'structural' feature of Keynes's analysis; it has nothing to do with unlikely events like the liquidity trap.<sup>13</sup> Townshend's emphasis on the role of autonomous expectations in the determination of the rate of interest leads him, for example, to argue that the liquidity preference view provides the basis for a new theory of value.<sup>14</sup>

*The liquidity trap: a critique*

The reason why Hicks's emphasis on the liquidity trap clashes with Keynes is that it neglects the latter's peculiar view of the working of the price mechanism. Like Neoclassical theorists, he claims that prices are flexible; however, unlike them, he argues that they do not play a direct equilibrating role. In particular this means that (a) prices may fail to exercise a direct influence on the forces of demand and supply in a certain market; (b) unemployment is not due to price rigidities. This is also true for the interest rate. Two comments are in order. First, for Keynes the interest rate does not directly balance saving and investment on the capital market, as implied by Classical theory. In particular, interest rate changes directly affect only the investment function, while they affect the saving function indirectly through changes in income. This implies that there is no market mechanism that can push the interest rate to its 'right' or full employment level. The point is that Keynes rules out the possibility of an excess of saving over investment which could exercise a downward pressure on the interest rate. He rejects the notion of *ex-ante* saving and does not define a full employment saving function independently of the investment function, so that no gap between the two variables can ever arise (e.g. Leijonhufvud 1981a). Moreover, as noted before, even the flow of income in the liquidity preference sequence cannot be assumed in his theory to affect the interest rate in a predictable way because of the predominance of the stock principle in the determination of the rate of interest and the autonomous role played by expectations on financial markets.

Second, a rigid interest rate cannot be regarded as the cause of unemployment in the *General Theory*. The point is that even if the interest rate were flexible, full employment would not necessarily be granted. This is due to the fact that, for Keynes, investment is an autonomous variable. While, in the Classical model, investment is normally at its 'right' value because it is highly responsive to interest rate changes, in the *General Theory* it may not be so; it may fail to take the 'right' value even if the interest rate is low. The point is that it depends on long-term expectations which are governed by popular models of the business community that are quite autonomous with respect to current market occurrences, including interest rate changes. Investment cannot simply be 'forced' to take on the full employment value.

**Concluding remarks**

In this chapter, I have dealt with one of the first instances of 'pragmatic' macroeconomics: namely, Hicks's IS-LM model. The latter turns out to be a hybrid product which is based on a few key departures from the canons of 'pure theory', as well as from Keynes's alternative paradigm. It can be

thus criticized from both standpoints. On the one hand, in contrast with 'pure theory', it relies on aggregates and rules out atomism and the constructive method. This leads Hicks to draw conclusions which are in contrast with the orthodox paradigm, such as his view that the Classical macro model is consistent with less than full employment, the assumption of given money wages and the price level determined by marginal costs. On the other hand, the IS-LM seeks to translate the key saving/investment relation of the *General Theory* in symmetric terms and stresses the role of a price rigidity like the liquidity trap. Both of these operations undermine the autonomy of Keynes's macroeconomics as they rule out the principle of effective demand. The latter is consistent only with an asymmetric relationship between saving and investment and the view that the interest rate does not play a direct equilibrating role.

## HICKS'S 'SUGGESTION FOR SIMPLIFYING THE THEORY OF MONEY'

As in Hicks's other major works of the 1930s, in 'A Suggestion for Simplifying the Theory of Money' (1935, hereinafter 'Suggestion'), he aims to show that Keynes's analysis amounts to a special case of Classical theory. He does so by seeking to introduce money in general equilibrium theory on the grounds of the constructive method which also underlies *Value and Capital*. As might be expected, money is not a primary feature of the general equilibrium model. It might possibly be fitted into the model only as an exercise in 'generalization', similar to the extension of the mechanistic principles to non-mechanical phenomena (like heat and light) in nineteenth-century physics. In this chapter, I argue that Hicks's 'Suggestion' can be criticized from both a Classical and a Keynesian standpoint. On the one hand, his application of the constructive method to money does not work. On the other, his approach is incompatible with Keynes's monetary theory because it neglects the fact that the latter is a 'theory of principle'.

### **The application of the constructive method to money: preliminary remarks**

The main problem addressed by Hicks in 'Suggestion' is how to make money compatible with the standard theory of value and general equilibrium analysis; that is to say, how to start what he calls a marginal revolution in monetary theory. He already seems aware of this problem in his first writings on monetary issues (e.g. Hicks 1933). In the latter, he stresses in particular that money turns out to be incompatible with the notion of stationary equilibrium. The point is that while this equilibrium state implies that present and future prices are equal, money can exist only if there is uncertainty over future payments. Money, therefore, cannot be explained by static theory and must be regarded as a disequilibrium phenomenon (see Hicks 1933:34–5).<sup>1</sup> However, Hicks (1935) goes beyond this rather 'negative' conclusion and



seeks to reconcile money with equilibrium. He notices that recent developments in both value and monetary theory help to solve the problems that blocked the first attempts at integrating the two branches of economic theory.<sup>2</sup> On the one hand, he refers to Pareto's reformulation of the theory of value, stressing that marginal utility analysis is a general theory of choice. Hence Hicks claims that, since people choose to have money rather than other things, money too must have marginal utility. On the other, he argues that the Cambridge or cash-balance approach rests on ideas which are similar to his own.

There are at least three reasons why Hicks praises this approach.<sup>3</sup> First, unlike early versions of the Quantity theory such as Fisher's, which place the emphasis on the velocity of circulation of money and carry out only mechanical manipulations of a few aggregates, the Cambridge economists are concerned with people's motives for holding money. They point out that people hold money mainly for transactions and for precautionary motives— i.e. for the convenience of being liquid and the security of being able to provide for current and future payments. Second, the cash-balance approach also seeks to integrate monetary and value theory. Unlike Fisher's approach, which created a gap between the theory of value and the theory of money and fluctuations, the Cambridge theorists recognized, in principle, that monetary theory is only a special case of value theory, so that the value of money (the price level) had to be determined by using the familiar demand and supply apparatus, exactly like any other commodity. However, the fear of falling into a circular argument<sup>4</sup> and the conception of money as being nothing but a veil implied by the Quantity theory (the utility of money is only that derived by the goods which money can buy, i.e. money as such has no utility) led to scepticism over the possibility of actually deriving the value of money on the grounds of marginal utility. Third, the cash-balance approach points out that the demand for money (both for transactions and for precautionary motives) depends upon the rate of interest. According to the Cambridge economists, this means that holding money is the outcome of rational choice. In particular, agents seek to balance at the margin the advantages of holding money with its opportunity cost—i.e. the income that is foregone by holding it rather than by investing it in interest-bearing assets.

In Hicks's view, the last point is developed especially in Keynes's *Treatise on Money*. Here Keynes shows that the price level of investment goods depends upon the relative preference of the investor for holding bank deposits or securities and thus indicates the existence of a choice at the margin. Hicks regards this insight as the basis of his own attempt to start a marginal revolution in monetary theory. He points out that this revolution can be brought about by building a bridge between Keynes's insight, which is developed in partial equilibrium terms, and the modern Paretian value theory based on a general equilibrium framework.

### Hicks's 1935 model

The basic results of this operation can be summarized as follows.<sup>5</sup> First, Hicks focuses on the capital account of a representative individual at a given point in time and asks what determines the quantity of money which he will desire to hold—i.e. his portfolio balance. It must be noted that Hicks does not distinguish between the various motives for holding money, seeming to imply that all of them can be analysed by using the same theoretical apparatus, based on standard value theory. Strictly speaking, however, he underlines that the application of the latter to monetary theory requires an important amendment. While, in value theory, the focus is on the income and expenditure account of the individual, and the problem is to ask which items in that account are under his own control, and then how he will adjust these items in order to maximize his utility, in his view monetary theory focuses instead on the stock of wealth rather than income (in contrast with the early versions of Quantity theory) and thus needs to be based upon 'a capital account, a balance-sheet. We have to concentrate on the forces which make assets and liabilities what they are' (Hicks 1935:57). Hicks stresses that this is the method actually developed in banking theory, so that 'monetary theory becomes a sort of generalization of banking theory' (ibid.: 57).

Second, having pointed out that the central issue in the pure theory of money is to explain 'the decision to hold assets in the form of barren money, rather than of interest or profit yielding securities' (Hicks 1935: 50–1), Hicks argues that the demand for money by an individual depends upon three main factors: the cost of investment (i.e. the cost of transferring assets from one form to another), the dates at which he expects to make payments in the future, and the expected rate of return on investment. These factors explain, in particular, why, with any given level of investment costs, it will not pay to invest money for less than a certain period and in less than certain quantities. However, as Hicks emphasizes, this list of factors is not complete because the crucial fact that people's expectations over the last two factors are never precise must also be taken into account. According to him, this means considering in the analysis the role of a risk factor affecting both the expected period of investment and the expected net yield of investment. One of the crucial consequences of the existence of risk is that:

The particular expectation of a riskless situation is replaced by a band of possibilities, each of which is considered more or less probable. It is convenient to represent these probabilities to oneself, in statistical fashion, by a mean value and some appropriate measure of dispersion...we may assume that a change in the mean value with constant dispersion has much the same sort of effect as a change in the particular expectations... *The peculiar problem of risk therefore*

*reduces to an examination of the consequences of a change in dispersion. Increased dispersion means increased uncertainty.*

(Hicks 1935:53; emphasis added)

It can be noted that for Hicks, uncertainty or risk (which he regards as synonymous) may be increased ‘either by a change in objective facts on which estimates are based, or in the psychology of the individual, if his temperament changes in such a way to make him less inclined to bear risks’ (1935:53). He then draws the conclusion that the increase of uncertainty of both the period and the yield of investment ordinarily acts as a deterrent to investment and, therefore, tends to increase the individual’s demand for money.

Third, he suggests that the investor’s normal behaviour is to try to minimize the total risk of his investment and that the most effective way to do so is to spread capital over a number of investments.<sup>6</sup> However, the existence of investment costs that make it unprofitable to invest less than a certain minimum amount in any particular direction reduces the possibility of risk reduction along these lines. Thus the representative individual would adjust to his most preferred situation by distributing capital over only two types of assets: those which are relatively *safe* (like cash and bank deposits) and those which are relatively *risky* (like long-term debts and shares). This distribution is governed by subjective preferences for much or little risk bearing as well as by subjective expectations of the investment yield. Hicks points out that the latter ‘play a part here corresponding to the part played by prices in value theory’ (1935:58). A crucial consequence of the fact that the equilibrium of the individual’s capital account is determined by subjective factors like expectations instead of objective factors like prices is that:

This purely theoretical study of money can never hope to reach results so tangible and precise as those which value theory in its more limited field can hope to attain. If I am right the whole problem of applying monetary theory is largely one of deducing changes in anticipations from the changes in objective data which call them forth. Obviously, this is not an easy task, and above all, it is not one which can be performed in a mechanical fashion. It needs judgement and knowledge of business psychology much more than sustained logical reasoning. The arm-chair economist will be bad at it.

(Hicks 1935:58–9)

However, Hicks notices that this is not the end of economic theory, because ‘once the connection between objective facts and anticipations has been made theory comes again into its rights’ (1935:597). It is important to note that here Hicks anticipates two points that he later

develops in *Value and Capital*. First, he stresses that, in a general equilibrium perspective, the consideration of money is not separate from that of expectations, although he does not relate them to the missing market issue as in his later book. Second, he underlines the link between expectations and objective data of the world-1 type, such as prices and investments costs.

### Hicks on Keynes's monetary analysis

It is now possible to show how Hicks manages to reduce Keynes's monetary approach to a particular case of his theory. The point is that 'Suggestion' underlies Hicks's interpretation of Keynes carried out in his later writings of the 1930s. Here, Hicks begins by making a positive assessment of Keynes's liquidity preference.<sup>7</sup> He stresses, for example, that the latter, in line with his own temporary equilibrium method, regards the rate of interest as a purely monetary phenomenon in contrast with the standard theory based on the notion of long-run equilibrium and the concepts which are related to it, such as the natural rate of interest:

It is a great strength of Mr. Keynes's theory of interest that it conceives the rate of interest, from the outset, as a money rate... This monetary character of interest is, of course, no novelty; it has been generally recognised at least since the time of Wicksell. But the way of expressing it used by Wicksell and his followers has, of course, to be abandoned by Mr. Keynes since a 'natural rate' of interest would be a concept foreign to the whole present trend of his ideas. Interest, for him, is simply the money rate, and, like Wicksell and his school, he regards the rate as primarily determined by monetary factors.

(Hicks 1936:91–2)

However, Hicks also ends up by raising important objections to Keynes's theory. In particular, he criticizes it for overemphasizing the speculative motive. In his view, the latter leads Keynes to reduce the interest rate into purely risk elements:

A part of the interest paid on actual securities is to be attributed to default risk; and a part of the interest paid, at least on long-term securities is to be attributed to uncertainty of the future course of interest rates. Both of these elements are purely risk-elements; if they were the only elements in interest, it would be true to say that all interest is, in the end, nothing but a risk-premium. That is, I take it, the view of Mr. Keynes; his doctrine of 'Liquidity Preference' appears to reduce interest into terms of these two risks factors.

(Hicks 1946:163–4)

For Hicks, however, this doctrine is objectionable because:

To say that the rate of interest on perfectly safe securities is determined by nothing else but uncertainty of future interest rates seems to leave interest hanging by its own bootstraps; one feels an obstinate conviction that there must be more in it than that.

(Hicks 1946:164)

In line with ‘Suggestion’, Hicks thus argues that there is another reason, apart from the uncertainty concerning future interest rates, that stops people from holding all their assets in the form of securities—i.e. the cost of investing in the latter. It is this cost of transaction together with the risk factor that explain the determination of the level of the rate of interest. This is a first sense in which Keynes’s approach turns out to be a particular case of Hicks’s: he focuses only on the risk factor.

However, Hicks’s critique does not end here. He also defines a new hierarchy between the different motives of the demand for money and the determinants of the rate of interest. Unlike Keynes, he goes on by distinguishing between the determination of the short-term rate and that of the long-term rate. In particular, Hicks maintains that the short-term rate is explained by the imperfect moneyness of securities, which is due ‘to their lack of general acceptability: it is this lack of general acceptability which causes the trouble of investing in them’ (1946:165) and it is the latter, namely ‘the trouble of making transactions which explains the short rate of interest.’ (ibid.: 166). The long-term rate is instead explained in terms of speculation over the future short rate. It is an average of short rates plus a premium to cover the risk of unexpected adverse movements in future short rates.

On these grounds, Hicks defines the relative importance of the precautionary and speculative motives in the following terms:

More than the ‘speculative motive’ is needed to account for the system of interest rates. The shortest of all short rates must equal the relative valuation, at the margin, of money and such a bill; and the bill stands at a discount mainly because of the ‘convenience and security’ of holding money, the inconvenience which may possibly be caused by not having cash immediately available. It is the chance that you may want to discount the bill which matters, not the chance that you will then have to discount it on unfavourable terms. The ‘precautionary motive’, not the speculative motive is here dominant. But the prospective terms of rediscounting are vital, when it comes to the *difference* between short and long rates.

(Hicks 1937:111)

In other words, based on his criticism of Keynes, Hicks is able to derive a demand for money which is not dominated by uncertainty over future interest rates and thus by the speculative motive as in the *General Theory*, but by the relative convenience and security involved in holding wealth in money form— i.e. by the precautionary motive. This function appears to be sufficiently stable since transactions costs and the determinants of the precautionary motive are not as volatile as expectations over future interest rates.

### Critiques from a Classical standpoint

One critique of 'Suggestion' which can be raised from the standpoint of 'pure theory' is that it fails to apply the constructive method in a successful manner. This is due to the fact that Hicks faces two kinds of limitation. One is of a 'subjective' kind. The point is that while seeking to incorporate money into general equilibrium theory, he focuses mainly on the store of value function and fails to address the issue of the transactions role of money. In particular, he neglects the fact that the standard general equilibrium model is not an hospitable setting for it.<sup>8</sup> As pointed out by Ostroy and Starr, Hicks, like Walras, 'did not question...the capacity of the existing value theory to accommodate the challenge of monetary exchange' (1990:6). In other words, Hicks overlooks the fact that the successful application of the constructive method to money requires substantial revisions of existing value theory. In line with his treatment of expectations in *Value and Capital*, he takes into account money only once the core of value theory—i.e. the theory of exchange in real terms—has been completed. This is a feature which underlies all standard general equilibrium analysis, from Walras to Hicks. As Ostroy puts it: 'By introducing money after he had completed his theory of exchange, Walras clearly made monetary phenomena an optional add-on rather than an integral component of the mechanism of exchange' (Ostroy 1989:188).

The other limitation which Hicks has to address is of an 'objective' or intrinsic kind due to the fact that he provides a unified analysis of the demand for money based on the representative agent device. In particular, as Hicks himself recognizes in his *Critical Essays in Monetary Theory* (1967), the analysis developed in 'Suggestion' in line with Cambridge theory implies a misrepresentation of the transactions motive with respect to Fisher's equation of exchange. As noted before, while the latter focuses on the velocity of circulation of money and the institutional aspects of the payment system, the Cambridge theory regards the transactions demand for money as a matter of rational choice. However, as stressed by Hicks, this change of perspective is very misleading. The transactions motive is not a true 'motive' and should be regarded as devoid of volitional connotations. It is simply the money needed to circulate a certain level of output:

A demand for money for transaction purposes is not a voluntary demand like the demand for commodities, which could be forced into the mould of marginal utility theory. The aggregate of money outstanding would depend upon the pattern of transactions conducted, not upon any individual decisions, not even upon any aggregate of individual decisions. For in its nature it is a disequilibrium, not an equilibrium phenomenon. And this seems to mean that we must expect it to be rather impervious to direct economic *incentives*.

(Hicks 1967:15–16)

Moreover, he notes that transaction balances are:

The money that is needed to *circulate* a certain volume of goods, at a particular level of prices. The old Fisher  $MV=PT$  gives a better picture of it than the over-voluntarized ‘Cambridge Quantity Equation’. In relation to this part of the money stock, ‘Velocity of Circulation’ is perfectly appropriate.

(Hicks 1967:15–16; original emphasis)

In other words, Hicks seems to admit here that transaction money represents an intrinsic limit on the application of the constructive method and the possibility of generalizing the Walrasian model. This is due to the fact that it is a kind of ‘systemic’ phenomenon belonging to the category of the ‘unintended’ outcomes of human behaviour. Hicks’s (1967) claims seem to recognize the impossibility of implementing his old ‘pure theory’ project. Only a ‘limited’ macro model can actually be built on orthodox premisses. Classical theory has to put up with the fact that it cannot do more than consider money as a disequilibrium phenomenon or a veil, in line with the dichotomy view.

It is important to stress that Hicks’s argument is not contradicted by advances in the microfoundations of the demand for money in the 1950s. There is no doubt that many stories can be told in which transaction money appears as the outcome of rational choice; one example is the inventory-theoretic approach of Baumol (1952) and Tobin (1956). However, the problem is that these are merely partial equilibrium stories; that is to say, stories that do not discuss the role of money in the system as a whole.

### Critiques from Keynes’s standpoint

The existence of analogies between Hicks and Keynes (for example, their reference to a monetary theory of the interest rate) does not cover the basic contrast between them.<sup>9</sup> In particular, Hicks’s unified treatment of the demand for money based on the representative agent device puts him in contrast with two innovative aspects of Keynes’s analysis: (a) his separate

account of the motives for holding money; (b) his emphasis on the speculative motive. Both of these aspects can only be rationalized by adopting a systemic view of the role of money.

*Keynes's separate account of the motives for holding money*

In the *General Theory* the link between a separate account of the motives for holding money and a systemic view is strong. It can be argued that Keynes's analysis is based on two points. The first is that all motives depend somehow on systemic elements—i.e. elements which are not under the control of agents. The other is that different systemic elements are relevant for the transactions and the precautionary motives, on the one hand, and the speculative motive, on the other. This is the reason why he rejects the tendency implied by the constructive method to analyse all motives on the grounds of the same theoretical framework based on the representative agent and standard utility maximization.

As for the first two types of motives, a major role is played by systemic elements of an institutional kind, such as the level of national income and the system of payments, which are also stressed by the Quantity theory. However, Keynes makes a major departure from the standard monetary theorists, managing to account for the role of transactions money as an integral part of his theoretical framework as opposed to a disequilibrium feature. As noted in Chapter 3, this is due to the fact that, unlike general equilibrium theorists, he sets out from the assumption that markets are missing and considers a full-blown monetary economy as the original datum of the analysis, rather than the end result of sterile efforts to add money to an essentially nonmonetary system. This approach allows him to achieve two important results: namely, to integrate money and value theory from the outset and justify the transactions role of money. It is clear, for example, that only in a context in which the number of futures markets is limited and individuals are compelled to face uncertainty, form expectations and make decisions and transactions in a sequential fashion can money have an essential role to play.

While the simple institutional fact that markets are missing accounts for the transactions role of money, to justify the precautionary motive Keynes introduces another systemic element implied by the missing market assumption: namely, the deformation of agents' calculation tools. He stresses that in the conditions of uncertainty generated by the absence of markets, agents are compelled to adopt conventional rules of behaviour. The store of value role of money enters the picture when the deformation is too strong and even conventions break down. As he puts it: 'Money as a store of wealth is a barometer of the degree of our distrust of our own calculations and conventions concerning the future' (Keynes 1937a:116).



*The speculative motive*

In contrast with the first two types of motives, the speculative motive is determined to a large extent by systemic elements of the world-3 type. He makes this point clear when he stresses that: ‘The rate of interest is a highly conventional, rather than a highly psychological, phenomenon. For its actual value is largely governed by the prevailing view as to what its value is expected to be’ (Keynes 1936:203). The conventional nature of the interest rate is due to the fact that the speculative motive is the main component of the demand for money which is interest-elastic. In particular, it is the very fact that speculators seek to guess or are inspired by the ‘prevailing’ market view on the ‘normal’ interest rate that accounts for the formation of a conventional datum, like the state of liquidity preference.

It should be clear why this makes a major difference with respect to the representative agent model adopted by Hicks. The main difference concerns the issue of expectations. While Hicks’s model rests on the assumption of given expectations in the shape of given probability distributions, for Keynes instead individuals’ expectations are not given, they do not have a definite form. At the macro level, only aggregate psychological data, such as liquidity preference, are given. These may influence individuals’ expectations, but do not determine them completely, in line with the view that agents are autonomous decision-makers. Which particular type of expectations prevails in actual market conditions is an empirical issue.

It is important to note that, from Keynes’s standpoint, Hicks’s representative agent model is not totally wrong. It can be used, for example, in partial equilibrium analysis to deal with allocation problems like the determination of the optimal distribution of a given amount of capital between financial assets. This is a problem which Keynes does not address in the *General Theory*, but it certainly cannot be ruled out as being totally irrelevant. However, Keynes’s view seems to be that this kind of model is not appropriate to discuss macroeconomic issues, such as the role of money in the system as a whole and the determination of the level of activity. In particular, following his right dichotomy argument, he holds that it cannot be used to provide the bridge between micro and macro analysis.

It can be argued that the reason why this gap between Keynes’s macroeconomic view and the representative agent model arises is that the state of liquidity preference which underlies the former cannot be proxied by the given expectations of the latter. It is sufficient to note that the state of liquidity preference does not depend on any specific individual’s psychological state, but on the theories and expectations of all the members of the financial community. Moreover, the determinants of the two types of data differ. While Keynes’s aggregate datum relates to world-3 objects like popular models, the representative agent’s expectations are ultimately

determined by objective data of the world-1 type, such as transactions costs and the short-run interest rate and other parameters reflecting current market experience. This implies a very different degree of autonomy of expectations. While Keynes's liquidity preference gives rise to the bootstrap view—i.e. the fact that speculators' expectations over the long-run interest rate play a key role in the determination of the long-run rate itself—Hicks ends up by suggesting instead that transaction costs and short-run rates are the ultimate determinants of long-run rates.

It is not difficult to see why Hicks's stance implies ruling out the autonomy of expectations altogether. The point is that movements in future short rates are much less unpredictable and disturbing than those in long rates, and the expectations about future short-rates largely overlap with realized results, like Keynes's short-run expectations about effective demand. Hicks's approach to liquidity preference thus appears to be in line with his (1936) review of the *General Theory*, where he rules out the autonomous role of long-term expectations by stressing the link between Keynes and the Swedish economists, focusing essentially on short-term expectations and the *ex-ante/ex-post* gap. In other words, it can be argued that, in both cases, Hicks finds an objective world-1 anchor to either investors' long-term expectations or those over the long-term rate, thus replacing Keynes's objective world-3 anchor. Once again, it is fair to say that there is no need to argue that Keynes would simply dismiss Hicks's view. He does not necessarily deny that current prices and parameters play a role in the formation of expectations. However, in his view they affect agents' expectations not directly, but only through world-3 inmates, like the given state of liquidity preference. This given state of expectations, while influencing market participants, is to a large extent determined exogenously with respect to current market experience. It is this feature which accounts for the different causal role played by expectations in Keynes's model with respect to Hicks's. While, for Hicks, expectations in 'Suggestion' as in *Value and Capital*, are forced to be well behaved as they are, in the end, determined by equilibrium prices, Keynes's expectations appear instead as a truly autonomous dimension of economic analysis.

### Concluding remarks

In this chapter, I have analysed Hicks's 'Suggestion', calling for the application of the constructive method to money. This contribution can be criticized from opposite sides. On the one hand, a Classical economist who believes in the 'pure theory' project would argue that Hicks's application of this method has not gone far enough as he does not manage to show that transactions money can find a room in the general equilibrium model. On the other, it can be argued that Hicks's use of the representative agent model clashes with two important aspects of the *General Theory*,

like the separate account of the various motives for holding money and the emphasis placed on the speculative motive. These two aspects of Keynes's analysis are strictly linked to the fact that he adopts a systemic perspective on the role of money, starting from the key missing market assumption. This allows him to achieve significant analytical results, such as the emphasis on a monetary economy as the original datum, the integration of monetary and value theory, the rationalization of the transactions role of money as well as the focus on the systemic elements underlying the various motives.

## MODIGLIANI

This chapter focuses on Modigliani's famous paper 'Liquidity Preference and the Theory of Interest and Money' (1944, hereinafter 'Liquidity'). Like Hicks, Modigliani also claims that the *General Theory* is a particular case of Classical theory and relies on the canons of general equilibrium. However, unlike Hicks, Modigliani's contribution concerns not 'pure theory', but only 'pragmatic' macroeconomics. In this field he makes at least two innovations with respect to 'Mr. Keynes and the "Classics"'. First, he no longer regards aggregates as being 'autonomous' and introduces the labour market and the production function to the basic model. Second, he rejects the temporary equilibrium perspective and restores the Marshallian distinction between short- and long-run equilibrium.

In this chapter I argue that these innovations greatly influence Modigliani's interpretation of Keynes's theory. It is sufficient to note, for example, that Modigliani sees this theory as placing the emphasis on short-run deviations from the long-run Classical norm. I demonstrate ultimately that Modigliani's conclusions can be criticized for two different reasons. On the one hand, the 'Liquidity' model is objectionable on Classical grounds. Its neglect of some canons of 'pure theory' implies a substantial narrowing down of the scope of the Classical paradigm. On the other, it is open to criticism from Keynes's standpoint as it dismisses key aspects of the *General Theory*, such as its market sequence and the indirect adjusting role of money wages.

### The relationship between 'pure theory' and 'pragmatic' macroeconomics

At the beginning of 'Liquidity', Modigliani makes a few important remarks about his conception of model building:

As a first step in the analysis, we must set up a system of equations, describing the relation between the variables to be analysed. In doing so we are at once confronted with a difficult choice between rigor and convenience: the only rigorous procedure is to set up a complete

‘Walrasian’ system and to determine the equilibrium prices and quantities of each good, but this system is cumbersome and not well suited to an essentially literary exposition as we intend to develop here. The alternative is to work with a reduced system: we must be then satisfied with the rather vague notions of ‘physical output’, ‘investment’, ‘price level’, etc. In what follows we have chosen, in principle, the second alternative, but we shall check our conclusions with a more general system whenever necessary.

(Modigliani 1944:46)

It is worth noting two points in this passage. The first is that Modigliani stresses the existence of a trade-off between rigour and convenience in economic analysis. He seems to subscribe to the rigour of ‘pure theory’, which rejects aggregates for their intrinsic vagueness. The second point is that he suggests a ‘pragmatic’ solution to this contrast. Instead of developing ‘pure theory’, he actually chooses the IS-LM option. However, in ‘Liquidity’ he makes an innovation with respect to Hicks’s (1937) paper by seeking to establish stronger ties between his aggregate model and ‘pure theory’. In particular, he does not rule out atomism altogether. Instead of interpreting aggregates as autonomous concepts, he regards his model as a ‘reduced’ or ‘simplified’ version of a full-blown general equilibrium system. This means that while exploiting the practical advantages deriving from the use of aggregates,<sup>1</sup> he seeks to retain the essential features of this system, such as the reference to the basic parameters of preferences and technology.

It would be wrong, however, to conclude that ‘Liquidity’ represents a major step towards the realization of the programme of ‘pure theory’ defined in *Value and Capital*. Indeed, from this standpoint, it can even be regarded as a backward step from ‘Mr. Keynes and the “Classics”’. The point is that Modigliani drops the notion of temporary equilibrium underlying Hicks’s IS-LM. He refers instead to a standard Wicksellian version of general equilibrium analysis (e.g. Rogers 1989:73) resting on the traditional distinction between short-run and long-run equilibria.<sup>2</sup> This makes for a huge difference from Hicks’s (1937) approach. It seems clear, for example, that while the latter attaches some emphasis to phenomena like money and expectations, considering them as significant macro features which the Classical model must try to incorporate, Modigliani plays them down. Suffice it to note that relying on the notion of long-run equilibrium as a benchmark of economic analysis implies accounting for money and expectations only as short-run disequilibrium phenomena. It is not difficult to see why: in fact, this state of equilibrium is inconsistent with such phenomena because it rests on the assumption of perfect information, which makes nonsense of both.<sup>3</sup>

These innovations have important implications for Modigliani’s interpretation of Keynes. While continuing to regard the *General Theory* as representing only a special case of Classical theory, he justifies this

conclusion in different terms from Hicks. Instead of stressing the formal equivalence of conclusions between Keynes and the Classics, his emphasis on the atomistic roots of his model and the distinction between short- and long-run equilibrium leads him to see a substantial identity of conclusions between them. In order to demonstrate these points, it is useful to focus on 'Liquidity' in some detail. The equations of its model are:

$$M=L(Y, r) \quad (1)$$

$$I=I(Y, r) \quad (2)$$

$$S=S(Y, r) \quad (3)$$

$$S=I \quad (4)$$

$$Y=PX \quad (5)$$

$$X=X(N) \quad (6)$$

$$W=X'(N)P \quad (7)$$

$$C=Y-I \quad (8)$$

$$W=aw_0+bF^{-1}(N)P^4 \quad (9)$$

$$a=1 \quad b=0 \quad \text{for } N=N_0 \quad (10)$$

$$a=0 \quad b=1 \quad \text{for } N>N_0$$

$$a=0 \quad b=1 \quad (11)$$

$$M=kY^5 \quad (1a)$$

The first ten equations represent the Keynesian system. In particular, the first four equations are those used by Hicks (1937) to generalize the *General Theory* with the introduction of the rate of interest and the level of income in all the equations of the original IS-LM model. Identity (5) defines money income. Equation (6) describes an aggregate production function relating output X to the input of labour N. Equation (7) states the condition of equilibrium in the production of goods. Firms will extend production up to the point where the given money wage is equal to the marginal net product of labour. Identity (8) defines consumption as income less investment. Equations (9) and (10) and identities (11) describe the relationship between the wage rate and the supply of labour. According to Modigliani, by including identities (11) and the Cambridge equation (1a) in the above model it is possible to obtain a pure Classical system.

### The primacy of the labour market

The atomistic specification of this model and the distinction between short- and long-run equilibrium, lead Modigliani to make a few major innovations

with respect to Hicks. The first concerns the explicit consideration of the labour market and the production function. This allows Modigliani to achieve two important results. First, he manages to provide a more correct interpretation of Classical theory than Hicks (1937). In particular, this theory is no longer regarded as always being consistent with fixed money wages and unemployment. These events may be compatible with it only if they are seen as temporary deviations from the long-run equilibrium state which describes the 'normal' implications of the theory. These implications may be summarized as follows:

$$L \rightarrow G \rightarrow K$$

This sequence shows the primary role played by the labour market (L) in the Classical model. This is due to the fact that the latter relies on atomistic foundations and starts out from the specification of preferences and technological relations in a priori terms—i.e. as individual data independent of the market. In particular, the technological relations determine the demand for labour, while workers' preferences underlie the labour supply. Having determined the labour input, the production function yields the income level which is relevant for the goods market (G). Income is either consumed or saved. Saving and investment on the capital market (K) determine the interest rate.

The second result of the explicit consideration of the labour market and the production function is that Modigliani interprets Keynes directly in terms of the Classical sequence described above. While Hicks retains the liquidity preference sequence and seeks to demonstrate its formal equivalence with the loanable funds sequence, Modigliani's strategy is more direct: it amounts to replacing the former with the latter. In particular, he attempts to demonstrate that liquidity preference is irrelevant, except when money wages are rigid. It should not come as a surprise, therefore, to find that Modigliani ends up by regarding Keynes and the Classics as coming to the same conclusions. In particular, in 'Liquidity' Keynes appears to emphasize only short-run deviations from the long-run Classical norm, a stance thoroughly consistent with a Classical approach. Modigliani states this view in two different ways: (a) when he refers to the general model; (b) when he discusses IS-LM.

When discussing his general model, Modigliani argues that the basic difference between Keynes and the Classics lies in the formalization of the relationship between the wage rate and the labour supply. In his view, Keynes's essential contribution is to emphasize the money wage rigidity caused by workers' irrational behaviour. In particular, he stresses that while the Classics regard workers' behaviour as being consistent with the axioms of individual rationality, so that their supply of labour is homogeneous of degree zero in prices and depends only on the real wage, for Keynes instead

these axioms do not hold. In the *General Theory*, under conditions of underemployment (i.e.  $N < N^0$ ), the supply of labour is perfectly elastic with respect to the historical ruling money wage rate,  $w$  which is a datum for the model. Only after full employment has been reached does the wage rate become a variable to be determined by the system. He thus draws the conclusion that Keynes's basic result—i.e. 'the consistency of economic equilibria with the presence of involuntary unemployment—is due entirely to the assumption of "rigid wages" and not to the Keynesian liquidity preference' (Modigliani 1944: 65). To demonstrate this claim, he goes on to analyse the basic properties of a system with rigid wages. He notes, for example, that in this system: 'The equilibrium value of the "real" variables is determined essentially by monetary conditions rather than by real factors (e.g. quantity and efficiency of existing equipment, relative preference for earning and leisure, etc)' (ibid.: 65–6). These monetary conditions are sufficient to determine money income and, given fixed money wages and technical conditions, an equilibrium level of employment (although not necessarily full employment).

There are two points to note about this view. The first is that it is actually in line with Classical theory and thus implies that Keynes is saying nothing new. As noted, for example, by Dutt and Amadeo: 'Keynes's "classical" economists...as indeed Keynes well knew...were well aware of the fact that wage rigidity causes unemployment' (1990:103). The second point is that, for Modigliani, this conclusion is true in general, with the exception of the liquidity trap case, in which liquidity preference theory suffices *per se* to explain the existence of underemployment equilibrium. It is important to note that while Hicks considers this case as the core of Keynes's theory, for Modigliani instead this is a rather uninteresting and limiting case.<sup>6</sup>

### Modigliani's theory of interest

In his analysis of the IS-LM model, Modigliani also states the view that Keynes and the Classics come to the same conclusions. This analysis departs from Hicks's in a number of important respects. The basic point is that Modigliani criticizes Hicks's interest rate theory based on the cost of buying and selling securities. He notes, for example, that 'this is certainly an unusual theory of interest and an astonishing one...it appears irreconcilable with the theory we have developed throughout this paper' (Modigliani 1944:83). He points out in particular that:

While the cost of investing is necessary to explain why the demand for money to hold is not equal to zero and why the rate of interest cannot fall below a certain level it is certainly not necessary and sufficient to explain the rate of interest.

(Modigliani 1944:83)



Setting out from the distinction between short-run and long-run equilibrium, Modigliani thus restores the traditional theory of the interest rate whereby the real forces of the propensity to save and the marginal efficiency of investment play a major role in the long run, while monetary factors such as liquidity preference and the money supply are relevant in the short run:

The equality of demand and supply of loanable funds [or for money to hold] is the equilibrium condition for the week...and determines the equilibrium rate of interest for the week. It corresponds to the short-run equilibrium condition of the Marshallian demand and supply analysis... But the stock of money to hold (the supply) tends itself to change and thus push the 'daily' rate toward the level at which the flow of money saving equals the flow of money investment. The condition (*ex-ante*) saving=*(ex-ante)* investment corresponds to the long-run Marshallian condition... The first condition is satisfied even in the short period. The second is a long-run condition and therefore may actually never be satisfied: but it is necessary to explain the level towards which the weekly rate tends.

(Modigliani 1944:87)<sup>7</sup>

For Modigliani, this theory holds under quite general conditions—i.e. under both the flexible and rigid wages assumptions. It only fails to hold when the liquidity trap occurs. In this case, 'the rate of interest is determined exclusively by institutional factors' (1944:88). There are two points to note about this view. The first is that Modigliani rightly puts an end to the anomaly (from the standpoint of Classical theory) represented by Hicks's interest rate theory. While in *Value and Capital* Hicks relies on a full atomistic specification of the basic model and thus places the emphasis on the role of tastes and technology on the labour market, he provides no justification for dismissing the role of these parameters in his analysis of the capital market.

The second point to note is that, on the basis of his new theory of interest, Modigliani completes his interpretation of Keynes and the IS-LM model. In particular, he regards the 'money' rate as underlying the LM and the 'real' rate as underlying the IS curve, in line with Hicks's 'generalized' model. The innovation he makes with respect to Hicks is to regard this model as the normal IS-LM—i.e. a model directly representing Keynes's views, rather than a kind of 'personal' exercise, as it was for Hicks. As the latter had noted, this innovation is tantamount to considering Keynes's theory as similar to Wicksell's.

In order to demonstrate this point it is useful to focus on Modigliani's interpretation of the IS-LM curves in some detail. Modigliani begins by noting that the LM curve describes points of short-run equilibria on the money market (i.e. positions of equilibrium for the income period) insofar

as it refers to the equality of demand and supply for stocks of money to hold. This equality is a condition of short-run equilibrium because it is the outcome of decisions that can be carried into effect immediately. On the other hand, he interprets the IS curve as a locus of points of long-run equilibria between the flows of *ex-ante* saving and investment on the goods market. This equality is a condition of long-run equilibrium because it ‘cannot be brought about instantaneously’ (Modigliani 1944:62), as the multiplier takes time to work out its full effect. For him, this is due to the assumption, made also by Robertson (1936), that consumption in the current period is a function of the income earned in the previous period. It follows from this interpretation that the point of intersection of the IS and LM curves is to be regarded as a position of full equilibrium where both short-run and long-run conditions are satisfied.

### Critiques from a Classical standpoint

As we have seen, one of the results achieved by Modigliani is that he manages to provide a more correct interpretation of the Classical model than Hicks (1937) thanks to his consideration of the labour market, the production function and the distinction between short-run and long-run equilibrium. This explains why he is able to identify the right Classical sequence of markets and place the Classical interest rate theory into its natural long-run context. However, it would be wrong to regard the ‘Liquidity’ paper as being fully consistent with ‘pure theory’. Modigliani’s reliance on the notion of long-run equilibrium has serious consequences for the status of his Classical model. The point is that this notion of equilibrium impairs any real extension of the explanatory power of the standard Walrasian model—i.e. the application of the constructive method, due to its perfect information assumption. This is quite obvious in the analysis of phenomena like money and expectations. Although they are not ruled out altogether by the notion of long-run equilibrium, they can only appear as short-run disequilibrium phenomena, justified by some exogenous factor or form of irrationality.

In other words, a kind of trade-off appears to be involved in Modigliani’s choice to adopt the distinction between short-run and long-run equilibria. While granting more correct conclusions, this approach also appears as a retreat from Hicks’s avant-garde stance. The message of ‘Liquidity’ is thus clear: the ‘right’ Classical macro model is correct, but rather limited in scope—a message in tune with the views about the Classics put forward in the *General Theory*.

### Critiques from Keynes’s standpoint

The simple fact that Modigliani’s model relies on aggregates is certainly not enough to make it consistent with the *General Theory*. The point is that

Modigliani denies any autonomy to aggregates, interpreting them in strict atomistic terms, and this is why he draws some very anti-Keynesian conclusions. He is led, in particular, to rule out Keynes's market sequence and his alternative vision of the working of the price mechanism.

### *Keynes's market sequence*

The link between the market sequence underlying the *General Theory* and Keynes's anti-atomistic stance is extremely significant. The predominance of monetary factors over real ones, which this sequence implies, or the fact that the structural parameters of general equilibrium do not play a unique causal role in the analysis, is not due to anything like money wage rigidity or the short-run nature of Keynes's scheme, as suggested by Modigliani. As I have already emphasized, Keynes's conclusions do not depend upon price rigidities. Moreover, his peculiarity has nothing to do with the emphasis on 'short-run' or 'disequilibrium' states. These imply the acceptance of a long-run equilibrium norm which he clearly rejects.

The true explanation of Keynes's alternative market sequence is that he relies on a different conception of the economy with respect to the Classics. By developing a phenomenological standpoint, he calls into question the distinction between the primary and secondary qualities of economic agents which they accept. He thus rules out the possibility of providing an a priori specification of either individual preferences or technological relations, which implies the primary role of the labour market in the economic process and the determination of notional or potential output as the first analytical step. There are two points to note here. First, Keynes defies atomism by placing the emphasis on the aggregate psychological data which underlie the key functions of his model. It is important to regard these data as true structural data. The point is that Keynes's short-run or momentary equilibrium is not meant to be a temporary stage in the transition towards a long-run state in which all exogenous variables are explained in terms of individuals' optimizing choices. That Keynes's data are persistent is emphasized by Boland, for example:

Whenever enough time is allowed in any neoclassical model, all variables, including 'aggregate' variables, can be shown to be the ultimate result of individual choice. But it is also important to realize that in Keynes' argument no amount of realistic time would ever be sufficient to explain 'aggregate' variables away as the neoclassical methodologists would have us do.

(Boland 1992:134)

It is important to see why it is so. The persistence of Keynes's data is explained by his alternative conception of objectivity with respect to standard

theory. While the latter (at least in its less sophisticated versions, such as Modigliani's) regards aggregate psychological data or expectations as mere accidental or arbitrary factors which disappear in the long-run equilibrium state because they are bound to conform to world-1 objects, such as the relative frequencies of events, for Keynes instead these data are persistent or structural factors because they reflect world-3 objects, such as the popular models of the economy. These models are influenced by past time-series realizations but cannot be reduced to them. They represent an autonomous sphere of reality which is not bound to 'disappear' or collapse to the others with the mere passage of time. New evidence or information does not imply convergence to the 'true' objective (in the world-1 sense) reality. On these grounds, it becomes clear why a notion of long-run equilibrium like Modigliani's, which seeks to isolate 'fundamental' or structural factors, such as the basic parameters of general equilibrium theory, from 'accidental' phenomena such as expectations, is foreign to Keynes's theory. However, it would be wrong to draw the conclusion that the latter is utterly incompatible with long-run equilibrium notions. This is not so. The long run involving the 'passage of time' is not ruled out by Keynes but simply loses its autonomous analytical relevance. In particular, it is clear that, if the aggregate data which in his view underlie the state of equilibrium at a given moment of time are persistent, the long run can actually be regarded as a mere sequence of momentary equilibria.

Second, Keynes's break with atomism is justified by the fact that he is concerned with the forces that determine the actual, rather than the potential level of output. As Mirowski stresses (1989:306), one of the most significant features of Keynes's analysis is that it severs the link between output and capital. His theory of the magnitude of output is independent from the production function. Thus, while it is true that, as Joan Robinson argues, the *General Theory* is inconsistent with the Neoclassical concept of capital, as the latter implies a one-commodity world, and that saving creates investment (e.g. Mirowski 1989:327), it is also true that Keynes's revolution does not consist of a direct critique of the Neoclassical theory of production or its concept of capital, but of the development of a phenomenological approach focusing on the different forces that underlie the determination of the actual level of output. This implies shifting the focus from the labour market to the goods market as the core of the analysis.

### *Keynes's rejection of the direct force view*

The reason why Modigliani's emphasis on money wage rigidity, like Hicks's liquidity trap, is in contrast with Keynes is that it fails to consider his original view of the working of the price mechanism. As I have already emphasized, like Classical theorists, Keynes maintains that wages are flexible, but, unlike them, he argues that wages do not play a direct equilibrating role. In

particular, this means that: (a) money wages do not directly equilibrate demand and supply for labour as implied by Classical theory (e.g. Dutt and Amadeo 1990:105; Vercelli 1987:146–9); (b) unemployment is not due to wage rigidities.

As for the first point, let us start by noting that, for Keynes, money wage changes do not directly affect the demand for labour. In standard theory, two conditions grant this result:

- the demand for labour is an inverse function of the real wage following the decreasing marginal productivity of labour implied by the standard assumptions about the production function and technology;
- the real wage changes together with the money wage due to the fact that the price level is given by the Quantity equation.

It can be argued that in the *General Theory* neither of these conditions hold any longer. First, labour demand directly depends on the level of aggregate demand. As we have just noted, this is due to the fact that the technological data do not play a unique causal role in Keynes's theory. Second, money wage changes lead to changes in the price level so that the real wage remains constant. While this has no consequences for the standard labour demand function, it does affect Keynes's labour demand function as it exerts an influence on the level of aggregate demand—through changes in the real stock of money and the rate of interest, for example.

On the other hand, in Keynes's view, money wage changes do not influence the supply of labour directly either. In standard theory, two conditions account for this influence:

- the supply of labour is a positive function of the real wage, following the standard assumption about workers' atomistic preferences (e.g. that they prefer leisure to work);
- the real wage changes together with the money wage.

Once again, it is arguable that in the *General Theory* these conditions do not hold. It is sufficient to note that, for Keynes, the supply of labour is not a function of the real wage. This is due to the fact that one of the parameters of the general equilibrium model—namely, workers' atomistic preferences—does not play a unique causal role in Keynes's theory. In the latter, the assumption is made, for example, that workers' behaviour is based on a more general theory of rationality than the standard one. Instead of seeking to maximize their utility and supply labour as a function of the real wage, they follow other objectives of a conventional nature. In particular, they try to get what they regard as a 'fair' wage. What matters for them is not their 'absolute' wage, but the wage they earn relative to that earned by other labour groups. Their action is designed to defend this relative wage, thus

keeping wage differentials constant. This objective justifies some unorthodox conclusions about labour supply. In particular, it explains why workers show asymmetric behaviour towards a real wage cut—i.e. they generally accept the cut engineered through an increase in the general price level, but refuse that brought about through a reduction in money wages (see Keynes 1936:14). The point is that, while an increase in the price level affects all workers alike, a reduction in money wages may instead lead to a change in wage differentials as it is seldom of an all-round character.

### *Wage rigidity and unemployment*

Keynes rejects the view that money wage rigidity is the cause of unemployment. He notes, for instance, that ‘the contention that the unemployment which characterises a depression is due to a refusal by labour to accept a reduction of money-wage is not clearly supported by the facts’ (1936:9). In contrast with the Classics, he suggests that, even if the money wage were flexible, full employment would not necessarily be granted. This is due to the fact that money wage reductions may have quite unpredictable effects. Indeed, as Keynes points out in Chapter 19 of the *General Theory*, because of the indirect way in which price changes affect the economy, quite the opposite of what is expected on the grounds of standard analysis might occur. Removing money wage rigidity may have a bad effect on the level of aggregate demand; it may actually either provoke greater instability or lead to a worse equilibrium. Not only do workers resist money wage cuts, but entrepreneurs’ long-term expectations may also become more pessimistic as wage cuts lead to price deflation:

It follows, therefore, that if labour were to respond to conditions of gradually diminishing employment by offering its services at a gradually diminishing money wage... The chief result of this policy would be to cause a great instability of prices, so violent perhaps as to make business calculations futile.

(Keynes 1936:259)

Thus, Keynes even comes to the conclusion that money wage rigidity is one of the factors that explain why ‘the economic system in which we live...is not violently unstable’ (1936:250).

### **Concluding remarks**

In this chapter, I have dealt with one of the first versions of American ‘pragmatic’ macroeconomics—that proposed by Modigliani (1944) in his ‘Liquidity’ paper. Modigliani’s views can also be attacked from opposite sides. First, while providing a relatively correct interpretation of the Classical

model due to his consideration of the labour market, the production function as well as the distinction between short-run and long-run equilibrium, Modigliani fails to meet the basic challenge of ‘pure theory’ —i.e. that of incorporating money and expectations into general equilibrium analysis— and treats them as mere short-run disequilibrium phenomena. Second, by providing precise atomistic foundations for his aggregate model, Modigliani rules out the methodological background of the *General Theory* altogether. He is thus forced to dismiss Keynes’s market sequence and wrongly emphasizes money wage rigidity as the cornerstone of his theory.

## SAMUELSON

In this chapter I focus on Samuelson's interpretation of Keynes. Like Hicks and Modigliani, he too claims that the *General Theory* is a particular case of Classical theory and relies on general equilibrium methodology. However, unlike them, he regards Classical theory and Keynesian macroeconomics as almost two separate worlds. While the former is quite close to 'pure theory', the latter is essentially *ad hoc*. The only point the two approaches have in common is their reliance on the direct forces paradigm. This is why Samuelson completes the exercise in 'translation' of Keynes's saving/investment relation in symmetric terms started by Hicks.

This chapter emphasizes that these innovations lead Samuelson to depart from Hicks and Modigliani in his interpretation of Keynes. He believes the essential contribution of the *General Theory* lies not in liquidity preference or money wage rigidity, but in the principle of effective demand. I also show that, like Modigliani, Samuelson's conclusions can be criticized from two different standpoints. On the one hand, Samuelson also fails to extend the explanatory power of general equilibrium theory. On the other, his 'translation' exercise implies a misleading interpretation of the principle of effective demand.

### **The relationship between 'pure theory' and 'pragmatic' macroeconomics**

In order to understand Samuelson's view, it is vital to be aware that he provides two very different versions of 'pragmatic' macroeconomics. The first is what he calls 'microeconomics' and/or 'general equilibrium', which represents the essence of the Classical macro model. The second is what he labels 'Keynesian macroeconomics'. The two are so different that, unlike Hicks and Modigliani, he does not make a direct comparison between Keynes and the Classics. Let us start from the Classical version. The type of 'general equilibrium' that Samuelson has in mind is not unlike Modigliani's, although he does not use aggregates—with the exception of those in the Quantity theory equation. In his various contributions, he thus places the emphasis



essentially on two basic canons of ‘pure theory’: atomism and the direct forces connecting individual agents.

As for atomism, Samuelson is one of the most lucid advocates of the theory that the production function is prior to the economic process insofar as it represents purely technological relations (e.g. Mirowski 1989:327), and that consumers’ preferences are individual data independent of the market.<sup>1</sup> As for the direct forces paradigm, he notes, for example:

Individualistic atoms of the rare gas in my balloon are not isolated from the other atoms. Adam Smith, who is almost as well known for his discussion of the division of labor and the resulting efficiency purchased at the price of interdependence, was well aware of that. What he would have stressed was that the contacts between the atoms were *organized* by the use of markets and prices.

(Samuelson 1963a:1411; original emphasis)

As for the third canon of ‘pure theory’—namely, the constructive method—it is important to see why it is followed by Samuelson’s ‘general equilibrium’ only to a limited extent. There is no doubt that Samuelson is one of the strongest advocates of the use of this method in economics. For example, he stresses the unifying role of the principle of maximization—i.e. the view that the latter is the fundamental assumption through which all economic phenomena must be explained (Samuelson 1947: Chapter 1, 1970; Pasinetti 1981:10; Boland 1982:136, 1992:18). However, the fact that he relies, like Modigliani, on the long-run equilibrium benchmark does not really allow him to extend the explanatory power of general equilibrium to money and expectations. The latter can only be regarded as disequilibrium phenomena in his model.

Let us now turn to Samuelson’s Keynesian version of ‘pragmatic’ macroeconomics, which he regards as being almost unrelated to ‘pure theory’. In particular, he does not provide an atomistic specification of the aggregates of Keynes’s model, stressing that the latter is to some extent *ad hoc* and independent of full-blown general equilibrium theory. The model, he suggests, can be used to provide a convenient, albeit non-rigorous, description of the short-run behaviour of the economy, since it places the emphasis on phenomena of practical significance, such as unemployment, and the policy tools to cure them.

It is important to note that, in order to avoid an embarrassing conflict between the two different versions of ‘pragmatic’ macro, Samuelson makes a drastic simplification. He compartmentalizes the discipline, assigning each part its own department. On the one hand, he reduces the Classical model essentially to the status of ‘microeconomics’, dealing with value theory and long-run general equilibrium. On the other, he tends to identify the Keynesian model with ‘macroeconomics’ *tout court*, dealing with aggregate variables

and short-run disequilibrium phenomena (e.g. Boland 1982:89; Dow 1985:83),<sup>2</sup>

This compartmentalization accounts for a few relevant ‘non-orthodox’ features of Samuelson’s analysis. First, he admits the possibility of several independent macro explanations overlapping with micro explanations. An instance of this belief can be found in Samuelson’s (1941) paper where he makes a statistical test of the simple relationship between consumption and income. Having pointed out that such a relationship turns out to be one of the most striking uniformities yet uncovered in economic data, he stresses that in the analysis of the determinants of consumption, income effects are so strong that it is hard to find empirically the influence of prices usually associated with demand functions in micro analysis (1941:1171; also 1948a: 258). Second, he admits the possible failure to derive correct macroeconomic conclusions from standard microeconomic reasoning, such as the so-called logical fallacies of composition, in which the system as such is considered as a mere aggregation of its individual elements. He underlines, the paradox of thrift, for example, which he regards as one of the key results of Keynesian macroeconomics:

What is good for each person separately need not be good for all; under some circumstances, private prudence may be social folly. Specifically, this means that the attempt of each and every person to increase his saving may...result in a reduction in actual saving by all people in the community.

(Samuelson 1948a:270–1; for a comment, see Dow 1985:82)

Third, Samuelson makes the even stronger claim that the analysis of many macroeconomic issues cannot be carried out on the grounds of the maximization assumption underlying microeconomics. As he points out in his Nobel lecture:

I must not be too imperialistic in making claims for the applicability of maximum principles in theoretical economics. There are plenty of areas in which they simply do not apply...the accelerator-multiplier...provides a typical example of a dynamic system that can in no useful sense be related to a maximum problem.

(Samuelson 1970:12–13)

It would be wrong, however, to believe that Samuelson sees no link whatsoever between Keynesian macroeconomics and ‘pure theory’. Like Hicks, he regards the former as being in line with the direct forces paradigm. In particular, he seeks to complete the exercise in ‘translation’ of Keynes’s theory in symmetric terms started by Hicks, placing special emphasis on the saving-investment relationship. This emphasis is justified by his belief that:

The broad significance of the *General Theory* to be in the fact that it provides a relatively realistic, complete system for analysing the level of effective demand and its fluctuations. More narrowly, I conceive the heart of its contribution to be in that subset of its equations which relate to the propensity to consume and to saving in relation to offsets-to-saving.

(Samuelson 1946:1523)

Samuelson's symmetric treatment of saving and investment provides the key to the understanding of his interpretation of Keynes and, in particular, the reason why he reduces the latter to a special case of Classical theory.

### The 'saving-investment-income' cross

That Samuelson focuses on the relationship between saving and investment, treating them à la Hicks as two symmetric and independent forces, just like the demand and supply for an individual good, can be seen in a number of points. First, he criticizes Keynes for failing to make a clear distinction between *schedules* and *observables* (e.g. 1946:1532). In particular, the latter shifts continuously between the interpretation of the statement 'savings equal investment' as an *equilibrium condition*, where reference is made to *ex-ante* or desired variables (schedules), and its interpretation as an *accounting identity* which refers to *ex-post* or realized magnitudes (observables).<sup>3</sup>

Second, Samuelson emphasizes that the most significant aspect of the Keynesian system is the idea of investment and saving being equilibrated, in the sense of schedule intersections, by income. In order to make this clear, he builds what he calls the 'simplest Keynesian model' (Samuelson 1948b:1198). He starts by defining income as being equal to the sum of consumption expenditure and net investment:

$$Y=C+I$$

He adds the two following hypotheses: (a) consumption is a function of income; (b) investment may be provisionally taken as a constant. Thus he states:

$$C = C(Y)$$

$$I = \bar{I}$$

By substituting these relations in the first identity, he obtains the following equation:

$$Y = C(Y) + \bar{I} \quad (1)$$

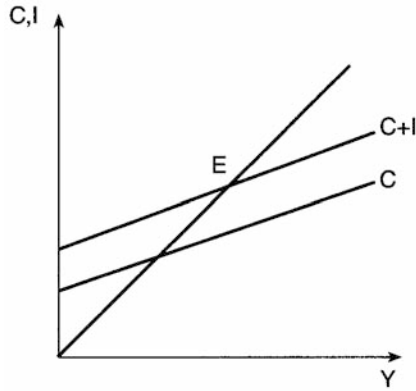


Figure 8.1 The 45 cross

Samuelson points out that this simple model of income determination can be graphically represented on a 45° line diagram (see Figure 8.1). Furthermore, he stresses that there is another version of the equation (1) which is suitable for describing the determination of income on the grounds of the intersection of a saving schedule with investment (see Figure 8.2)

$$Y - C(Y) = \bar{I} \text{ or } S(Y) = \bar{I} \quad (2)$$

In his 1948 textbook, Samuelson regards these two approaches as being 'really identical, each being a different aspect of the same thing' (1948a:260).

Third, like Modigliani, he points out that one of the features of investment-saving analysis is that the adjustment process towards the

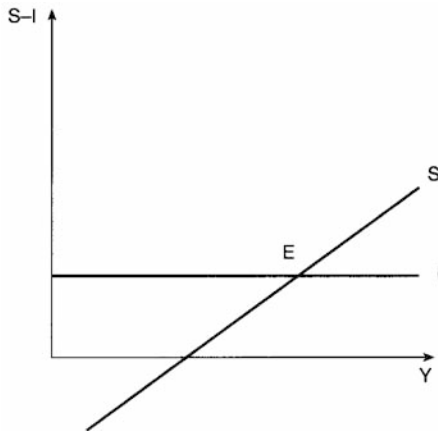


Figure 8.2 Income determined by the intersection of the saving and investment schedules

equilibrium level of income is not an instantaneous one. He notes that when new investment takes place:

The multiplier effect...may take time to work itself out. There may be...a period of delay between the moment when people receive new income and the time when they are able to spend it. In the short-run...therefore the economic system may fall short of the equilibrium level because the new investment has been temporarily offset by increased saving... When national income finally ceases growing and settles down, then people will be back on their (saving) schedule and income will be at the new equilibrium intersection.

(Samuelson 1948a:269)<sup>4</sup>

Fourth, Samuelson claims that ‘the Keynesian saving-investment-income cross [is] not formally different from the Marshallian supply-demand-price cross’ (Samuelson 1946:1532; see also 1948b:1198–9). It must be noted that this view forces Samuelson to go beyond the simplest Keynesian model of income determination analysed above, which clearly implies an asymmetric relationship between investment and saving (the former being autonomous, it can only determine the latter through income changes). This change in Samuelson’s interpretation of the saving-investment relationship is well documented in his writings, especially in his (1948a) textbook.

That these two variables are independent forces is clearly stated from the beginning of his analysis. He underlines, for instance, that ‘they are done by different individuals and for largely independent reasons’ (Samuelson 1948a:255). While investment is carried out by business enterprises, saving is to a large extent also effected by individuals or families. Having listed some of the most common motives for saving, such as the need to provide for old age, Samuelson stresses that whatever these motives, they have ‘practically nothing to do with...investment opportunities’ (ibid.: 254). Investment depends instead ‘on the *dynamic* and relatively unpredictable elements of *growth* in the system, on elements outside the economic system itself: technology, politics, optimistic and pessimistic expectations, governmental tax and expenditure’ (ibid.: 255; original emphasis).

On the other hand, the view that saving and investment are symmetric variables is affirmed by Samuelson only at the end of a rather long journey. As for saving, he starts by suggesting that it ‘tends to depend in a “passive” way upon income’ (1948a:258). This view is in line with his simplest Keynesian model and other previous writings. In his (1941) paper, for example, he notes that this is a crucial implication of the Keynesian system based on the ‘active’ role of investment:

In recent years business-cycle theorists have tended more and more to be of the opinion that investment is the strategic moving factor underlying fluctuations and determining the level of income and employment of the system. This view implies as a corollary that *consumption expenditure should be related passively to income*. This is a fundamental assumption...of the Keynesian system (e.g. the doctrine of the multiplier).

(Samuelson 1941:1171; original emphasis)

However, in other sections of his textbook, Samuelson assumes that autonomous changes in the propensity to consume (or save) may also take place, as in the following passage dealing with the determination of the equilibrium level of income: 'suppose that every family suddenly decides to have a higher propensity to consume and lower propensity to save' (1948a:268).

As for investment, Samuelson starts by claiming that it is basically an autonomous variable whose behaviour is quite unpredictable. In particular, he argues that it is not very responsive to changes in the interest rate and is affected mainly by exogenous factors of a real kind, such as technical progress, population growth and government intervention. However, two aspects of his analysis go in the opposite direction. First, he rarely mentions the role of long-term expectations or makes a negative assessment of Keynes's approach to this issue. He notes, for example, that Keynes does not provide a theory of expectations formation (e.g. Samuelson 1946). Second, Samuelson also stresses that investment may to a large extent be induced—i.e. turn out to be a positive function of other economic variables, such as current consumption or income, in line with the principle of acceleration. He argues, for example, that 'an increase in national income may induce a higher level of net investment' (Samuelson 1948a:270). It is clear that these two aspects are linked, although it must be noted that the acceleration principle implies not the simple neglect of expectations, but an endogenous expectations theory, according to which current income is crucial in determining expected income in the future, hence desired investment (e.g. Dow 1985:158; Stiglitz 1991).

On these grounds, Samuelson specifies the Keynesian model in a more complex way. He now holds that both investment and saving are partly affected by autonomous factors and partly induced by the same economic factor, namely, income. He can thus state:

$$C=a+bY$$

$$S=Y-C$$

$$S=-a+(1-b)Y$$

$$I=c+dY^s$$

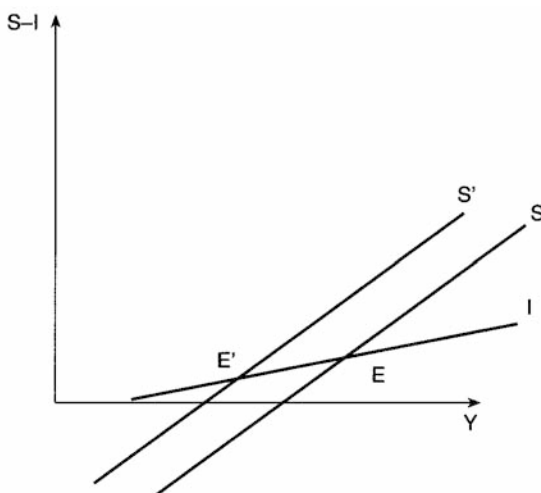


Figure 8.3 The paradox of thrift

An instance of Samuelson's symmetric treatment of saving and investment is to be found in his discussion of the paradox of thrift:

An increased desire to consume—which is another way of looking at a decreased desire to save—is likely to boost business sales and increase investment. An increase in thriftiness, on the other hand, is likely to make a depression worse and reduce the amount of actual net capital formation in the community. High consumption and high investment go hand in hand rather than being competing.

(Samuelson 1948a:72)

In terms of Figure 8.3, an increase in thriftiness shifts the saving curve upward so that the new intersection is at a lower level of income. Because of induced disinvestment, the drop in income will also mean smaller investment.

### The Correspondence Principle and Keynes's theory

Samuelson's original contribution with respect to Hicks and Modigliani is to extend the use of the 'saving-investment-income' cross. It is now important to see how the symmetric treatment of the two variables, together with the assumption that the income generating process takes time, is the basis of his view that Keynes's theory is a particular case of Classical theory. This result is made possible by the application of the Principle of Correspondence which is defined by Samuelson in his *Foundations of Economic Analysis*

(1947). He refers to this principle in order to solve one problem faced by Keynesian aggregate models due to their lack of roots in standard value theory. He argues, for example, that when these models are used to derive meaningful theorems,<sup>6</sup> such as those based on comparative statics exercises, which throw light on the way the unknowns of a model change following a change in the parameters:

The determination of unknowns is found to be unrelated to an extremum position. In even the simplest business-cycle theories there is lacking symmetry in the conditions of equilibrium, so that there is no possibility of directly reducing the problem to that of a maximum or minimum.

(Samuelson 1947:5)

However, for Samuelson this does not imply that Keynesian models are totally impervious to standard value theory. The failure of maximization to generate meaningful theorems in these models leads him to try to derive them from a different hypothesis: namely, that of stability. He notes, for instance, that these theorems can be derived once ‘the dynamical properties of the system are specified, and the hypothesis is made that the system is in “stable” equilibrium or motion’ (1947:5).<sup>7</sup> In particular, the hypothesis of stability allows him to derive these theorems by means of the Principle of Correspondence between comparative statics and dynamics. This principle implies that in order to derive comparative statics theorems within a model, the latter must be formulated in dynamic terms.<sup>8</sup> The link between this principle and the foregoing saving/investment analysis is clear. In the latter, by making the dynamic assumption that the rate of change of income is proportional to the gap between *ex-ante* saving and investment, Samuelson is able to derive all the main comparative statics results of the Keynesian system (1947: 276–83).

This dynamic approach to Keynes’s theory is what justifies Samuelson’s view that the latter is but a particular case of Classical theory. The point is that it gives support to the claim that Keynesian analysis is significant only for short-run disequilibrium phenomena, which are important for practical rather than theoretical purposes. Samuelson makes this clear in two ways. On the one hand, he stresses that Keynes’s concepts, while representing an anomaly (as they cannot be accounted for in terms of maximizing behaviour), do not, however, require the revision of basic principles of economic theory. In line with Leontief and Modigliani, he holds, for example, that liquidity preference theory explains only the differential yield between money and bonds, which is bound to disappear in the state of long-run equilibrium, where uncertainty and imperfections of all kinds can be neglected (1947: 122–4). In this state, the level of the interest rate is accounted for entirely by the fundamental factors of a real kind—such as



productivity and thrift— which are emphasized by standard general equilibrium analysis.

On the other hand, despite the emphasis on the fallacy of composition and the limitations of the maximization principle, Samuelson ultimately does not regard the gap between the two versions of ‘pragmatic’ macro—i.e. between Classical ‘microeconomics’ and Keynesian ‘macroeconomics’ —as being too wide. He stresses that this gap exists only when the movements out of equilibrium are significant, as in the periods of depression experienced by real economies. At full employment it completely disappears and the verities of ‘microeconomics’ are restored:

The clue to the paradox of thrift lies in the question of whether or not national income is at a depression level. If we were at full employment...then the old-fashioned doctrine of thrift would be absolutely correct...from both the individual and the social standpoints... Much of the time there is some wastage of resources, some unemployment... When this is the case, everything goes into reverse... What is true for the individual—that extra thriftiness means increased saving and wealth—may become completely untrue for the community as a whole.

(Samuelson 1947:271)

Moreover, Samuelson believes that this gap can be closed quite easily by using appropriate policy tools. Indeed, this is the task of the Neoclassical Synthesis:

Modern democracies have the fiscal and monetary tools, and the political will to use them, to end chronic slumps and galloping inflations. This gives us the neoclassical synthesis: the classical principles of microeconomic pricing...are thus validated by successful use of the tools.

(Samuelson 1963b:339)

In later editions of Samuelson’s (1948a) textbook he underlines that this task has been performed successfully. For instance, he claims that thanks to the Neoclassical Synthesis ‘the economist is now justified in saying that the broad cleavage between microeconomics and macroeconomics has been closed’ (*ibid.*: 361).<sup>9</sup>

### **Critiques from a Classical standpoint**

Although Samuelson provides an essentially ‘correct’ interpretation of the Classical macro model, his reference to long-run equilibrium leads him, like Modigliani, to drop one canon of ‘pure theory’ —i.e. the constructive

method. Therefore he too regards money and expectations as mere short-run disequilibrium phenomena and the construction of a bridge between short-run and long-run analysis an almost impossible task. It is arguable, however, that in Samuelson this flaw appears even greater than in Modigliani. His attempt to reduce the standard general equilibrium model to the status of ‘microeconomics’ clearly shows that the standard principles are quite irrelevant to understanding of virtually all of macroeconomics and, in particular, issues such as unemployment and fluctuations. Despite the fact that Samuelson is one of the strongest advocates of maximization as the unifying principle of all economic theory, he ends up, by drawing the conclusion that this principle suffers from precise limits of application within the field of macroeconomics.

### Critiques from Keynes’s standpoint

Samuelson’s emphasis on ‘autonomous’ aggregates is not enough to make his model actually compatible with the *General Theory*. The point is that while not providing an atomistic specification of Keynes’s aggregates, he misses the true basis of their autonomy. In particular, he does not attach any weight to expectations and the aggregate psychological data which underlie them. This leads him to draw conclusions that look unacceptable from Keynes’s standpoint, such as the need to deal with saving/investment analysis in dynamic terms.

### *Keynes and standard dynamic analysis*

In order to understand Keynes’s objections to this kind of dynamic analysis, it is important to realize that he relies on a concept of stability different from the traditional one used by Samuelson (e.g. Vercelli 1987:32–4). While the latter refers to dynamic stability, dealing with the system’s convergence to equilibrium states, Keynes focuses instead on structural stability, addressing the key parameters of the economy, such as the aggregate psychological data, which in his view replace atomistic parameters such as preferences and technology. It is arguable that Samuelson’s concept is not in tune with Keynes. First, he explicitly rules out a dynamic analysis based on the gap between *ex-ante* and *ex-post* variables. Second, he regards the multiplier as being instantaneous. There are important reasons why he does so. It is clear, for example, that by emphasizing a slow adjustment of income to the investment-saving gap due to the expenditure or production lags, Samuelson clashes with the principle of effective demand. It is sufficient to note that if there is a systematic expenditure lag and consumption depends upon past income rather than current income, the view that investment determines saving in the current period is called into question.

Third, although Keynes does not dismiss the analysis of adjustment processes altogether, he does not attach much weight to it. Two remarks are in order here. The first is that Keynes's analysis of these processes sharply departs from Samuelson's. The point is that they define aggregate demand in different terms. While Samuelson regards it as the sum of consumers' and investors' plans, for Keynes it refers only to entrepreneurs' plans: it 'is the proceeds which entrepreneurs *expect* to receive' (Keynes 1973b:179; original emphasis). He underlines that entrepreneurs' decisions are based either upon short-run expectations in the case of producers trying to estimate the level of aggregate demand or upon long-run expectations in the case of investors. On these grounds, he defines the equilibrium condition on the goods market. Unlike Samuelson, he argues that equilibrium occurs when short-run expectations are fulfilled, rather than when the plans of investors and savers are consistent. This explains why, in Keynes's view, although the production and the expenditure lags may well cause disequilibrium, they do not operate directly or mechanically by creating a gap between saving and investment as suggested by Samuelson. They are significant only insofar as they lead to the disappointment of firms' short-run expectations.<sup>10</sup> Keynes's emphasis on these expectations accounts for the fact that disequilibrium in his theory means that there is a gap not between *ex-ante* saving and investment, but only between *ex-ante* and *ex-post* investment:

All one can compare is the expected and actual income resulting to an entrepreneur from a particular decision. Actual investment may differ through unintended stock changes, price changes, alteration of decision. The difference, if any, is due to a mistake in the short-period expectation.

(Keynes 1973b:180–1)

The second remark to make is that whatever the definition of disequilibrium, the fact remains that while, for Samuelson, the occurrence of disequilibrium within the period is the core of the theory of income determination, Keynes regards it instead as a phenomenon of scant interest. He focuses on short-run equilibria states where short-run expectations are fulfilled.<sup>11</sup> He notes, for example, that a change in inventories due to a mistake in the short-run expectation is of 'secondary importance, emphasis on it obscuring the real argument. For the theory of effective demand is substantially the same if we assume that short-period expectations are always fulfilled' (Keynes 1973b:181).

### *Keynes's structural stability analysis*

Keynes's stability analysis, unlike Samuelson's, implies an asymmetric link between saving and investment. To see this point it is sufficient to note that

while Samuelson merely assumes that equilibrium states are stable, Keynes does not take (structural) stability for granted (e.g. Vercelli (1987:2–4, 182). He does allow for discontinuous changes in the parameters. The asymmetric link between the two variables is justified by his belief that changes in agents' long-term expectations are normally much more significant than those which occur in the propensity to consume. He stresses, for example: 'The propensity to consume is a fairly stable function so that, as a rule, the amount of aggregate consumption mainly depends on the amount of aggregate income...changes in the propensity itself being treated as a secondary influence' (Keynes 1936:96). One of the reasons for this asymmetry is that while investment depends upon expectations based on (world-3) popular models which are formed exogenously with respect to current market experience, the propensity to consume is based more on habits which can be regarded as world-1 objects insofar as they can be slowly moulded by institutions.

Another point at which Keynes's stability analysis departs from Samuelson's concerns the assessment of policy interventions. Keynes's emphasis on the instability of the key parameters contradicts Samuelson's view that a smooth transition from depression to full employment is possible, given the simple choice of the right policy mix. The crucial point he makes in the *General Theory* is that policy may itself cause instability in those parameters so that the task of pushing the system to full employment is never a mechanical one. Thus policy-makers may fail to reach this goal, if they are unable to shape agents' conventional views:

Thus a monetary policy which strikes public opinion as being experimental in character or easily liable to change may fail in its objective of greatly reducing the long-term rate of interest... The same policy, on the other hand, may prove easily successful if it appeals to public opinion as being reasonable and practicable and in the public interest, rooted in strong conviction, and promoted by an authority unlikely to be superseded.

(Keynes 1936:203)

### Concluding remarks

In this chapter, I have analysed Samuelson's contribution, showing that it too presents some weak aspects. While stressing, for example, the belief that all phenomena should be reduced in terms of 'first principles', Samuelson fails, like Modigliani, to account for money and expectations in general equilibrium terms due to his reliance on the long-run equilibrium benchmark. Indeed, he is so honest in stressing the intrinsic limits to the Hicksian constructive method in macroeconomics that he labels the standard Classical model as 'microeconomics', while regarding almost the whole of

‘macroeconomics’ as the realm *ad hoc* Keynesian methods. On the other hand, while allowing for ‘autonomous’ aggregates, Samuelson fails to recognize the role of the aggregate psychological data which underlie them. He thus rules out Keynes’ alternative concept of structural stability and the asymmetric link between saving and investment.

## KLEIN

This chapter focuses on Klein's interpretation of Keynes. His views are broadly in line with those of other major architects of the American tradition of 'pragmatic' macroeconomics, like Modigliani and Samuelson. Klein's original contribution is to emphasize, in contrast with Samuelson, that there is no gap between the Classical and the Keynesian models. In particular, by developing his aggregation theory he tries to show that Keynes's aggregates can be derived from standard microeconomic functions.

Here I show that, while sharing Samuelson's view on the central role played by the principle of effective demand in the *General Theory*, Klein places a special emphasis on the interest-inelasticity of Keynes's saving and investment functions. This interpretation leads him to extend the symmetric treatment of saving and investment already begun by Hicks and Samuelson. Finally, I consider the critiques of Klein which can be raised from different standpoints. It can be argued that Klein too fails to consider money and expectations in general equilibrium terms. On the other hand, his attempt to specify aggregates in atomistic terms combined with his emphasis on the inelasticity view lead him to rule out Keynes's market sequence and his analysis of the price mechanism.

**The relationship between 'pure theory' and 'pragmatic'  
macroeconomics**

Klein holds a quite different conception of 'pragmatic' macroeconomics from Samuelson. First of all, while Samuelson regards the Classical model as 'microeconomics' —i.e. a disaggregated long-run general equilibrium model—Klein believes it can be expressed in aggregate terms. In line with Modigliani, he takes the Classical aggregate model as a direct, albeit simplified, expression of the more rigorous Walrasian framework.

Second, while Samuelson regards the Keynesian model as 'macroeconomics' based on aggregates and almost totally disconnected from either 'microeconomics' or 'pure theory', for Klein instead it is almost identical to the Classical model. For this reason, he stresses that Keynes's

aggregates can be derived from standard microeconomics. In particular, while Samuelson suggests that aggregation is not useful, Klein takes the opposite view:

Samuelson did not believe at that time in the formal transition between micro and macroeconomics; he did not believe in the approach that I took to the aggregation problem... Paul also used to say that one should take a macroeconomy as it is and you cannot derive it as one analogue of optimization... He was sceptical about the use of Neoclassical theory and aggregation theory as a basis for our models.  
(Klein 1987:354)

Thus while Samuelson advised him ‘just to write down the equations without justifying them by economic theory arguments’ (Klein 1987:354),<sup>1</sup> Klein preferred instead to follow his Cowles colleagues who insisted that one has to justify them.

It is important to distinguish between two aspects of the problem of aggregation (see Schlicht 1985:10, 93–4). The first is more technical: namely, how a given micro system can be consistently described in lower dimensions by a macro system. The second is more general: namely, what are the links between the micro and the macro laws. As for the first aspect, Klein argues that if the derivation of Keynesian aggregates from the traditional microeconomic units could be shown to exist, Keynes’s theory would look more scientifically accurate and, therefore, also more generally acceptable to those who find it misleading for being couched in terms of aggregates (e.g. Klein 1966:56–7; see also Boland 1982:90; Weintraub 1979:61–2). As for the second aspect, Klein holds the view that macro laws are similar to micro ones, in line with the constructive method borrowed from the mechanistic model. As I have already stressed, one of the implications of this method is that wholes can be built up from the known properties of the elements.<sup>2</sup> Thus, if a theory formulates the determination of the choices and actions of each individual in a group, then the set of these individual behaviour characteristics is logically equivalent to the behaviour characteristics of the group and nothing is left out.

It must be noted, however, that Klein, like most American Keynesians, does not subscribe to Hicks’s full-blown constructive method, used to extend the general equilibrium approach to money and expectations on the grounds of representative agent models. Due to his reliance on a long-run equilibrium benchmark that makes no sense of the difficult problems addressed by Hicks in *Value and Capital*, he seeks a more limited application of this method (what can be labelled a ‘truncated’ constructive method). In particular, Klein’s main concern is to justify the use of aggregate models as simplified versions of the long-run equilibrium model. According to Klein, the use of aggregate models does no harm so long as it is understood that they are based upon

the standard laws of maximizing behaviour of individuals which are established in this benchmark. He then argues that Keynes's macro model is quite robust as it too can be seen as relying on these laws. Indeed, he notes that between Keynes and Classics:

There is...an important aspect of similarity, namely, *methodology*. [Their] macroeconomic models are similar except for emphasis. However, the macroeconomic models are not the basic elements of either system. It is necessary to analyse the considerations that lie behind the macrosystem, i.e. the microsystem. It will be found here, too, that the methodology of Classical and Keynesian economics do not differ.

(Klein 1947b:117; emphasis added)

The construction of both models involves two steps:

First, it is necessary to formulate the behaviour pattern of individuals... Both models are based on utility-maximization to get the demand for consumer goods and household cash-holdings and on business-firm profit...maximization to get the demand for producer goods, labour and business cash-holdings.

(Klein 1947b:117)

The second step instead, 'is to show how to pass from a theory involving individual firms, households, factors, and commodities to a theory involving communities of individuals, composite factors and composite commodities' (Klein 1947b:117).

We cannot deal here with the technical aspects of the problems of aggregation, which are covered by Klein in two articles published in *Econometrica* (1946a, c; see also Boland 1982:90; Janssen 1993: ch.5; Schlicht 1985; Weintraub 1979:61–2), but it is sufficient to notice that Klein chooses to proceed by 'assuming the *theories* of micro and macroeconomics in advance and then discovering what aggregates are consistent with these assumptions' (Klein 1946c:311). In his view, this aggregation procedure leads 'to very simple formal analogies between the propositions of micro and macro economics' (Klein 1966:57).

### Some formal analogies between micro and macro

In *The Keynesian Revolution*, Klein analyses these analogies in greater detail. He starts with the analogy between the standard theory of consumer behaviour and the aggregate consumption function. The first holds that if a household maximizes its utility subject to the budget constraint, then its demand for each type of good consumed will depend upon its income and



the prices of all goods in the household budget. Klein then stresses that by appropriate aggregation methods, 'one can develop the analogue of these demand schedules which says that the demand of each household for real consumer goods depends on the general price level of consumer goods, the interest rate... and the household's money income' (Klein 1966:58). By making further simplifications, such as the introduction of real income instead of money income and the price level, separately, he is then able to derive the Keynesian consumption function whereby 'consumption depends upon the rate of interest and the level of real community income' (*ibid.*: 59).

As for investment analysis, Klein points out that Keynesian theory is based on profit maximization: 'Again, it seems best to develop a treatment from the behaviour of an individual unit following an optimal principle and then to derive the aggregative relationship for the economy as a whole' (Klein 1966:62). In particular, he notes that in Keynes's theory the following propositions hold:

- (a) The individual firm will purchase capital goods as long as the expected future earnings from this good, properly discounted, exceed the price of additional capital goods.
- (b) The marginal efficiency of capital is that discount rate which will just equate the discounted stream of anticipated earnings to the price of new capital goods.
- (c) Propositions (a) and (b) follow from the individual firm's attempt to maximize its expected profits subject to the technological constraint, which establishes a definite relationship between the input of the factors of production and the output.

On these grounds, Klein claims that the corresponding relationship, which holds for the economy as a whole, states that the demand for capital goods 'depends upon the ratio of the discounted future national income to the average price of capital goods and upon the accumulated stock of capital' (1966: 63). By making the further assumptions that the expected national income depends upon the most recently observed levels of national income (he claims that this is the only way expectations can be formed) and that there is only one price level in the system, he derives the following basic Keynesian relationship: 'the demand for capital goods depends upon the real value of national income, the interest rate and the stock of accumulated capital' (*ibid.*: 63).<sup>3</sup>

As for liquidity preference, Klein starts from the individual saver's utility function, which describes the relationship between utility and the holding of securities of various types and money. He then argues that by maximizing this function, subject to the constraint that the total amount of assets and money held by an individual should not exceed an initial endowment plus

the accumulated savings over the individual's past history, it is possible to obtain the demand equations for money and all types of securities:

These demand relations state that the demand for money depends upon all the relative security prices, the price of money...and the constraining factor of accumulated savings. If the aggregation procedures are carried out properly, the community relationships will state that the community's demand for money depends upon the general price of securities and the accumulated wealth for the community.

(Klein 1966:70)

By replacing the price of securities with the interest rate and expressing the wealth variable as the ratio of the national income to the interest rate (as is customary practice when capitalizing an income flow from an asset), Klein is thus able to derive the Keynesian liquidity preference function, according to which the demand for money depends upon the interest rate and the level of national income.

### Klein's 1947 model

It is now possible to see how Klein's stance on the aggregation problem leads him to depart from Samuelson on the interpretation of the *General Theory*. While subscribing to Samuelson's emphasis on the principle of effective demand, he differs in his analysis of the saving/investment relationship. In order to analyse this point, it is useful to focus on the comparison of Keynes with the Classics made by him in some detail. In his article, 'Theories of Effective Demand and Employment' (1947b) he builds the following Classical model:

$$M = kpY \text{ (quantity equation)} \quad (1.1)$$

$$S(i)=I(i) \text{ (saving-investment equation)} \quad (1.2)$$

$$Y=Y(N) \text{ (production function)} \quad (1.3)$$

$$dY/dN=w/p \text{ (demand for labour)} \quad (1.4)$$

$$N=f(w/p) \text{ (supply of labour)} \quad (1.5)$$

$$M/p=L(i, Y) \quad (1.1')$$

$$S(i, Y)=I(i, Y). \quad (1.2')$$

According to Klein, the first five equations of this model, which is similar to Modigliani's, represent the simplest version of Classical theory. Given the amount of money, these equations determine five unknowns— $p$ ,  $Y$ ,  $i$ ,  $N$ ,  $w$ —and the sole solution will always be one of full employment. He clearly stresses the sequence of events implied by this model:

1. The demand for and supply of labour determine the real wage and the level of employment.
2. Given the level of employment and the fixed stock of capital, the production function determines the level of real output.
3. The equation of saving and investment determines the rate of interest.
4. Given the level of output, the constant velocity of circulation and the given supply of cash determine the absolute price level.<sup>4</sup>

As for Keynesian theory, Klein notes that it ‘does not involve the introduction of any new variables and it merely involves a change of *form* of some classical equations’ (Klein 1947b:110; emphasis added). However, this theory does not imply full employment equilibrium. In order to make this clear, he sets up the following model:

$$M/p=L(i) \text{ (liquidity-preference equation)} \quad (2.1)$$

$$S(Y)=I(Y) \text{ (saving-investment equation)} \quad (2.2)$$

$$Y=Y(N) \text{ (production function)} \quad (2.3)$$

$$dY/dN=w/p \text{ (demand for labour)} \quad (2.4)$$

$$N=f(w/p) \text{ (supply of labour)} \quad (2.5)$$

$$M/p=L(i, Y) \quad (2.1')$$

$$S(i, Y)=I(i, Y) \quad (2.2')$$

$$S(i, Y, M/p)=I(i, Y) \quad (2.2'')$$

According to Klein, the first five equations represent the simplest Keynesian theory. By replacing equations (2.1) and (2.2) with either equations (2.1') and (2.2') or equations (2.1') and (2.2''), he then obtains two more general versions of this theory.

As far as the simplest model is concerned, Klein's views are very similar to Samuelson's. First, he too regards the principle of effective demand as the crucial feature of Keynes's system, rather than liquidity preference or money wage rigidity.<sup>5</sup> As for the latter, for example, Klein underlines that the truly important ideas of Keynes ‘are actually independent of any special assumptions about the labour market’ (Klein 1966:115). Even if the standard assumptions about labour supply, the flexibility of wages and prices and perfect competition were made, the principle of effective demand would be sufficient by itself to show that a full employment state is not automatically attained. In this sense, Keynesian theory is quite revolutionary as it implies the rejection of the Classical belief in the intrinsic self-adjusting properties of the economic system in the absence of all forms of rigidity and imperfections. It must be noted, however, that for Klein

this conclusion does not correspond to what Keynes himself regarded as the most significant aspect of his work. In particular, he ends up by accepting the view held by Leontief and Modigliani that, for Keynes, the phenomena of rigid money wages and involuntary unemployment are due to money illusion.<sup>6</sup>

Second, again in line with Samuelson, Klein points out that Keynes's great innovation is his replacing the Classical savings-investment theory of interest with a savings-investment theory of the determination of income, which is sufficient to show that full employment is not automatically attained. He starts by suggesting that the core of the *General Theory* is the idea that, 'savings as a function of the level of income equals autonomous investment' (1966:110). However, by adopting Samuelson's symmetric view, he too ends up by suggesting that 'if investment is also a function of income, the Keynesian theory of the savings-investment determination of the level of income still holds' (ibid.: 112).

### The inelasticity view

That is not all. Klein makes at least two innovations from Samuelson which are linked to his view on aggregation. The first is to justify the conclusion that Keynes formulates a special case of Classical theory in a different way. The second is to place greater emphasis on the role of econometrics. As for the first innovation, it must be noted that while both authors draw this conclusion because they translate Keynes's saving-investment relation in symmetric terms, Klein pushes this translation one stage further. In particular, while Samuelson regards the dynamic formulation of this relation as the core of Keynes's contribution, for Klein instead this core lies in the interest-inelasticity of the saving and investment functions.<sup>7</sup>

The reason why this conclusion is linked to his view on aggregation is simple. If Keynes and the Classics rely on similar saving and investment functions, there must be something that justifies Keynes's peculiarity other than the simple fact that these functions determine income, as Samuelson suggests. While reference to the income generating process is enough for Samuelson to assert Keynes's novelty because he regards it as a purely *ad hoc* macroeconomic fact, it is not enough for Klein inasmuch as income also appears as an argument in Classical saving and investment functions.

In order to make this clear, it is useful to focus on Klein's first generalized version of Keynesian theory, which includes equations (2.1') and (2.2'). It is not difficult to see that he extends Samuelson's analysis in one respect; namely, he considers explicitly the role of the interest rate in both investment and savings functions. Klein begins his analysis by noting that this version of Keynesian theory appears to coincide with the generalized Classical model.

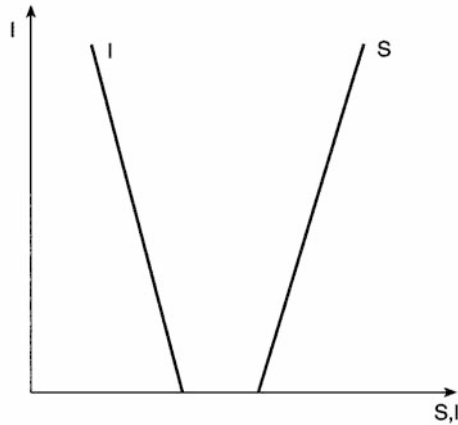


Figure 9.1 Interest-inelastic saving and investment schedules

However, in his view, this is an erroneous conclusion. There is one basic difference between the two theories which remains: namely, the interest-elasticity of the savings and the investment functions. While for the Classics savings and investment are highly responsive to interest changes and grant the attainment of full employment, in the Keynesian system unemployment may occur because the two variables are interest-inelastic (see Figure 9.1). As he puts it ‘interest inelasticity of these schedules is one of the fundamental assumptions of modern Keynesian theory’ (1966:11).

Klein believes that one of the main reasons why savings are interest-inelastic is that: ‘In the modern society savings are regulated largely by habits and considerations of economic security and have little to do with the rate of interest’ (1966:111). As for investment, having noted that, ‘Keynes’s real contribution...has been to show that if all savings are not offset by legitimate investment outlets, failure to generate a high level of employment will follow’ (ibid.: 81), Klein stresses that the failure of investment to absorb full employment savings is almost always due to its interest-inelasticity:

If there were unlimited investment opportunities at the going interest rate, the investment schedule would be a horizontal straight line—infinitely elastic—and consequently always intersect with a non-horizontal saving schedule. Many orthodox economists use a model of the latter type... The case of the horizontal investment schedule and the non-horizontal saving schedule come in the end to Say’s law.

(Klein 1966:85)<sup>8</sup>

Again Klein is aware that, strictly speaking, the assumption of an interest-inelastic investment schedule is not made in the *General Theory*. He points

out, for instance, that ‘Keynes had been consistently in favor of low interest rates in order to stimulate investment activity to a high level’ (Klein 1966: 66). However, in his view, it is perfectly legitimate to regard that assumption as one of the basic features of the Keynesian system since ‘Keynes did not really understand what he had written’ (1966:83).

The reason why Klein’s inelasticity assumption reduces Keynes to a particular case of Classical theory is that it turns out to be a type of rigidity, not unlike the liquidity trap and money wage rigidity. These rigidities all imply an interpretation of Keynes in terms of direct forces stressing the direct adjusting role of prices and the symmetric relationship between demand and supply in all markets. As already noted, this interpretation suggests the conclusion that, although Keynes and the Classics rely on different sequences, they explain unemployment in the same way. In particular, both theories agree that if prices are free to adjust, unemployment is impossible; thus the latter can only be due to some exogenous factors impairing this adjustment, such as a rigidity. In other words, a rigidity is any factor which interferes with the working of an otherwise smooth price mechanism. This interpretation also underlies Klein’s contribution. He is aware, as we have seen, that Keynes and the Classics rely on different sequences. It is only in Keynes’s theory, for example, that a lack of investment leads to unemployment. In Classical theory, instead, the analysis of the capital market is carried out when the income level is already determined (at its full-employment level) by the labour and the goods market. However, by interpreting the saving-investment relationship of Keynes’s theory in symmetric terms, he is able to argue that: (a) whenever the two functions are interest-elastic a state of full employment is granted, just as in Classical theory; (b) if only investment interest-inelasticity were absent, full employment would immediately be restored:

There is a method of assuring a full employment solution to the system, although it is highly artificial and unobserved in the real world. Professor Knight has suggested that the investment schedule be made infinitely interest-elastic. If this were assumed, there would always be full-employment equilibrium.

(Klein 1947b:112)

### The role of econometrics

Klein’s second innovation with respect to Samuelson is the great emphasis he places on econometrics. This too depends on his view on aggregation. While Samuelson believes that Keynesian theory is somehow *ad hoc* and thus turns out to be relatively difficult to compare with Classical theory, following his aggregation stance, Klein argues instead that both theories can be represented by using the same model and differ only in the values assigned

to their parameters. He points out, for instance, that ‘a single model with one set of parameters yields the Classical theory and with another set of parameters yields the Keynesian theory’ (Klein 1947b:117). On these grounds, it is clear that while for Samuelson the choice between the two theories is relatively straightforward due to the dichotomy between Neoclassical micro and Keynesian macro (e.g. the latter holds in depression, the former with full employment), for Klein this choice is more complicated. It can only be made on the grounds of the empirical evidence *vis-à-vis* the parameters of the models. It is for this reason that he attaches a lot of weight to econometric estimates (see Klein 1947a), which, in his view, prove that the Keynesian theory is more consistent with the facts.

Indeed, the impulse Klein has given to econometrics, to the link between the models constructed for purposes of theoretical analysis and the models designed as a basis for empirical fitting, is one of his most relevant contributions to the Neoclassical Synthesis. Although national income accounting and data-gathering activities, together with attempts to implement the ideas of the *General Theory* in the formation of economic policy, were pursued by many economists soon after the publication of the book, the establishing of a strong link between the use of policy tools and that of econometric techniques was one of Klein’s specific contributions. For instance, he notes that while ‘people from the “inside” group at Cambridge never followed through with a careful statistical check of the theory’ (Klein 1966:192), close followers of Keynes in Britain and the USA, like him, ‘recognized that this policy implementation (of Keynes’s ideas) would require accurate predictions of the macroeconomy and econometric model-building has this goal precisely in mind’ (*ibid.*: 192).<sup>9</sup>

Another important link between Klein’s aggregation view and econometrics is that both stimulate the activity of providing an atomistic description of the economy. In particular, according to him and the Cowles theorists, this description allows macro-econometric model-building to establish more stable behavioural functions (e.g. Lawson 1989a:242, 254). This point is made clear by Klein in his criticism of the econometric models built in the late 1930s and the early 1940s:

A principal failure of customary models is that they are not sufficiently detailed. There are too many variables which are classified as autonomous when they are actually induced... The surplus of autonomous variables results from a failure to discover all the appropriate relationships constituting the system. In adding to the consumption function, we should have the investment function, the inventory function, the housing function, the price-formation equation, etc.

(Klein 1946b:302–3)

Klein clearly argues here that one of the reasons these models have failed is that they have erroneously omitted some key factors, by regarding them as autonomous. It follows that analytical progress consists in ruling out autonomous factors, replacing them with functions relying on accurate descriptions of individual behaviour.

However, it would be wrong to regard the use of econometric models as opening too wide a gulf between Klein and Samuelson. There are many features of these models that seem to be in line with Samuelson's behaviourist stance. Suffice it to stress the following two points. First, as Klein pointed out, the use of the techniques of statistical inference to obtain numerical values of the relevant parameters and make forecasts is made under the assumption that the relevant behavioural functions are stable—i.e. that people maintain their past behaviour pattern in the future and thus form their expectations on the grounds of past events. Second, for Klein the econometric models guarantee an objective basis for policy-making:

These models if fully developed and properly used eventually should lead all investigators to the same conclusions, independent of their personal whims, [while] the usual experience in the field of economic policy is that there are about as many types of advice as there are advisors.

(Klein 1946b:303)

### Critiques from a Classical standpoint

Although Klein seems closer in spirit to 'pure theory' than other American Keynesians due to his aggregation view, he too fails to make serious advances in this field. In particular, like Samuelson and Modigliani, he accepts a long-run general equilibrium model as the benchmark of economic theory which undermines the possibility of making progress with money and expectations. Moreover, it is arguable that Klein's use of econometric techniques to estimate his aggregate models implies a further departure from 'pure theory'. It is sufficient to notice, for example, that these techniques are forced to approximate individual expectations with past values of aggregate variables, such as national income. But, as stressed by Hicks in *Value and Capital*, these aggregate variables are in contrast with 'pure theory'. Given that it is not legitimate to assume the consistency of individual expectations, they can only have an *ex-post* meaning.

### Critiques from Keynes's standpoint

The fact that Klein relies on the aggregates of the *General Theory* does not make his model compatible with Keynes. First, Klein's aggregation view is alternative to Keynes's conception of aggregates. Second, Klein's emphasis



on the interest-inelasticity of the saving and investment functions clashes with Keynes's vision of the working of the price mechanism.

### *Keynes's top-down strategy*

As noted in Chapter 2, Keynes's top-down approach is one of the key features of the *General Theory*. His aggregates do not differ from the standard micro functions only for the degree of aggregation involved.<sup>10</sup> While it is true that Keynes views society as being comprised of individuals and derives many aggregates as the sum of individual choices, his way of accounting for these choices is not the same as the one followed in standard theory. For example, it is clear that in the *General Theory* aggregate demand results from individuals' demand for goods. However, it does not simply correspond to the sum of individual consumers' demand as it would if macro were just a potted version of standard micro. Moreover, even if we take into account only consumption, the fact remains that, as pointed out by Boland (1986:148–9), Keynes's psychological law of consumption, which implies that the marginal propensity to consume is less than one, is not directly related to the micro textbook idea of a utility maximizing consumer facing a given income or budget. While the consumer is thought to spend all of his income, Keynes's law requires, instead, that individuals operate inside their budget constraint.

In general, it can be argued that for Keynes the differences between macroeconomics and standard micro are so significant that the former must be regarded as autonomous from the latter. Indeed, they belong to different levels of explanation and deal with different problems: while the former deals with the determination of the level of activity, the latter focuses on resource allocation. In Keynes's view, to reduce one problem to the other and, in particular, to regard the allocation problem as the universal problem of economics as attempted by Neoclassical theory, is quite simply misleading. The point is that, when dealing with the determination of the level of activity, other factors come into play beyond the consideration of the simple individual unit. For example, expectations are formed on the grounds of aggregate psychological data, which are the product of unintentional individual behaviour. Moreover, money presupposes the existence of a priori elements, such as the lack of future markets that make it necessary and agents' trust that others will accept it in transactions.

### *On the inelasticity view*

The reason why Klein's inelasticity view is in contrast with Keynes (e.g. Carabelli 1988:201), is that it too fails to consider his alternative stance on the working of the price mechanism. As we have already seen, Keynes does not call into question the standard view that prices are flexible, but the fact

that they do actually play a direct equilibrating role on all markets. This is also relevant for the discussion of the interest-inelasticity view. There are two points to stress here. In the first place, the inelasticity of the saving and investment functions does not explain why, in the *General Theory*, the interest rate fails to equilibrate the capital market as Klein maintains. This failure is due to the principle of effective demand itself.

Indeed, Klein seems to miss some key features of this principle. First, once this principle is accepted, the autonomous or *ex-ante* saving function of the Classical model—i.e. that which is inversely related to the interest rate—quite simply disappears. For Keynes, interest rate changes affect directly the investment function, while they affect the saving function only indirectly through income changes. Second, the principle of effective demand is a ‘structural’ phenomenon which does not depend on any type of rigidity because the key functions which underlie aggregate demand are governed by new structural parameters—i.e. the aggregate psychological data, which replace the atomistic parameters of general equilibrium. In Keynes’s model in particular we no longer find an investment function dominated by productivity and a saving function dominated by thrift as in the Classical model, but only an investment function governed by the popular models of the economy. Thus the failure of the rate of interest to play an equilibrating role is ultimately due to the fact that these new parameters dominate the scene, not to the fact the old ones assume certain ‘wrong’ values.

Third, if it is true that different parameters underlie the Classical and the Keynesian models, it is obvious that econometric estimates cannot settle the dispute between the two theories. This also seems to be Keynes’s view. In particular, the fact that the relevant parameters of the economy are not of an atomistic nature is one of the reasons why he expresses deep reservations about the use of statistical tools, as shown by his debate with Tinbergen.<sup>11</sup> Although it is true that he does not reject the use of these tools altogether,<sup>12</sup> unlike Klein, he stresses, for example, that they should be used mainly for description—i.e. for the purpose of examining the validity of a model in the light of past experience, rather than for prediction. The point is that due to their non-atomistic nature, the fact that they are dependent on expectations based on world-3 objects, the parameters of Keynes’s theory are much more unstable than the general equilibrium parameters (e.g. Lawson 1989: 247).

In the second place, for Keynes the interest-inelasticity of the investment function is not the cause of unemployment. The logic of his position is that even if investment is interest-elastic, full employment will not necessarily be granted. This is so for at least two reasons. First, in his view investment may change for quite unpredictable reasons irrespective of the level of the rate of interest. While Keynes in general has no inhibition against the view that investment depends upon the interest rate and that monetary policy is important,<sup>13</sup> he stresses, for example, that downward shifts in this function due to pessimistic long-term expectations play the most significant role in

determining the fluctuations of the economy (Keynes 1936:143–4). Second, Keynes rejects the view that a high interest-elasticity of investment would be beneficial to the economy. In general, it would favour greater volatility of investment and make the control of the level of aggregate demand a more difficult task. He notes, for instance, that in the case of highly elastic investment, ‘if, indeed, we start from a position where there are very large surplus resources for the production of capital-assets, there may be considerable instability within a certain range’ (ibid.: 252). He thus draws the conclusion that a low interest-elasticity of the investment function, whenever it occurs, must be considered one of the factors that grant stability to the economy, rather than the cause of unemployment (ibid.: 250–1).

### **Concluding remarks**

This chapter has analysed Klein’s interpretation of Keynes. He too can be criticized on the grounds of ‘pure theory’, because he relies on a ‘truncated’ constructive method. Instead of trying to incorporate money and expectations into the general equilibrium model, he is concerned only with showing that aggregates derive from the standard micro functions. Moreover, his emphasis on econometrics forces him to neglect the role of individual expectations which play an important role in ‘pure theory’.

On the other hand, although Klein accepts Keynes’s aggregates and the principle of effective demand, the fact that he deals with the latter on the grounds of the direct forces paradigm leads him to emphasize the interestinelasticity of the saving and investment functions, which clashes with Keynes’s view of the working of the price mechanism. Moreover, Klein’s aggregation view rules out Keynes’s ‘theory of principle’ approach which does not consider aggregates as resulting from the combination of simple elements.

## AMERICAN KEYNESIANS IN THE 1950s

In this chapter we shall consider the subsequent evolution of the Neoclassical Synthesis in the 1950s by focusing on significant works of the leading American Keynesians—Hansen, Modigliani, Brumberg, Ackley and Tobin. While continuing to regard macroeconomics as an essentially pragmatic discipline, these authors suggest some important changes in the application of the general equilibrium canons with respect to the standard interpretations of the 1940s. First, while agreeing with the process of translation of the *General Theory* in terms of direct forces which came into being after its publication, they find that this process must be pushed one stage further. They advocate, in particular, a more explicit consideration of expectations and uncertainty in the analysis of the saving-investment relationship. Second, they become aware that this task implies calling into question Klein's simple aggregation view. American Keynesians argue, for example, that Keynes's concepts must be amended in the light of modern theory. Moreover, in their view, more sophisticated micro theories than those used by Klein are needed to account for macro issues.

Here I argue that these new 'microfoundations' contributions can also be criticized. On the one hand, while seeking to generalize standard theory beyond the realm of long-run equilibrium, they still fail to address the issues of money and expectations in a general equilibrium context. On the other, the attempt to restate Keynes's views in more rigorous terms leads the microfoundations theorists to dismiss many innovative aspects of the *General Theory*.

### The relationship between 'pure theory' and 'pragmatic' macroeconomics

While accepting the basic conclusions of the interpretations of the 1940s, the American Keynesians begin to challenge the conception of 'pragmatic' macroeconomics held by Klein as well as another influential author, Hansen (e.g. 1949, 1953). In particular, they tend to call into question

Klein's aggregation view, stating very simple analogies between Keynes's concepts and standard micro theory. While accepting the idea of establishing strong links between the two branches of economic theory, they criticize the way Klein accomplishes this task. First of all, unlike him, these authors accept Samuelson's view that Keynes's aggregates are essentially *ad hoc*—i.e. foreign to economic theory. The point is that while the basic conclusions of the *General Theory* are correct, they rest on arguments, such as those relating to aggregate psychological data, which are either confused, mysterious or logically inconsistent, and turn out to be in contrast with the standard axioms of rational behaviour. Second, the same authors also underline that the static micro theory used by Klein is inadequate. While it is useful to account for long-run equilibrium states, it is incapable of dealing with short-run analysis, where the role of expectations becomes significant. The American Keynesians thus call for a new, rigorous formulation of Keynesian aggregates on the grounds of more sophisticated micro theories based on an explicit dynamic perspective.

There are two points to note about this revision of Keynesian theory. First, it brings the microfoundations theorists more into tune with Hicks's full-blown constructive method than Klein. While the latter simply shows that aggregate models are simplified versions of the long-run equilibrium model, the microfoundations theorists no longer take them for granted. They derive their conclusions about aggregate behaviour directly from the representative agent models. Moreover, they adopt a dynamic perspective capable of dealing with expectations.

Second, this revision of Keynesian theory is induced by at least two key factors. The first is the need to take the application of the direct forces paradigm to Keynes's theory one stage further with respect to the models of the 1940s. While accepting the treatment of the saving-investment relation in symmetric terms, the microfoundations theorists suggest that this has not gone far enough. Other variables beyond those considered in the simplest 'Keynesian cross' must come into play in order to achieve a perfect symmetry. One of these is expected income.

The second factor is econometric analysis. Soon after the publication of the *General Theory*, many applied economists started to estimate the key relations of this book, such as that between current income and consumption. As soon as this simple function seemed to yield less satisfactory results (e.g. it turned out to be unstable) many researchers began to try out further explanatory variables together with current income in order to improve the empirical fit. It is this naive additive view, together with the Klein view that autonomous variables in econometric models represent a lack of analysis and a likely cause of the 'statistical' failure of early econometric models, that poses a challenge to theorists and pushes them to develop new microfoundations.

## Consumption

*The critique of Keynes's consumption function*

Modigliani and Brumberg are among those who take up the challenge posed by the additive view in the study of the function consumption. This view was the result of the tentative rationalizations of important empirical findings, such as those made by Kuznets (1946), which started to call into question the simple Keynesian function. Kuznets demonstrated that the average propensity to consume is more or less constant over the long run, while it fluctuates in the short run. This result seemed to be in contrast with Keynes's analysis of consumption for at least two reasons. First, it prompts a distinction between the long-run (trend) and the short-run (cyclical) consumption function, which is absent in the *General Theory*. Second, it appears to contradict Keynes's psychological law of consumption, stating that as income rises consumption will also rise but not by as much as the increase in income—i.e. the marginal propensity to consume is less than one (Keynes 1936:96). In order to account for these phenomena, applied economists made several attempts to revise Keynes's consumption function by simply introducing further variables in the analysis, such as saving out of past income, liquid assets, capital gains, the last highest income reached in a boom and expectations of future income.<sup>1</sup>

The main objection that Modigliani and Brumberg raise against these attempts is that they are often carried out without the guidance of a clear theoretical framework (Modigliani and Brumberg 1954:80). These authors are aware that theoretical progress in this field requires going well beyond the saving-investment analysis carried out in the previous decade. Although, in their view, it is correct to regard saving as an *ex-ante* function depending upon other variables beyond current income, such as the interest rate and the stock of money in real terms, however this is not enough to achieve a full symmetry with investment. The point is that while the latter depends—at least in principle—on expectations, saving only depends on current income. In order to achieve full symmetry saving too must depend on expectations.

The introduction of expectations to the saving function involves the rejection of Klein's aggregation view. While accepting that aggregates must be grounded in micro analysis, Modigliani and Brumberg reject the simple correspondence between Keynes's consumption function and the standard theory of consumer behaviour. First, they regard the former as being largely *ad hoc* and in need of substantial revision. In particular, although they claim that their model provides a confirmation of Keynes's proposition that the marginal propensity to consume is less than one, they disagree with the way he presented this proposition—i.e. his psychological law. Following the largely predominant behaviourist stance, which rules out reference to autonomous states of mind or expectations, they argue that this law is

mysterious or foreign to economic theory and must be replaced by the alternative assumption that men are forward-looking animals (Modigliani and Brumberg 1954: 121).

Second, Modigliani and Brumberg criticize Klein's reference to the standard theory of consumer behaviour. In their view this is not an adequate underpinning for a Keynesian consumption function as it is static or linked to long-run equilibrium and therefore incapable of accounting for the kind of dynamic phenomena highlighted by empirical evidence (e.g. the link between cyclical and long-run behaviour of consumption) and expectations. Thus they seek to develop rigorous new microfoundations for the aggregate function on the grounds of a more sophisticated choice-theoretical framework, such as that underlying Fisher's theory of saving, dealing with agents' intertemporal perspective from the start. Setting out from here, they analyse the life cycle of income and the consumption needs of households using standard marginal utility tools. In particular, they apply the same optimizing method to the lifetime saving plan as is applied to the static choice between two commodities. It should be noted, however, that their Life-Cycle model is not just a restatement of Fisher's theory, but rather a step forward from it. It is sufficient to consider that while Fisher deals only with propositions which refer to long-run equilibrium, Modigliani and Brumberg instead show how to reconcile these propositions with both short-run and long-run evidence.

### *Modigliani and Brumberg's model*

The basic aspects of Modigliani and Brumberg's approach can be summarized as follows. First, these authors focus on the utility function of a representative consumer. Second, they assume that his utility is a function of his present and future consumption, and that he maximizes his utility function subject to his budget constraint—i.e. to the resources available to him, which are the sum of current and future earnings over his lifetime and his current net worth. On these grounds, they state that the current consumption of the individual can be expressed as a function of his resources and the rate of return on capital, with parameters depending on his age.<sup>2</sup>

Third, Modigliani and Brumberg focus on those motives for saving which also operate in conditions of certainty, such as the desire to add to the estate for the benefit of one's heirs and that arising from the fact that the pattern of current and prospective income receipts will generally not coincide with the preferred consumption. The important point they make in this respect is that there need not be any close relation between consumption in a given period and income in the same period. Consumption is related to a broader measure of income, not just to current income. Thus Modigliani and Brumberg criticize the empirically oriented literature based on the simple Keynesian function, since it places too much emphasis upon the latter notion of income, almost to the exclusion of any other variable.

Fourth, the two authors try to show that their model provides an explanation of the empirical evidence which is alternative to that suggested by other theories, such as Duesenberry's. This is a major difference with respect to Hicks's 'pure theory', as the latter is unrelated to the aim of prediction. With a view to performing this task Modigliani and Brumberg need to 'operationalize' their theory. The point is that their theory of consumer behaviour is too general to be really useful in applied research. In order to derive from it some propositions specific enough to be amenable at least to indirect empirical tests, they claim to need to make a number of steps.

The first step is to narrow down the theory on the grounds of a few simplifying assumptions, such as those about the form of the utility function, the lack of bequests and perfect capital markets.<sup>3</sup> Three remarks are in order here. First, this step confirms the negative conclusions reached in the later debate over the possibility of aggregation. As pointed out by Sonnenschein (1972) and Debreu (1974), for example, the pure theory of individual equilibrium is incapable of placing enough restrictions on aggregates, so that almost no imagined results can be ruled out as being inconsistent with individual rationality. Imposing *ad hoc* restrictions is, therefore, the only way to achieve 'practical' results by using the standard axioms; it is these restrictions that do the whole job. Economic theory thus appears as a technical game in which everything depends on the choice of the most convenient type of restrictions (e.g. Ingrao and Israel 1987; Lawson 1989b). Second, Modigliani and Brumberg admit that their assumptions are unrealistic. For example, the assumption that there are no bequests rules out a factor that accounts for an important feature of real-world economies, such as the difference between the marginal propensity to save of 'rich' and 'poor' families. One of the reasons why the two authors make this assumption is that accounting for this feature would undermine the use of the representative agent device. The only distinction among families compatible with this device is that of age, as all go through the same life cycle eventually. However, the two authors—showing their commitment to instrumentalist views à la Friedman (1953) whereby it is not the realism of assumptions that matters but their predictive power—claim that 'if the theory proves to be useful in explaining the essential features of the phenomena under consideration in spite of the simplifications assumed, then these simplifications are thereby justified' (Modigliani and Brumberg 1954:85). Third, on the basis of these assumptions, they are able to state that current consumption is a linear and homogeneous function of current and expected (discounted) income plus initial assets, with coefficients depending on the age of the household.

The second step that Modigliani and Brumberg suggest to obtain some specific propositions from their theory is to derive testable implications. They claim that the equation representing the function just described in principle could be directly tested. However, they also admit that there is a lack of



data providing information on age, assets and average expected income. Most of these variables are not even observable. The two authors thus point out the need to derive from their model some implications of a type suitable for at least indirect testing in terms of available data about the relations between variables which can be observed and measured (such as current consumption and *ex-post* income). As Modigliani stresses in his contribution, this is the ‘difficult task of bridging the gap between pure theory and measured magnitudes’ (Modigliani and Ando 1960:230). This task is difficult because it requires ‘the introduction of further specifications which cannot be derived from the basic model itself (*ibid.*: 230). However, they believe that, at least in principle, it is feasible.

### Implications of the Life-Cycle model

One of the main implications of this model for cross-section analysis is the hypothesis that in stationary conditions, where for each household current income is equal to the level received in the past and expected in the future, ‘the proportion of income saved is substantially the same at all levels of income’ (Modigliani and Brumberg 1954:94). The authors argue that their approach is capable of reconciling this theoretical hypothesis with the proposition, strongly supported by empirical evidence, that the proportion of income saved tends to rise from a very low figure at low levels of income to a large positive figure in the highest brackets. They stress that their explanation is quite different from those usually advanced in the literature, such as that suggested by Duesenberry (1949). While the latter emphasizes the stickiness of consumer expenditure, which adjusts only with a lag to changed circumstances caused by the phenomenon of habit persistence, Modigliani and Brumberg instead claim that there is usually no significant lag in the adjustment of total expenditure with moderate changes in income. In their view, saving does not behave as a passive variable absorbing a larger share of the change in income. It increases essentially because the new level of income is regarded as transitory. In particular, having noted that in real economies short-run fluctuations in individual incomes lead current income to differ from the previous accustomed level and from current income expectations, they argue that the proportion of income saved will tend to rise with income because the highest income brackets may be expected to contain the largest proportion of households whose income is above the accustomed level and whose saving is, therefore, abnormally large (Modigliani and Brumberg 1954:100).

As for time-series analysis, in their (1952) paper (published only in 1979), Modigliani and Brumberg stress that their model implies that in the long run the proportion of income saved depends not on the absolute level of income, but on its rate of growth. They also suggest that this model is consistent both with the long-run stability of the saving ratio and its short-run pronounced cyclical variability.

It has to be noted, however, that close analysis of all these implications (for both cross-section and aggregative analysis) casts serious doubts about the success of Modigliani and Brumberg's effort to 'operationalize' Fisher's theory. As noted, for example, by Green, the empirical results of the Life-Cycle model are not satisfactory:

There are no empiricist reasons for preferring it to other theories not rooted in the neoclassical traditions. The history of the consumption function has been largely an ideological success story. But looked at as a case study in 'positive economics' (hence judging the neo-Fisherian theory by the standard of those who defend it) it can, after a quarter of a century, only be described as a failure.

(Green 1984:111)

The point is that the implications of the Life-Cycle model are similar to those of competing models. As Modigliani notes, there is a basic similarity between this model, Friedman's theory of Permanent Income and the Duesenberry hypothesis. Although for him this 'in no way implies that the Life-Cycle Hypothesis is equivalent, either in its long-run or short-run implications to the other models' (Modigliani 1975:56), the fact remains that there is a lack of empirical tests capable of discriminating among these competing models. As Modigliani admits, 'the substantial aggregative time series evidence supporting the other models can also be construed as being consistent with the Life-Cycle Hypothesis' (1975:55-6; also Green 1984).

## Investment

### *Critiques of Keynes's investment function*

Ackley is an author who stresses the need to go beyond the early analysis of investment as well as the additive view held by econometricians. In particular, he argues that the accelerator principle (in its simplest formulation) is not enough to restore a full symmetry between saving and investment. Just as Modigliani and Brumberg introduce future income among the determinants of saving, Ackley emphasizes the need to explain investment on the grounds of variables involving reference to expectations and the long-run perspective, such as firms' desired stock of capital.

The insertion of these kinds of variables in the investment function implies the rejection of Klein's aggregation view. While subscribing to the principle that aggregate functions must be grounded in micro analysis, Ackley objects to the simple analogy between Keynes's investment function and the static theory of the firm. First, he regards the former as being in need of substantial revision, as he makes clear, for example, in his (1961) textbook on macroeconomics. Here he argues that Keynes, while taking over the Classical

theory of investment in substance, retained some confusions. In particular, Keynes defined the marginal efficiency of capital (MEC) schedule showing the amount of investment which would occur at each rate of interest and stressed that this schedule declined for two reasons:

- the larger the stock of capital, the lower the expected return from the use of capital assets;
- the greater the rate of investment, the higher the cost of assets.

The latter reason was more important to him in the short run and the first in the long run. In Ackley's view, however, this analysis is objectionable because it confuses: 'factors relating to the size of the *stock of capital with* those relating to the *rate of investment*. It led to various contradictions and ambiguities that are easily enough resolved when one separates the two sorts of considerations' (Ackley 1961:485; original emphasis). Following Lerner's (1944) seminal contribution, he thus draws a distinction between two different problems: (a) to explain the optimal (or desired) stock of capital for firms; (b) to explain at what rate investment occurs when the capital stock is not at its optimum.

Second, Ackley believes that Klein's reference to the standard theory of the firm is not sufficient. It is also necessary to analyse the determinants of the optimum stock of capital employed by the firm, accounting for the kind of dynamic phenomena highlighted by empirical evidence and expectations. He thus seeks to place the aggregate investment function on more rigorous microfoundations dealing with the intertemporal perspective of firms from the start.

Ackley's views are shared by Tobin, who also criticizes the *General Theory* for another reason. He objects to the fact that bonds and equities are treated as perfect substitutes; a view which is confusing because it neglects the different determinants of risk and yield of these two types of asset:

Theorists have differed in the degree of substitutability assumed between bonds and capital. While Keynes' investment theory takes them as close or even perfect substitutes, we have emphasized that they are imperfect substitutes with a margin of differential yield as important and as variable as liquidity preference theory finds between bonds and bills or bills and cash.

(Tobin and Brainard 1977:239)

### *Ackley's model*

The basic aspects of Ackley's analysis can be summarized as follows. First, he focuses on a representative firm, in line with the constructive method. Second, he singles out the determinants of the optimum stock of capital.

This depends upon the relationship between three factors: the cost of assets, their expected yields and the rate of interest. He then asserts that for the individual firm, in perfect competition, the interest rate and the cost of assets can be taken as given, while the expected yields can be regarded as declining when investment increases for two reasons:

- increasing unit costs due to a U-shaped long-run cost curve on the supply side;
- declining sales prices on the demand side.

When focusing on the level of the economy as a whole, Ackley notes instead that the rate of interest and the cost of assets can be taken as variables, while the above two reasons for declining expected yields can be ignored. On the one hand, the changes in the capital stock can take place through an adjustment in the number of firms (each operating at optimal scale) without affecting expected unit costs. On the other, if all firms and industries expand together, there need be no change in the relative price of several products and thus no prospective loss of sales. Ackley stresses that at the aggregate level there is a different reason for declining expected yields from investment: ‘This relates to the fact that more capital can be used by the economy only by making productive methods...more “capital-intensive”’ (1961:466). In general, methods using more capital produce more at the same cost (exclusive of interest) than those using less capital. However, the marginal productivity of capital decreases as more and more capital is employed with a given amount of labour. For this reason, the more capital-intensive methods become most profitable the lower the interest rate.

There are two points to note in Ackley’s analysis. First, he takes for granted that Keynes’s ‘unified’ approach to investment can be split into the two separate aspects of the determination of the optimal capital and the determination of the level of investment. He thus interprets his views on the relation between investment and the interest rate directly in terms of desired capital and the marginal productivity of capital curve. One of the key points he emphasizes is that Keynes, like Wicksell, sees no general reason why more capital-intensive methods are, always and without any limit, cheaper (excluding interest) than less capital-intensive ones. It may well be that at a zero rate of interest the best methods of production are not those of infinitely high capital intensity (Ackley 1961:472). On these grounds, Ackley draws the conclusion that, in Keynes’s view, the demand curve for capital is fairly steep (i.e. interest reductions have little effect in increasing the optimum capital intensity).

In this way, Ackley achieves two new results with respect to Klein. The first is that he translates Klein’s argument about the inelasticity of Keynes’s investment demand curve into the view that, for Keynes, it is the demand for

capital that is inelastic. The second result is that, by using the concept of desired capital, he links investment to the real rate of interest. The interest rate relevant to investment decisions thus becomes the relative price, reflecting, in the long run, the intertemporal choices of firms and consumers (and thus the forces of productivity and thrift) rather than the simple borrowing cost of capital, influenced by speculators' views, as in Keynes's unified approach based on the link between the MEC and the long-term rate.

The second point to emphasize is that Ackley considers the effect of uncertainty upon the calculation of the expected yields and the related question whether firms, in fact, make such calculations. He summarizes his views as follows:

We shall say that the effect of uncertainty is somehow included in the entrepreneur's calculation; that changes in the degree of uncertainty or in attitudes toward uncertainty can cause investment prospects to improve or to deteriorate without any change having occurred in what might be called the 'physical' attributes of the situation. We shall however abstract from these matters: 'Given the degree of uncertainty and entrepreneurs' attitude thereto, such and such will be the case'.

(Ackley 1961:476)

This passage makes clear why Ackley drops Keynes's 'unified' approach to investment. In his view, this approach is bound to mix up two different elements: the effects of uncertainty and the 'physical' attributes of the situation reflecting the productivity of capital. By using the notion of desired stock of capital, he makes a clearer distinction between the two. It is sufficient to note that this notion actually implies that uncertainty, important though it may be, does not affect the capability of individual firms to act according to the standard axioms and thus make autonomous calculations and optimal plans concerning the long-run, profit-maximizing techniques at each rate of interest.

Strictly speaking, however, Ackley does not seem to accept the new approach without reservations about its lack of realism. In line with Simon, he admits, for example, that real-world firms do not actually make the kind of calculation implied by profit-maximizing behaviour, so that a theory based on the assumption of rational behaviour will give incorrect predictions of individual firm behaviour. However, he argues that this is not true when we consider aggregate investment:

The kinds of *changes* (e.g. reduction of  $r$ , increase in cost of assets, expected increase in future selling price level) that might affect the rational calculation of profitability in a certain direction will almost surely affect actual calculations in the same *direction*, if not to the same extent.

(Ackley 1961:476–7; original emphasis)

The final step of Ackley's analysis is to focus on the factors that determine the rate of investment. He asserts that none of the propositions developed with respect to firms' desired stock of capital is directly relevant to the theory of investment. This is due to the fact that investment occurs only when firms are not in equilibrium with respect to their capital structure—i.e. when they have fewer (or more) capital goods than the optimum. He notes that the passage from the theory of capital to the theory of investment for the economy as a whole is more difficult than for individual firms. While in the latter case it can be safely assumed that the capital goods needed are in the stock of the firm's supplier so that investment can occur very rapidly, in the former such an assumption cannot be made, since the new capital goods have to be produced. Thus Ackley claims that the limit to aggregate investment is the productive capacity of the capital goods industry; in particular, it is the speed of the making of these goods that will determine the rate of investment. He also points out that there is another way of developing the analysis of investment which is preferred by other economists, Keynes included. More specifically, instead of assuming a fixed capacity, they 'prefer to think of a flexible limit to output, with more output always forthcoming, but always at a higher (marginal) cost' (Ackley 1961:481). On these grounds, Ackley derives a new curve called 'marginal efficiency of investment' (MEI), which declines as the rate of investment rises due to the fact that higher investment rates will increase the cost of production of capital goods.

### *Tobin's q model*

The need to drop Keynes's 'unified' treatment of investment in order to restore full symmetry between saving and investment is made even clearer by Tobin's  $q$  theory of investment, defined in several articles (Tobin and Brainard 1968; Tobin 1969b; Tobin and Brainard 1977). As already noted, full symmetry requires that these two variables be determined respectively on the grounds of agents' preferences with regard to the intertemporal allocation of consumption and income flows on the one hand, and the productivity of capital determined by firms' technical choices on the other. Tobin's contribution is to make a sharp distinction between the long-run productivity of capital goods and the returns on other types of assets.

Tobin's analysis can be summarized as follows. First, he argues that net investment is a positive function of the ratio  $q$  between the market value of the capital assets of a firm (i.e the going price on the market for exchanging existing assets) and their replacement costs (i.e the price on the market for newly produced commodities). In general, values of  $q$  above 1 should stimulate investment and values of  $q$  below 1 discourage it. He points out that investment would not be related to  $q$  if instantaneous arbitrage could produce such floods of new capital goods so as to keep the market values

and replacement costs continuously in line. He suggests that this arbitrage does not occur because of the costs of adjustment and growth for individual enterprises and the short-run marginal costs of producing investment goods for the economy as a whole.

Second, Tobin points out that  $q$  could be equivalently defined as the ratio of  $R$  (marginal efficiency of capital) to  $rk$  (the interest rate used to discount future earning streams on business capital). In his view, the  $q$  theory is consistent with Keynes's theory, although, at first sight, they appear to differ. In particular, Keynes's condition that the marginal efficiency of capital equal the rate of interest determines not the flow of investment, but the stock of capital; more specifically, it determines the capital/labour ratio and the capital/output ratio. In a stationary economy, satisfaction of the condition means zero investment. However, Tobin points out:

Since Keynes discusses at length independent variations in the marginal efficiency of capital and the rate of interest, he does not really imagine that investment adjusts the capital stock fast enough to keep them continuously equal. Indeed the true message is that investment is related to discrepancies between the marginal efficiency and the interest rate. This is in the tradition of Wicksell and of Keynes' earlier work *The Treatise on Money*. The  $q$  ratio theory of investment follows this same tradition.

(Tobin and Brainard 1977:244)

There are a few points to underline here. First, Tobin regards the notion of marginal efficiency of capital as a synonym of marginal productivity of capital —i.e. the long-run real profitability of investment. He stresses that the hypothesis that investment is related to the difference between  $R$  and  $rk$  bears some resemblance to the 'flexible accelerator' idea that investment is a function of the difference between a desired and actual capital stock. The desired stock appropriate to  $rk$  is larger than the actual stock which yields  $R$ , when  $rk$  is lower than  $R$ .

Second, Tobin takes the discount rate as a rate which is related but not identical to any observed interest rate on long-term bonds or other fixed money value obligations. This is due to the fact that, in contrast with Keynes, he believes that bonds and equities are not perfect substitutes. Tobin argues that a principal reason for distinguishing between bonds and capital is their difference in risk. In particular, the major risks on capital relate to real events, such as changes in technology, relative scarcities and labour costs, while the major risks on financial assets arise from uncertainties about future rates of inflation and interest. It should be clear that behind this distinction there is the view, held by Tobin as well as Wicksell, that the long-run real productivity of capital is determined outside the financial sector and thus plays a causal role in the analysis. The stock market can only reflect it more or less adequately, and only passively (the view that this market is efficient

prevails in Tobin as he regards deviations of  $q$  from its normal value as being only temporary).<sup>4</sup>

## Liquidity preference

### *Critiques of Keynes's liquidity preference theory*

In line with the other microfoundations contributions, Tobin's (1958) famous article, 'Liquidity Preference as a Behaviour Towards Risk', also involves a critique of the early developments of the Neoclassical Synthesis. While it is true, for example, that Hicks's 'Suggestion' made the first steps in the right direction by emphasizing the role of expectations as well as current income and the interest rate in the analysis of liquidity preference, it failed, however, to provide an explicit modelling of agents' behaviour in the face of uncertainty. This is precisely the aim of Tobin's portfolio model.

Tobin also departs from Klein's aggregation view. While accepting the idea that aggregate functions must be grounded in micro analysis, he calls into question the firm link between liquidity preference and the standard theory of consumer behaviour. In the first place, he regards Keynes's analysis of the speculative motive as being in need of substantial revision.<sup>5</sup> In his view, this analysis rests on two key assumptions. First, investors have in mind a 'normal' rate of interest to which they expect the current rate to return. Second, investors have certain but fixed (or inelastic) expectations over this normal rate. This assumption implies that an investor is certain that every dollar invested in consols will, over the year ahead, earn not only interest,  $r$ , but also the capital gain or loss,  $g$ . This leads him to regard the allocation of his wealth between cash and consols as a straightforward, all-or-nothing choice: 'If the current rate is such that  $r+g$  is greater than zero, then he will put everything in consols. But if  $r+g$  is less than zero, he will put everything in cash' (Tobin 1958:245).

Tobin raises two kinds of criticism of Keynes's analysis, both implying reference to the notion of long-run equilibrium as a theoretical benchmark. The first is to emphasize, like Samuelson, that liquidity preference determines the level of the differential yield between money and bonds, rather than the level of interest rates as held by Keynes. He thus implicitly refers to the traditional long-run determinants of the level of interest rates—i.e. productivity and thrift. The second criticism is to point out that Keynes's theory is open to logical objection. In particular, Tobin subscribes to the views held by Leontief (1947), according to which Keynes's explanation for the speculative motive breaks down in the long run, given that the divergence between the current and the expected normal rate is bound to vanish eventually as investors learn from experience. Thus any rate of interest can be accepted as normal if it persists long enough. Leontief draws the conclusion that Keynes's liquidity preference theory concerns essentially a



dynamic or disequilibrium phenomenon and ‘does not differ in its assumptions and conclusions, although it does in formulation, from the simple quantity theory of money’ (Leontief 1947:238).<sup>6</sup> In his portfolio model, Tobin seeks to remedy these flaws of Keynes’s theory by providing an amended version. He thus dispenses with the assumption of stickiness in interest expectations made by Keynes without losing the implication which the latter drew from it—i.e. the inverse relationship between the demand for money and the interest rate. In order to do this, he bases the relationship on a different set of assumptions about individual investors.

On the other hand, Tobin criticizes Klein’s reliance on the standard theory of consumer behaviour. In his view, the latter is not an adequate underpinning for liquidity preference since it is static and hence incapable of accounting for dynamic phenomena like money and expectations. He thus seeks to develop new rigorous microfoundations on the basis of a more sophisticated choice-theoretical framework, such as the Neumann-Morgenstern hypothesis of expected utility maximization.

### *Tobin’s model*

Tobin’s approach can be summarized as follows. First, following the constructive method, he focuses on the behaviour of a representative investor and assumes that the latter is uncertain about the future rate of interest. In particular, he points out that the investor is uncertain about  $g$ , but bases his action on his estimate of the probability distribution of  $g$ . Tobin stresses that this view represents an alternative rationalization of the liquidity preference function with respect to that of the *General Theory*. Instead of relying on the notion of a representative agent, the latter derives the familiar inverse relationship between the demand for money and the rate of interest by assuming that a sufficiently large number of individual investors differ in their opinion about the normal rate. He thus notes that when Keynes refers to uncertainty in the market, ‘he appears to mean disagreement among investors concerning the future of the [normal] rate rather than subjective doubt in the mind of an individual investor’ (Tobin 1958:248).

Second, Tobin points out that the proportion of his portfolio which the representative investor holds in consols determines both his expected return and his risk. Third, he argues that the investor has preferences between these two parameters, which can be represented by a field of indifference curves. Three points can be noted in this regard. The first is that Tobin sketches a taxonomy of investors’ preferences. He refers to two main types of investors: *risk lovers* who are willing to accept lower expected returns in order to have the chance of unusually high capital gains and *risk averters* who are unwilling to accept greater risk unless they can expect greater returns. In the latter group, Tobin also distinguishes between *diversifiers* (who are regarded as the normal type of investors) and *plungers*.

The second point is that Tobin tries to justify the use of the indifference curves, as they ‘do not necessarily exist’ (1958:252). For him, as for Modigliani and Brumberg, there is the problem of making restrictive assumptions in order to narrow down the pure theory of consumer behaviour, which is too general to yield meaningful and testable propositions about macro phenomena. As he admits:

The Neumann-Morgenstern hypothesis of utility maximization will not, unaided, tell us much about portfolio choices. To get propositions with significantly more content than the prescription that the investors should maximize expected utility, it is necessary to place restrictions on his utility function or his subjective probability estimates or both.<sup>7</sup>  
(Tobin 1969a:267)

The third point is that, having derived the investor’s indifference curves, Tobin is able to state that he decides the amount to invest in consols to reach the highest indifference curve permitted by his opportunity locus and maximizes the expected value of his utility function.

Tobin’s last step is to specify the role of liquidity preference in relation to long-run equilibrium. While subscribing to the criticism of liquidity preference made by Leontief, he cannot accept the latter’s view that the money held for speculative (and precautionary) purposes must be zero in long-run stationary equilibrium, unless cash and consols bear equal rates.<sup>8</sup> The reason why Tobin does not follow Leontief’s long-run perspective through to the end is simple. The point is that in the long-run equilibrium state there is no room for dynamic phenomena like money and expectations due to the lack of uncertainty. Thus, in the light of this perspective, not only Keynes’s approach, but also Tobin’s (which also relies on uncertainty even if reduced to risk) would appear to justify the role of money only as a disequilibrium phenomenon. This view would obviously have a number of negative consequences on the use of a model like IS-LM which relies on a long-run equilibrium benchmark (at least in the version of Modigliani and Hansen).

It is important to note, however, that instead of seeking a real solution to this problem by addressing the difficult issue of the microfoundations of money within the general equilibrium model—i.e. the task of explaining within the standard paradigm of economic theory why paper that makes no intrinsic contribution to utility or technology is held at all and has a positive value in the exchange of goods and services—Tobin chooses a pragmatic solution and simply avoids this issue. In other contributions, he openly admits, for example, that, ‘I certainly have no solution to that deep question, nor do I regard one as prerequisite to pragmatic monetary theory’ (Tobin 1982: 173). Moreover, in his (1958) paper, he makes clear that ‘pragmatic’ macroeconomics focuses on more practical issues, such as

comparative statics analysis, which do not depend upon the solutions to the above problems:

Fortunately the usefulness of comparative statics does not appear to be confined to comparisons of states each of which would take a generation or more to achieve. As compared to the Keynesian theory of liquidity preference, the risk aversion theory widens the applicability of comparative statics in aggregative analysis.<sup>9</sup>

(Tobin 1958:266)

### Critiques from a Classical standpoint

From the standpoint of ‘pure theory’ the new microfoundations approaches can also be criticized for failing to apply Hicks’s constructive method in a successful manner. Although they rely on the representative agent device and try to generalize standard theory beyond the long-run equilibrium benchmark, they end up by simply following a new, more ingenuous, form of truncated constructive method, in line with ‘pragmatic’ macroeconomics. Due to their acceptance of the long-run equilibrium concept as a theoretical benchmark, their generalization of standard theory is made without solving the problems dealt with by Hicks. It is sufficient to note, for example, that these theorists model expectations in a partial equilibrium context either by taking them as unexplained givens or by referring to the adaptive expectations framework, which, as stressed in recent literature, turns out to be inconsistent with optimizing behaviour as it incorporates a systematic lag (e.g. Begg 1982:172).

What is wrong about this new form of truncated constructive method from the standpoint of ‘pure theory’ is that it turns out to be a mechanism for generating an illusion: namely, that the solution of the difficult problems analysed by Hicks is not a real ‘must’ for macroeconomic theorists. While the macro models of the previous decade were built on the clear-cut presupposition that standard theory is limited to long-run equilibrium so that a theorist like Samuelson could simply argue that most macroeconomics is simply *ad hoc*, the new microfoundations try hard to overcome these limits. However, they do so not by actually solving the real problems, but simply by neglecting them. Thus they deliver a very clear message to students: namely, do not waste time with the real ‘microfoundations’ problem of generalizing general equilibrium theory; this is not so important, as Tobin, for example, suggested when dealing with the incompatibility between money and long-run equilibrium. All serious theoretical work consists of finding the right trick to build theories of a partial equilibrium kind that actually ‘work’ —i.e. fit the empirical evidence somehow and generate comparative statics results.

All this is a mere illusion for one simple reason: the partial equilibrium analyses carried out on the grounds of the basic canons of Neoclassical theory cannot conduct a life of their own with respect to general equilibrium theory, because they rely on the same basic parameters as the latter. Thus, only if general equilibrium makes progress in dealing with the 'elementary' theory of expectations and money can one talk about genuine theoretical advances in Neoclassical theory. Instead of making a real theoretical generalization, the partial equilibrium stories play a rather different role: they show that bringing Neoclassical theory in touch with reality requires an incredible amount of *ad hoc* restrictions and simplifying assumptions. In this respect these stories look very similar to those *ad hoc*, partial explanations of phenomena like heat or light in nineteenth-century physics that could not be dealt with in the mechanistic paradigm.

### Critiques from Keynes's standpoint

It is arguable that, far from being relatively innocuous, the new microfoundations contributions tend to rule out some of the most innovative aspects of the *General Theory*, such as the passive role of saving, the conception of investment as an autonomous variable and the speculative motive. The point is that these aspects can only be rationalized on the grounds of the aggregate psychological concepts which the American Keynesians reject. These concepts are at the very roots of Keynes's contribution, and only appear intrinsically confused or flawed if assessed in terms of standard theory. As stressed, for example, by LeRoy: 'If recast in the orthodox terminology, Keynes's theory of investment appears to be no more than a particularly inept exposition of the neoclassical theory of investment' (LeRoy 1983:397).

### *The passive role of saving*

That aggregate saving is a residual or passive variable rather than the expression of individual plans is a crucial aspect of Keynes's theory (e.g. Chick 1983: 20, 56; Dow 1985:100). Three points may be emphasized. First, this result is closely linked to the psychological law of consumption, which is ruled out by Modigliani and Brumberg. To grasp this point it is merely necessary to notice that aggregate saving in the *General Theory* depends on systemic elements that are not under the control of individual agents, rather than on a general equilibrium parameter like thrift. The key systemic element is the level of effective demand giving rise to an asymmetric relation between investment and saving according to which the former generates the latter through current income changes. Now this link can only be rationalized on the grounds of the psychological law of consumption. By stating that the marginal propensity to consume out of current income is less than one,

this law implies that the gap between income and consumption rises as the level of income rises, so that only an increasing level of investment can grant full employment (e.g. Keynes 1936:98).

Second, in line with the principle of effective demand Keynes affirms the passive nature of aggregate saving by rejecting either the concept of *ex-ante* saving depending on the rate of interest or the influence of expected income on the propensity to consume. As for the former, he points out that even if it is the case that a rise in the interest rate would lead to a higher propensity to save out of a given income as implied by Classical theory, it is also true that under more general conditions, where income is variable, a rise in the interest rate will decrease the actual amount of saving:

The influence of changes in the rate of interest on the amount actually saved is of paramount importance, but is in the *opposite direction* to that usually supposed. For even if the attraction of the larger future income to be earned from a higher rate of interest has the effect of diminishing the propensity to consume, nevertheless we can be certain that a rise in the rate of interest will have the effect of reducing the amount actually saved. For aggregate saving is governed by aggregate investment; a rise in the rate of interest...will diminish investment...reducing incomes to a level at which saving is decreased in the same measure as investment.

(Keynes 1936:110–11; original emphasis)

As for the role of expected income he claims, for example:

Whilst it may affect considerably a particular individual's propensity to consume, it is likely to average out for the community as a whole. Moreover, it is a matter over which there is, as a rule, too much uncertainty for it to exert much influence.

(Keynes 1936:95)

It should be clear why Keynes reaches this view; in fact, had he admitted the influence, he would have paved the way for a complete reversal of the causal link between saving and investment suggested by his theory. The point is that, as the Life-Cycle model demonstrates, lifetime income in the consumption function, unlike current income, is not an independent variable determined by the level of effective demand, but is a budget constraint (e.g. Vercelli 1987:150). Thus if its influence on the propensity to consume is admitted, it can no longer be argued that aggregate saving is determined by investment; it becomes a variable which depends instead upon the individual motives for saving, upon thrift. However, once the full autonomy of saving is restored, the standard Classical view that saving is a necessary premiss of investment, the driving force of the accumulation process becomes justified.

According to Keynes, this view is not totally wrong. It does not hold generally, however, but only under the assumption of full employment income.<sup>10</sup>

Third, that aggregate saving depends upon investment does not imply that, for Keynes, analysis of individual motives for saving is irrelevant. It means, however, that it must be carried out within a systemic perspective, rather than on the grounds of a theoretical framework based on utility maximization, such as Fisher's.<sup>11</sup> The key systemic element which comes into play is not unlike the factor that accounts for the precautionary demand for money. It is the fact that when there is a lack of futures markets and the standard calculation tools fail, agents are compelled to adopt conventional criteria to face real-world uncertainty. On the one hand, Keynes notes that the consumer's horizon is quite short and that consumption and saving decisions are made largely on the grounds of institutional arrangements as well as established routines or habits. As he puts it: 'A man's habitual standard of life usually has the first claim on his income' (Keynes 1936:97; see also Hodgson 1988:129; Lawson 1985:917). It is the reference to this kind of (world-1) objective data that underlies his psychological laws of consumption and accounts for his top-down approach in contrast with Modigliani and Brumberg's bottom-up stance.

On the other hand, in line with his view of the 'passive' or 'accidental' nature of saving, Keynes rejects the existence of a precise link between saving, hence accumulation of wealth, in one period of life and consumption in some later periods, like the one suggested by Modigliani and Brumberg.<sup>12</sup> He argues that consumers do not save to achieve a long-run pattern of consumption but mainly to satisfy some often unspecified precautionary motives. They save, for example, to build up reserves against unforeseen contingencies, leave bequests to their heirs or just 'to enjoy a sense of independence and the power to do things, though without a clear idea or definite intention of specific action' (Keynes 1936:108).<sup>13</sup>

### *The autonomous role of investment*

Keynes establishes a firm link between the autonomy of investment and his notion of marginal efficiency of capital (MEC). In the *General Theory*, investment is an autonomous variable because it depends on systemic elements that are not under the control of individual firms. This is the reason why, in contrast with Ackley and Tobin, he denies that a general equilibrium parameter like the physical productivity of capital is a major determinant of investment. Once again, this does not mean that Keynes neglects the decisions of individual agents. However, unlike standard theory, he deals with them on the grounds of a systemic, rather than a partial equilibrium perspective. In contrast with the analysis of saving and consumption, world-3 popular models of the economy are the key systemic elements considered

by Keynes in his investment theory. As already noted, reference to such models is one of the basic conventions followed by individual firms in the face of uncertainty. It is this kind of behaviour that underlies Keynes's MEC concept and accounts for his top-down approach in contrast with Ackley and Tobin's bottom-up method.

The gap between these two approaches is not bridged by the existence of some analogies between Keynes and standard analysis (e.g. the reference to firms' maximizing behaviour and the equilibrium condition expressed in terms of the equality between the MEC and the rate of interest). A few major differences need to be stressed. The first is that, for Keynes, the MEC has a 'general' nature: it is influenced by many factors outside the narrow sphere of production of the individual firm, such as the strength of effective demand during the life of investment, the changes in the wage-unit, the state of confidence, the political and social atmosphere, the future inflation and interest rates. The view that Keynes's investment function cannot be reduced to individual firms' technical choices is implicit in his forceful distinction between the MEC and the standard concept of marginal productivity of capital (MPC), which is neglected by Ackley and Tobin.

This point is much stressed in the post-Keynesian literature. For example, Mirowski (1989:307) notes that in the *General Theory* the discussion of the MEC never refers to any theory of production, and that there is no commitment to any specific theory of capital. Moreover, as pointed out by several authors (e.g. Carabelli 1988:208, 214; Dow 1985:159–60; Kregel 1997: 262; Rogers 1989:120; Rotheim 1988:96; Vercelli 1987:154), unlike the MPC, the MEC does not consist of the physical productivity of capital, but purely of its artificial scarcity. Capital receives a reward because it is scarce, not because it is productive. There are also two more specific points to note about the MEC. First, as stressed, for example, by LeRoy, Keynes does not derive this function from the decisions concerning the optimal or desired stock of capital and thus his 'unified' approach is legitimate. He argues that Keynes's MEC schedule 'has nothing directly to do with production functions of firms as users of capital' (LeRoy 1983:415). The decreasing slope of this schedule:

reflects exclusively the elasticity of substitution between capital and labour on the part of capital-supplying firms, not capital-using firms as presumed in the neoclassical analysis...Keynes made it clear that the marginal efficiency of capital schedule related the interest rate to the flow rate of investment, not to some notion of a desired stock of capital as in the neoclassical model.

(LeRoy 1983:415)

Second, in contrast with Tobin's  $q$  model, which stresses that the MEC plays a unique causal role, Keynes allows instead for an overlap between

productive and financial investment on the stock market, which accounts for his lack of a clear-cut distinction between bonds and capital and his gloomy view of the speculative nature of the stock market. In his view, the MEC may be directly affected by a change in equity prices:

A high quotation for existing equities involves an increase in the marginal efficiency of the corresponding type of capital and therefore has the same effect (since investment depends on a comparison between the marginal efficiency of capital and the rate of interest) as a fall in the rate of interest.

(Keynes 1936:151)

Keynes's second major departure from standard theory is to hold that the rate of interest which is relevant for investment is not the real rate reflecting the intertemporal choices of firms and savers, but the nominal long-term rate. This is shown by his analysis of the effects of an expected price change on investment. While, for Tobin as for Fisher, this change affects only the nominal interest rate in the long run, for Keynes instead it directly affects the MEC, in line with his refusal of a rigid compartmentalization between the real and financial sector of the economy, such as that postulated by Tobin. In his view, Fisher's mistake:

lies in supposing that it is the rate of interest on which prospective changes in the value of money will directly react, instead of the marginal efficiency of a given stock of capital... The stimulating effect of the expectations of higher prices is due, not to its raising the rate of interest (that would be a paradoxical way of stimulating output—insofar as the rate of interest rises, the stimulating effect is to that extent offset), but to its raising the marginal efficiency of a given stock capital.

(Keynes 1936:142)

A similar view is held by Keynes *vis-à-vis* the effect of an expected fall in the interest rate: 'It is worth noting that an expectation of a future fall in the rate of interest will have the effect of lowering the schedule of the marginal efficiency of capital' (1936:143).

The third difference between Keynes and standard theory lies in his emphasis on firms' conventional behaviour. According to him, this is not necessarily in contrast with the aim of profit maximization, although it does involve shifting the focus of the analysis from the behaviour of a representative firm and the aspect of self-interest (e.g. how firms make optimal technical choices) to aggregate behaviour and the aspect of coordination (how firms together create the premisses for their individual decisions). These two models imply different assumptions about the behaviour of individual firms. The representative agent model assumes that



they are able to form expectations concerning their particular business without referring to other firms' behaviour. For Keynes, instead individual firms, albeit autonomous decision-makers, take their decisions by comparing their view with those of others. He assumes that each firm has a single-valued expectation (that can be regarded as its best or most probable expectation held with various degrees of confidence), which it compares with the average or normal expectations held by a group of investors—what Keynes terms as the 'given state of long-term expectations'.<sup>14</sup> This does not determine individual firms' decisions on its own, but represents the premiss or benchmark for them. In particular, it is by looking at the average yield embodied in this state of expectations that firms decide whether or not to invest.

This view leads one to conclude that the aggregate investment function drawn for a given state of expectations does not reflect a representative firm's *ex-ante* behaviour (i.e. the description of its plans concerning long-run profit-maximizing techniques at each rate of interest), but quite simply the actual number of firms carrying out investment projects at a given moment of time, in line with the statistical conception of aggregates. There are two points to note. First, the interest elasticity of this function does not reflect the changing intensity of capital of the productive techniques adopted by the representative firm, but the changing number of firms that make investments. Second, the condition that the MEC equals the rate of interest is an *ex-post* market equilibrium condition.

It must be noted that from the standpoint of Keynes's top-down approach allowing for different levels of explanation representative firm's models are not totally wrong. In principle, they could be used in partial equilibrium analysis to discuss the optimal behaviour of firms under given conditions. However, their use would prove inappropriate within a macroeconomic perspective. It is sufficient to note, for example, that, apart from their approach to expectations, they rest on the full employment assumption. This also represents a major departure from the *General Theory*. While it is true that the book seems to refer to what Ackley regards as the most important cause of declining prospective yields in standard analysis—i.e. diminishing MPC due to the increase in the stock of capital in the long run—Keynes's reference to such a factor needs to be questioned inasmuch as it turns out to be quite inconsistent with the main object of his analysis: namely, the demonstration of the possibility of underemployment equilibrium. The point is that, while in standard theory the assumption of diminishing MPC makes sense because a rise in investment is the result of an increase in the optimal amount of capital which firms wish to combine with a given amount of labour, for Keynes that assumption may be violated insofar as an increase in investment may accompany an increase in the level of employment. Once again, it seems correct to draw the conclusion that partial equilibrium stories, such as those provided by Ackley and Tobin, could come to the same

conclusions of Keynes's systemic analysis of individual behaviour only in the particular case of a full employment level of income.

### *On Keynes's speculative motive*

There is a close link between the speculative motive and Keynes's formulation of liquidity preference based on a given state of expectations over the 'normal' rate. Like saving and investment, the speculative motive also depends on the specification of systemic elements. In contrast with Tobin and Hicks's 'Suggestion', Keynes follows his macrofoundations perspective and refers to the 'popular' models of the economy concerning the future 'normal' interest rate rather than to savers' preferences and maximizing behaviour.

Keynes's perspective departs in a crucial way from Tobin's representative agent model. While the latter reduces uncertainty to risk and thus assumes that agents form given probability distributions, Keynes's emphasis on uncertainty implies instead that individual expectations are not given in a definite form.<sup>15</sup> At the macroeconomic level, only the 'aggregate' state of liquidity preference is given. This influences individuals' expectations, although it does not determine them completely. In particular, agents take world-3 theoretical models concerning the expected normal rate as the benchmark for their decisions.

At least three major features of this view may be underlined. First, it accounts for the fact that the typical form of speculative behaviour is not diversification, as in Tobin's model, but the all-or-nothing choice of plungers. Individuals choose on the grounds of their point expectations whether to hold money or bonds. Second, in line with Keynes's statistical view of aggregates, which Tobin himself acknowledges, it implies that the aggregate demand for money function drawn for a given state of expectations, instead of reflecting the representative agent's *ex-ante* behaviour (i.e. the description of his plans concerning utility maximizing choices at each rate of interest), quite simply describes the actual number of agents holding money. The inverse relation between the interest rate and the aggregate demand for money thus reflects the fact that a fall in the interest rate increases the number of those who expect a rise in the interest rate. In contrast with the representative agent model, for Keynes's systemic analysis it is actually the distribution of individual views that matters. This view certainly allows Keynes to provide a much more realistic account of market behaviour with respect to Tobin's model. While the latter implies that all individuals are alike and thus, strictly speaking, no transaction actually takes place on the market, Keynes instead regards market outcomes as the product of the behaviour of different types of agents (e.g. widows, rentiers, investment trusts, professional speculators), each holding different views about the future of the interest rate (for a similar view, see Robinson 1951; Kahn 1954).

Third, Keynes's analysis is not, as Leontief and Tobin argue, flawed. It is sufficient to recall that he does not rely on the long-run equilibrium benchmark like them, but on a notion of momentary equilibrium. This means that his nominal long-term rate is not the rate that prevails in the long run—i.e. the natural rate of Neoclassical theory—but simply the rate that exists at a moment in time. As Keynes puts it: 'Any level of interest which is accepted with sufficient conviction as *likely* to be durable *will* be durable' (Keynes 1936:203; original emphasis). On the other hand, due to his 'theory of principle approach', Keynes does not need to justify the existence of money and liquidity preference in this long-run context, and thus is not forced to make pragmatic choices, such as regarding money only as a disequilibrium phenomenon. On the grounds of his notion of momentary equilibrium, Keynes regards liquidity preference as an equilibrium phenomenon from the outset. Two remarks are in order here. First, in his view, even conventional constructions, such as the normal rate of interest, may be sufficiently stable to provide a reference point for both theoretical analysis and agents' actual behaviour. Indeed, as already stressed, it is correct to regard Keynes's aggregate psychological data not as mere arbitrary factors which disappear in the long-run equilibrium, but as persistent or structural factors. The point is that they reflect world-3 objects, such as the popular models of the economy, which represent an autonomous or irreducible sphere of reality. Second, the persistence of the normal rate implies the persistence of the gap between normal and current rate emphasized by Keynes in his account of liquidity preference. The point is that agents' expectations concerning the normal rate are shaped by these autonomous theoretical constructions and thus may fail to converge to the 'true' objective (in the world-1 sense) reality represented by the relative frequencies of events. In other words, unlike Tobin, Keynes believes that agents may fail to 'learn from experience', not because they are irrational but because they consider other factors, such as conventions, ignored by standard theory.

It must be stressed again that, from Keynes's standpoint, a representative agent model like Tobin's is not totally wrong. It can be used, for example, to analyse investors' behaviour in a partial equilibrium context. However, the crucial point is that this model should not be used to deal with macro issues, such as the characteristics of a monetary economy; it is not the bridge between micro and macro analysis as implied by the constructive method. In particular, it is not appropriate to discuss the speculative motive itself. As noted by Chick (1983), insofar as he reduces uncertainty to risk and relies on given individual expectations, Tobin does not actually deal with this motive at all:

The portfolio-theoretic approach to the demand for money is not... an advance upon Keynes's justification for the interest-elasticity of the demand for money but an entirely *different* theory, relating to the

behaviour of a quite different set of transactions, motivated by a desire to invest, rather than to speculate...portfolio theory...is a theory determining a one-period choice... Since there is no mechanism within the model to generate change, it is in fact implicit that the portfolio is held forever, once it has been chosen. This conclusion is difficult to reconcile with the role played by capital gains and losses as the source of risk in portfolio theory... Speculators were defined as a class of people seeking to make profit from capital gains, not an income from interest payments. Portfolio theory describes the behaviour of the long-term investor.

(Chick 1983:213–15; original emphasis)

### Concluding remarks

In this chapter we have analysed the microfoundations contributions made in the 1950s. One of the points we have emphasized is that, while overcoming Klein's aggregation view and deriving macro conclusions directly from new representative agent models, these works still do not comply with Hicks's constructive method. Due to their reliance on the long-run equilibrium benchmark, they attempt to generalize standard theory without solving the basic problems dealt with by Hicks. For example, they address the issue of expectations in a partial equilibrium context only and rely on *ad hoc* simplifying assumptions and restrictions.

On the other hand, instead of being innocuous restatements of Keynes's theory these contributions rule out some of its key features, such as the passive nature of saving, the autonomy of investment and the speculative motive itself. Due to their reliance on the representative agent device as a tool of generalization, they cease to be the simple partial equilibrium stories they formally appear to be (relying, that is, on the fixed income assumption). They seek instead to establish a bridge between micro and macro analysis, thus violating Keynes's hierarchical view of the levels of explanation whereby the analysis of the economy as a whole is one thing, and the partial equilibrium story another.

## PATINKIN

In this chapter we focus on the last step in the evolution of the Neoclassical Synthesis, namely Patinkin's interpretation of the *General Theory*, which he put forward especially in his (1965) classic, *Money, Interest and Prices*. Patinkin too accepts the pragmatic approach to macroeconomics developed by the American Keynesians. His original contribution is to extend the application of the direct forces paradigm to Keynes's theory by emphasizing the symmetry between the functions of aggregate demand and supply and by treating the demand for money as the demand for a normal good.

Here I argue that these innovations account for Patinkin's departure from Samuelson in particular. While considering the principle of effective demand as the 'disequilibrium' core of the *General Theory*, he regards it as being consistent with the new microfoundations developed in the 1950s, rather than being simply *ad hoc*. I also show that Patinkin's conclusions can be called into question. On the one hand, while seeking to generalize standard theory, he fails to apply the Hicksian constructive method to money and expectations and seems to violate canons such as atomism and the direct forces paradigm. On the other hand, Patinkin's model implies ruling out the most significant innovative aspects of Keynes's principle of effective demand and the speculative motive.

**The relationship between 'pure theory' and 'pragmatic'  
macroeconomics**

Patinkin rejects the wide gap between Samuelson's two basic versions of 'pragmatic' macro: namely, Classical 'micro' and Keynesian 'macroeconomics'. Unlike Samuelson, he expresses the Classical model in aggregate terms and considers Keynesian macro as resting on the same principles as Classical theory, rather than as being simply *ad hoc*. Indeed, for Patinkin as for Klein, the two theories essentially rely on the same model and differ only in a few auxiliary assumptions, such as those concerning the price elasticity of some key functions. However, he makes at least two innovations with respect to Klein. The first is that in his view aggregates

are not simple projections of standard micro theory, but need to be accounted for in terms of the new micro theories, such as the Life-Cycle theory or the portfolio model. This view seems to be in tune with the Hicksian constructive method. As in *Value and Capital*, he actually starts from a disaggregated approach based on the representative agent device and makes reference to the temporary equilibrium method. However, like most American Keynesians, Patinkin makes a few significant departures from the original Hicksian framework. In particular, unlike Hicks, Patinkin relies on a kind of long-run equilibrium analysis. Suffice it to note that he makes the simplifying assumption of certain expectations that the price of each good will be the same in the future as it is in the present. While not directly restoring long-run equilibrium as a benchmark of the analysis, this assumption actually implies the reference to the concept of ‘equilibrium over time’ —i.e. a sequence of temporary equilibria—which was also criticized by Hicks as being inappropriate to discuss Keynesian issues. The point is that assuming certain expectations implies ruling out the possibility of discrepancies between planned and actual behaviour which, for Hicks, was at the heart of dynamic analysis.<sup>1</sup>

Patinkin’s second innovation with respect to Klein is that he extends the interpretation of Keynes in terms of direct forces. His original contribution lies in treating the aggregate demand and supply curves as symmetric forces. On the one hand, Patinkin is one of the first theorists to specify the aggregate supply function in explicit terms. On the other, he provides a new specification of the aggregate demand function. In order to demonstrate these points, it is useful to focus on Patinkin’s model in some detail. Here is the system of equations that he draws up to represent both Keynesian and Classical views:

$$Y=Z(N, K_0) \quad (1)$$

$$N^d=Q(w/p, K_0) \quad (2)$$

$$N^s=R(w/p) \quad (3)$$

$$N^d=N^s \quad (4)$$

$$C=g(Y, r, M_0/p) \quad (5)$$

$$I=h(Y, r, M_0/p) \quad (6)$$

$$G=G_0 \quad (7)$$

$$E=F(Y, r, M_0/p)^2 \quad (8)$$

$$Y=S(w/p, K_0) \quad (9)$$

$$E=Y \quad (10)$$

$$B^d/rp=H(Y, 1/r, M_0/p) \quad (11)$$

$$B^s/rp=J(Y, 1/r, M_0/p) \quad (12)$$

$$B^d=B^s \quad (13)$$

$$M^d=pL(Y, r, M_0/p) \quad (14)$$

$$M^s=M_0 \quad (15)$$

$$M^d=M^s \quad (16)$$

These equations specify the aggregate demand and supply functions and the market equilibrium conditions of four types of goods: labour (equations 1 to 4), commodities (equations 5 to 10), bonds (equations 11 to 13) and money (equations 14 to 16).

### The demand for money as a normal good

#### *Patinkin's critique of Classical monetary theory*

Let us begin by dealing with the equation concerning the demand for money. One of the innovations of Patinkin's analysis is that he treats the latter as the demand for a normal good. In line with Hicks's 'Suggestion', he tries to carry out the integration of monetary and value theory in general equilibrium analysis. In particular, he too deals with all the motives for holding money on the grounds of a unifying approach based on the portfolio model, and dismisses the traditional Fisherian version to the Quantity theory on account of its exclusive concern with long-run comparative statics conclusions which imply that money is nothing but a veil.

It must be noted however that, unlike Hicks, Patinkin does not believe that the problem of standard theory is that it relies on the notion of long-run equilibrium. As already noted, he too retains this notion in the shape of 'equilibrium over time' due to his assumption of certain price expectations and clearly points out that he does not question the basic validity of the Quantity theory. It is sufficient to notice that his certainty assumption, which implies that risk is absent, allows him to consider some key Classical concepts which were dismissed by Hicks, such as the natural rate of interest, within his temporary equilibrium framework,<sup>3</sup> and thus draw the same conclusions about interest as a real phenomenon as, for example, Modigliani and Hansen (see Patinkin 1965:379-80)

According to Patinkin, the real problem with the standard formulations of the Quantity theory is that they fail to take into account the equilibrating mechanisms, such as the real-balance effect, that push the economy from one equilibrium to the other. It is only by considering these mechanisms that regarding money as a normal good and achieving the integration of monetary and value theory really becomes possible.

*The real-balance effect*

To perform this task, Patinkin takes a number of steps. The first is to clarify the working of the real-balance effect, which was first considered by Pigou (1943). Patinkin shows how to integrate this effect within a Classical macro model, including an explicit aggregate demand and supply framework, built up from the individual demand and supply functions of the relevant individual goods. This framework is a crucial novelty with respect to the versions of Classical theory provided by Modigliani or Klein. While the latter, for example, defined aggregate demand simply by referring to the Quantity equation (i.e. as the quantity of money multiplied by its velocity of circulation), Patinkin defines it instead as the sum of aggregate consumption and investment (as well as public expenditure), in line with Samuelson's Keynesian model. Unlike Samuelson, however, he regards aggregate demand as being inversely related to the price level due to the fact that he introduces the real stock of money as an argument in both the consumption and investment functions together with income and the interest rate.

Three points about this innovation may be emphasized. The first is that, as stressed by Boland, it allows Patinkin to regard macro analysis as being perfectly analogous to micro analysis. In his view, it is true, for example, that 'whenever aggregate demand exceeds aggregate supply, the price index of all goods aggregated must rise in the same way that the individual market price rises whenever the market's demand exceeds the market's supply' (Boland 1982:84). In order to reach this conclusion, Patinkin begins by assuming that the price and wage levels fall in the same proportion. The real wage rate being unchanged, the supply curve (which is drawn vertically for a given real wage) is unaffected. However, the fall in the price level brings about an increase in the real value of cash balances. Given the dependence of the consumption and investment functions upon these balances, the aggregate demand function will shift upwards. Hence, at the unchanged real income, an excess demand of goods occurs so that inventories are drawn down and an upward pressure on prices is created.<sup>4</sup>

The second point is that this innovation is justified by the fact that Patinkin is dissatisfied with the application of the symmetry principle in the previous models of the Neoclassical Synthesis. In particular, he calls into question the view that saving and investment can really be treated as demand and supply for an individual good, as stressed for example by Samuelson. The point is that the concept of 'savings' is out of place in an analytical framework which views the economy as consisting of a number of goods, each with a price, and each with a market: 'For savings are clearly not a good, they have no price, and they are not themselves transacted on a market' (Patinkin 1965:270). In order to remedy this flaw, Patinkin defines commodity market equilibrium not in terms of the 'savings = investment' condition, but in terms of the 'aggregate demand = income' condition.



The third point is that for Patinkin, as for Pigou, the equilibrating mechanism based on the flexibility of absolute prices is not in contrast with the one based on the flexibility of relative prices which has always been stressed by the Classics. As Patinkin notes in discussing Pigou's article:

The classical school holds that the existence of long-run unemployment is *prima facie* evidence of rigid wages. The only way to eliminate unemployment is, then, by reducing *real* wages (since workers can presumably accomplish this end by reducing their *money* wage, this position has implicit in it the assumption of a constant price level). Pigou now recognizes that changing the relative price of labour is not enough, and that the absolute price level itself must vary. In fact, a strict interpretation of Pigou's position would indicate that unemployment can be eliminated even if real wages remain the same or even rise...for in this case the effect of increased real value of cash balances is still present.

(Patinkin 1948:551–2; original emphasis)

### *The integration of monetary and value theory*

Patinkin's second step is to advocate an explicit general equilibrium formulation. His aim is to derive the form of the excess-demand function for money from the discussion of the three markets for labour, goods and bonds plus the budget constraint.<sup>5</sup> Specifically, he notes that:

If we have assumed that an increase in real income or initial money balances...is devoted partly to increasing the demands for commodities and bonds, then we have also assumed that the remainder of this increase...is devoted to increasing the demand for money.

(Patinkin 1965:221)

This view underlies Patinkin's crucial claim that Say's Law implying the existence of a barter economy is not a basic component of Classical theory. All Classical theory needs to accept is Walras's law. Unlike Say's Law, Walras's applies to a monetary economy as it allows for positive amounts of excess demand for money.

Patinkin's third step is to show how to achieve the integration of monetary and value theory. He writes down the Classical demand for money function in a form similar to Keynes's liquidity preference function and makes it depend upon income and the rate of interest as well as the real stock of money. In contrast with the standard versions of the Quantity theory, he is thus able to argue that this theory is valid even when money is held also as a store of value for speculative as well as transaction purposes. This generalization allows Patinkin to achieve important analytical results. First,

although his model confirms the basic propositions of standard theory—for example, that an increase in the quantity of money leads to a proportional price rise, while the rate of interest remains constant—it also shows that the invariance in the rate of interest is due to the absence of money illusion in the demand for nominal speculative balances, rather than to the assumption that these balances are equal to zero in equilibrium as implied by standard theory.

Second, Patinkin overcomes the dichotomy of the pricing process accepted by standard theory, according to which relative prices are determined exclusively by real forces on the goods market, while the absolute price level is determined by the monetary forces represented by the Quantity equation. Patinkin holds that this dichotomy is to be rejected as it involves a basic contradiction. In particular, he notes that an equiproportional change in all money prices alone would apparently leave the real sector in equilibrium (as relative prices are unaltered), while in terms of the Quantity equation, the monetary sector would reveal a state of disequilibrium. In his view, this shows that implicit in the dichotomy is the assumption that real balances do not affect the demand and supply of other goods—i.e. that the real subset of the model does not contain money balances and thus a change in those balances has no effect on it. In the face of this contradiction, Patinkin then suggests dropping this assumption and inserting the real balances together with the relative prices as an argument in the excess demand functions of all goods. He thus claims that, in this way, the two sectors of the economy become interdependent and the integration of value and monetary theory is achieved.

In Patinkin's view, this integration has one crucial implication: namely, that the money held as a store of value for transactions and speculative purposes turns out to be a normal good amenable to standard marginal utility analysis. In this respect, he argues that transactions balances have utility mainly because they provide security against the inconvenience of being caught without liquidity. Furthermore, in order to make them subject to economic choice and the weighing of alternatives, he considers the existence of uncertainty about the timing of payments and receipts (not to be confused with uncertainty over future prices and interest rates). Just as for ordinary goods, he then obtains a demand curve for these balances with all the standard properties. He stresses, among other things, that such a curve is free of money illusion, depends on wealth (inclusive of initial financial assets) and is *negatively sloped* with respect to the price level.

It is important to stress that Patinkin's novel conclusions about the shape of this curve (as well as his critique of standard Neoclassical monetary analysis) are due to his assumption of an equiproportional change in all money prices alone (i.e. not accompanied by an equiproportionate change in the nominal holdings), an idea which he borrows from the theory of value, drawing on the analogy of a change in the price of an ordinary good. It is

sufficient to consider, for example, that a price increase generates a negative real-balance effect which causes the amount demanded of real balances to decrease (the opposite holds for a price fall).<sup>6</sup>

*Patinkin on Keynes's monetary analysis*

On these grounds, Patinkin goes on to criticize Keynes and shows why his analysis can be regarded only as a particular case of Classical theory. He raises two basic points. First, by applying Modigliani's key argument to money, he argues that the reason why the *General Theory* departs from the conclusions of the Quantity Theory is that Keynes implicitly assumes the existence of money illusion in the demand for speculative balances. This is due to the fact that the increase in the price level on the goods market, induced, say, by a doubling of the quantity of money, affects only the transactions (or precautionary) demand for money and not the speculative demand, so that it cannot double the total demand for money holdings. As a consequence:

Such a change cannot bring about the absorption of the doubled money supply at an *unchanged rate of interest*... Hence...some proportion of the increased money supply will seek an outlet in the purchase of securities...until these purchases have depressed the rate of interest to such an extent that the resulting increase in the speculative demand, together with the increase in the transactions demand brought about by the price rise suffices to absorb all the new money.

(Patinkin 1965:279; original emphasis)

It is important to note that Patinkin openly admits that, in referring to the *General Theory*, he has taken it out of its less than full employment context and represented it as dealing with a rise in the price level which is not explicitly mentioned by Keynes. It is clear that only if full employment is assumed is it possible to talk about a price rise on the goods market proportional to the increase in the quantity of money and the consequent real-balance effect.

Second, according to Patinkin, while it is true that the speculative motive is considered only by Keynes, it is nothing other than an important refinement of the Classical construction:

All that the speculative motive does is to introduce another reason for the negative slope of the demand for money with respect to the rate of interest; but *since we have assumed such a negative slope to exist anyway within the classical model (for transaction purposes) this cannot affect the foregoing conclusion.*

(Patinkin 1965:257; emphasis added)

## The price inelasticity of the aggregate demand function

### *The General Theory as a special case of Classical theory*

Patinkin also draws the conclusion that Keynes's analysis is a special case of Classical theory when he drops the full employment assumption and focuses on involuntary unemployment, as in Chapter XIII of *Money, Interest and Prices*. His approach may be summarized as follows. First, he begins by defining involuntary unemployment. He argues that the crucial attribute of this concept is its relativity. It must be defined in relation to that behaviour which can be taken as a norm of voluntariness. He takes the Classical supply curve of labour as the norm of reference. This curve shows how much labour workers will provide at various levels of the real wage. He thus notes that 'as long as workers are "on" their supply curve, that is, as long as they succeed in selling all the labour they want at the prevailing real wage rate, a state of full employment is said to exist in the economy' (Patinkin 1965:314–15; also 1949: 369). On these grounds, it is clear that if workers are off this curve, they must be acting involuntarily. Hence the extent of involuntary unemployment corresponds to the excess supply of labour which exists at the prevailing real wage rate.

Setting out from this premiss, Patinkin claims that the coexistence of involuntary unemployment and flexible money wages precludes the existence of equilibrium: 'for "flexibility" means that the money wage tends to fall with excess supply, and "equilibrium" that nothing tends to change in the system' (1965:315). This view is in line with the direct forces paradigm, which implies that flexible prices will clear the markets. Patinkin thus stresses that the term 'equilibrium' implies reference to a position of full employment. Hence a state of the economy which is characterized by involuntary unemployment cannot at the same time be an equilibrium; it is bound to be a state of disequilibrium.

Second, Patinkin stresses that a state of involuntary unemployment arises when two conditions occur: (a) firms are constrained by a low level of effective demand which creates a deflationary gap; (b) this gap becomes persistent due to the malfunctioning of the automatic adjustment process generated by it. In particular, this may happen if aggregate demand is not sufficiently interest and price elastic so that it fails to respond to the fall in the interest rate and the positive real-balance effect generated by the downward pressure on prices of the initial deflationary gap. In these conditions firms are eventually forced to curtail output and employment, and bring output into line with current sales to avoid the accumulation of inventories at ever-increasing levels.

According to Patinkin, this is exactly what distinguishes Keynes's view from the Classics. While the latter believe that the aggregate demand function is sufficiently interest and price elastic for flexible absolute prices to push

the economy constantly towards full employment, Keynes emphasizes instead that, due to the inelastic aggregate demand function, the equilibrating dynamic process is unlikely to converge either smoothly or rapidly towards full employment equilibrium (1965:338). In other words, Keynes does not argue that the automatic adjustment process does not exist, but that it is unsuccessful.

On these grounds, Patinkin draws a few important conclusions. The first is that the *General Theory* is the ‘economics of disequilibrium’ (1965:337). He stresses that Keynes’s references to possible unemployment equilibria do not contradict this view. He notes, for example, that Keynes’s use of the term ‘equilibrium’ is rather imprecise, as he does not draw ‘a sharp distinction in his own mind between static equilibrium...and protracted dynamic disequilibrium’ (Patinkin 1976:115–16).<sup>7</sup> Furthermore, it is possible to regard Keynes’s unemployment equilibrium as an ‘equilibrium position for the short-run’ within a dynamic disequilibrium process.

The second conclusion is that there is a narrowing down of the *analytical* distance between Keynes and the Classics. Keynes shares with the Classics the belief in the existence of an automatic adjusting process based on the flexibility of absolute prices. His contribution lies in placing the emphasis on the special case in which the automatic adjustment process is not successful. However, for Patinkin this does not generate a corresponding narrowing down of the *policy* distance. On the one hand, the Classics believe that monetary policy can be depended upon to aid the automatic adjustment process; on the other, Keynes argues that monetary policy is not enough and calls for fiscal policy and broad state intervention in the economy.<sup>8</sup>

### *Patinkin’s critique of the ‘static’ interpretation of Keynes*

Patinkin’s third conclusion is that he is able to reject the ‘static’ interpretation of Keynes by the other authors of the Neoclassical Synthesis. For example, he criticizes users of the diagonal cross diagram for suggesting the conclusion that the intersection of the aggregate demand curve with the 45° diagonal at less than full employment income levels is a true equilibrium position and that no automatic forces exist to push real income toward its full employment level (see Patinkin 1949:364, 1965:339).<sup>9</sup> In his view, this erroneous conclusion is due to their neglect of both the Pigou effect and the supply side of the goods market. On the other hand, Patinkin also calls into question the liquidity trap. He suggests that it cannot be reconciled with the standard assumption of rationality. The point is that the demand for money cannot become infinite unless the supply of bonds becomes infinite. However, in conditions of uncertainty it is not rational even for a bear to supply an infinite amount of bonds (Patinkin 1965:223). Moreover, as he points out in his debate with Hicks in the late 1950s (Hicks 1957, Patinkin 1959), even if the assumption that the system is caught in the liquidity trap were made,

it need not impair the main conclusions of his analysis. In this case, the system would remain stuck at a position of underemployment equilibrium only if prices and wages were rigid. If, instead, the pressure of unemployment causes wages and prices to fall simultaneously, the fall generates a real balance effect which may, in principle, shift the IS curve rightwards so that it intersects the LM at the position of full employment.<sup>10</sup>

**The incompatibility between the principle of effective demand and the assumptions of maximization and perfect competition**

*The link between firms' output of commodities and their input of labour*

Patinkin, furthermore, criticizes those like Modigliani who stress the link between Keynes's unemployment and wage rigidities and place the emphasis on special assumptions, such as that the supply curve of labour is infinitely elastic at the prevailing money wage until the point of full employment. According to him, this view reflects the habit of seeing only points *on* the supply curve (Patinkin 1965:328). In order to understand Patinkin's critique, it is useful to focus on his model in some detail. He starts by pointing out that the translation of the 'Keynesian' conclusion that when aggregate demand is price inelastic firms are eventually forced to curtail output and employment into his model is not simple, insofar as the Classical labour demand function he relies upon 'depends only on the real wage rate, and not on the volume of output' (1965:319). However, according to him, this dependence can be found by looking more closely into the tacit assumptions on which this function is based.

Patinkin notes that this function describes the behaviour of firms maximizing profits under conditions of perfect competition. This means that the 'planned labour input it specifies for any given real wage reflects the firms' assumption *that they will be able to sell all of their resulting output at the prevailing market price*' (1965:319; original emphasis). However, he argues that if firms start to accumulate unsold inventories, they must eventually drop both this assumption of an unlimited market and their plans for labour inputs. He thus stresses that, in these conditions, a *leftward shift* of the labour demand function will occur so that the economy will settle down, for example, to the position described by the point K in Figure 11.1 and the corresponding point G in Figure 11.2. On these grounds, he draws the conclusion that 'the influence of commodity output on labour input reflects itself, not in the *variables* on which the labour demand function is dependent, but in its *form*' (1965:319; original emphasis).

Patinkin's analysis does not end here. The crucial assumption he makes at this stage is that these points do not represent a position of equilibrium.

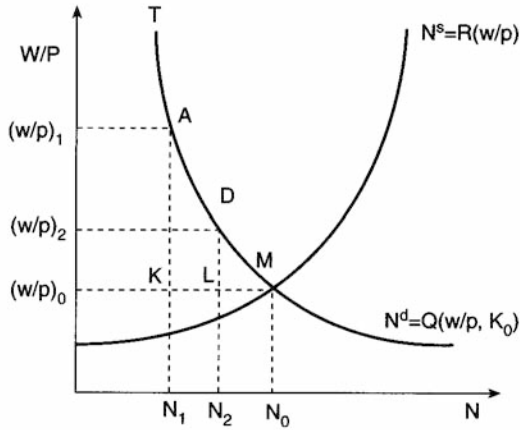


Figure 11.1 Influence of aggregate demand on the labour market

At point K, there is still an excess supply of labour which continues to press down on the money wage, while at point G there is an excess supply of goods which continues to press down on the price level.<sup>11</sup> This downward pressure on both wages and prices will lead in due course to an automatic decrease in the extent of involuntary unemployment.

*Patinkin's aggregate supply function*

It is important to notice the crucial role played by the aggregate supply function in this process. Patinkin assumes that:

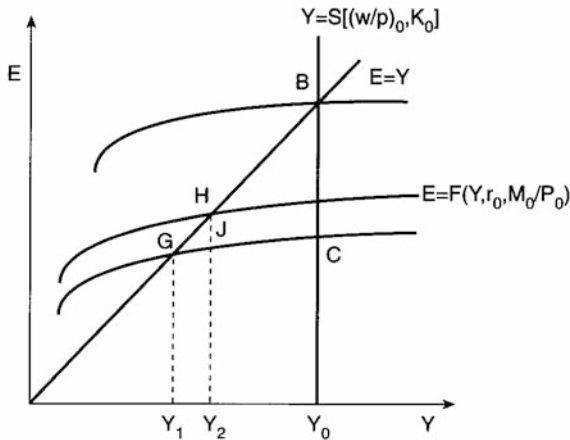


Figure 11.2 Influence of aggregate demand on the goods market

- (a) The supply curve of firms indicates the amounts of commodities they would like to supply to maximize their profits at various real wage rates. Given this rate and the fixed capital equipment, the representative firm's optimum input of labour is determined by its marginal productivity. And given this input, the production function then determines the corresponding optimum output of commodities.
- (b) The aggregate supply function is a vertical line drawn for a given real wage rate  $(w/p)_0$ . As this rate remains unchanged in the analysis, so the vertical line stays put at the full employment level.<sup>12</sup>
- (c) There is a gap between the optimal or potential and actual (disequilibrium) behaviour of firms in conditions of insufficient effective demand.
- (d) This gap induces firms to reduce the price of their own goods.

There are reasons to believe that Patinkin's analysis of this disequilibrium process runs into problems of 'internal consistency'. In particular, the assumption in point (d) seems to be in contrast with that of perfect competition, which he makes in other parts of his book. First, it is quite unlikely that 'potential' output can affect the price established on the market, as if it were actual excess supply (e.g. reflecting itself in an increase in inventories) for the simple reason that firms at point G are in equilibrium insofar as they sell what they produce. Second, the assumption that firms bid down the price of their own goods is in sharp contrast with the standard price-taking behaviour of firms in perfect markets. In the latter, prices are determined by the impersonal interplay of market demand and supply curves so that no individual firm enjoys the power to reduce its price in the face of idle capacity.

### *On firms' demand curve for labour*

The incompatibility between perfect competition and involuntary unemployment is also shown by Patinkin's analysis of firms' actual demand curve for labour. When analysing point K, Patinkin argues that it does not represent an excess demand for labour because the solid demand curve in Figure 11.1 does not describe the actual behaviour of firms.<sup>13</sup> This is described instead by the kinked curve TAN. In Patinkin's view, however, the latter is 'not a demand curve in the strict sense' (1965:322). It only makes clear that the input of labour is, under these conditions, limited to  $N_1$  units. The kink at point A emphasizes that if firms increase their input beyond  $N_1$  they will not be able to sell the resulting additional output.

Patinkin makes two points. The first is that, unlike Modigliani who is forced to connect decreases in employment with increases in the real wage rate due to his emphasis on underemployment equilibrium, he



claims that a deficiency in commodity demand can generate a decrease in labour input without requiring a prior increase in the real wage rate. As the point K is not on the demand curve for labour, it is not bound by the standard inverse relationship between input and the real wage rate which this curve specifies. This shows that involuntary unemployment need not have its origins in wage rigidities, although these certainly aggravate its duration (1965:340). If either wages or prices are absolutely rigid the dynamic process cannot work itself through a successful culmination (1965:327–8).<sup>14</sup>

The second point is that Patinkin admits that his analysis clashes with perfect competition:

The kink in the curve TAN is one that exists from the viewpoint of the economy as a whole; but, by definition of perfect competition, this kink cannot be taken into account by any individual firm. Now...at the point K there no longer exist the liquidity pressures of unsold inventories. What, then, keeps each individual firm from expanding its input until it reaches its demand curve for labour?

(Patinkin 1965:323)

Patinkin suggests that a first possible answer may be that:

Each firm does indeed attempt to do this, but some of them find themselves with unsold inventories which force them to contract input again. Thus K does not represent a static situation, but one in which there are always some firms expanding input and output, and others contracting, though, as long as commodity demand conditions remain unchanged, never in the aggregate succeeding in moving to the right of K.

(Patinkin 1965:323)

It must be noted that here Patinkin actually seems to reject the representative firm device since he starts thinking in terms of a ‘statistical’ notion of aggregate similar to Marshall’s or Keynes’s, focusing on the net effect of the productive efforts made by all firms in the economy. However, Patinkin sticks to the representative agent device and, though he hints at them, does not really consider the implications of the alternative approach. Instead, he suggests another explanation for firms’ behaviour: namely, that they do not act on the grounds of maximizing postulates. For example, he points out that repeated frustrating experiences, such as those mentioned above, may ‘lead firms to *disregard completely their ordinary curves as a guide to optimum behaviour*. But this then leaves the question as to how they do determine their behaviour’ (Patinkin 1965:323; emphasis added).

*Patinkin on Keynes's analysis of effective demand*

Patinkin's view of the possible inconsistency between the canons of maximizing behaviour and his analysis of disequilibrium states finds a counterpart in his direct interpretation of Keynes. In particular, he underlines that in the *General Theory* Keynes subscribes to the first postulate of Classical economics— i.e. the assumption that firms follow the canons of profit maximization and are always on their demand curve for labour as determined by the latter's diminishing marginal productivity, so that changes in the level of employment are necessarily accompanied by inverse changes in the real wage (Patinkin 1965: 324, 1976:94). In *Keynes's Monetary Thought* (1976), Patinkin claims that the acceptance of this postulate is a sign that Keynes's 'declared objective of integrating monetary and value theory' (1976:94) was not really successful. In particular, Keynes was not fully aware of the possible inconsistency between the maximizing postulates and the analysis of disequilibrium states. On the one hand, he 'did not develop a theory of demand for labor consistent with the state of unemployment *qua* market disequilibrium that was his major concern in the *General Theory*' (1976:94). On the other, his presentation of the principle of effective demand is not fully consistent with the principle of profit maximization, as he wrongly considered the point of intersection between aggregate supply and demand as the point at which entrepreneurs maximize profits:

Keynes actually bases the dynamic analysis of the *General Theory* on the simple assumption of the *Treatise* that the existence of profits (which Keynes identifies with an excess of the aggregate demand price over the aggregate supply price) causes entrepreneurs to expand output; and conversely for losses...it is on this assumption that Keynes relies in the *General Theory* in order to explain how the dynamic forces of the market bring an economy to a position of unemployment equilibrium corresponding to the point of intersection between the aggregate demand and supply curves. Now, this assumption of the *Treatise*...is not derived from the principle of profit maximization.

(Patinkin 1965:323)

Patinkin then draws the conclusion that:

Because...Keynes wanted to present his *General Theory as a* theory firmly based on the maximizing principle of marginal analysis, he yielded to the temptation to denote this point of intersection as one of maximum profit, even though he had not provided the economic rationale for so doing.

(Patinkin 1976:93)<sup>15</sup>

### Critiques from a Classical standpoint

#### *Patinkin's failure to apply the constructive method*

At least three criticisms can be raised against Patinkin from the 'pure theory' viewpoint. First, despite the fact that he relies on the representative agent device and seeks to generalize standard theory beyond the confines of static analysis, he too fails to apply the Hicksian constructive method for he adopts the notion of 'equilibrium over time'. Like the standard concept of long-run equilibrium, this notion does not allow for a meaningful treatment of money and expectations due to its neglect of uncertainty. For example, the latter is explicitly ruled out by Patinkin in his analysis of price expectations as he assumes that these are certain.

As for money, it can be argued that, not unlike Hicks, Patinkin faces both an objective and a subjective limitation in applying the constructive method. The subjective limitation is to neglect that general equilibrium theory cannot accommodate the transactions role of money. Indeed, money still remains an inessential addition to Patinkin's model. As stressed by Hahn (1965), this model allows for a non-monetary equilibrium—i.e. it has an equilibrium solution in which money has no positive exchange value. Patinkin only manages to justify the assumption of a positive demand for money because he assumes the existence of frictions, such as the uncertainty over the timing of receipts and payments and penalty costs for being out of cash, which find no room in his model. Moreover, in this model money has no essential role to play because it does not affect the dynamics of the tatonnement process by which the system finds an equilibrium but only the trading process—i.e. the actual exchange of commodities. In other words, it has no role to play in the happenings of Monday but only in the activities of the rest of the week (see Rogers 1989:46, 62–7).

On the other hand, Patinkin's objective limitation is that he provides a unified analysis of the demand for money based on the representative agent device that leads him to misrepresent the transactions motive with respect to Fisher's equation. Like Hicks, he neglects that transactions money is a systemic phenomenon (i.e. it is simply the money needed to circulate a certain level of output), rather than a normal good which can be analysed by using the standard marginalist apparatus.

A second criticism of Patinkin concerns his reliance on aggregates. This is of course no novelty with respect to the models built in the 1940s. However, his model provides further reasons for suggesting that aggregates are inconsistent with 'pure theory'. This is true especially for his aggregate demand and supply apparatus. There are two aspects of the latter that seem to violate several basic orthodox postulates: (a) the specification of aggregate demand as an inverse function of the price level; (b) the treatment of aggregate demand and supply in symmetric terms.

*The incompatibility between the real-balance effect and  
Classical theory*

Let us begin by focusing on the real-balance or Pigou effect which is so crucial for deriving aggregate demand as a function of the price level and all Patinkin's results. As already noted, this effect depends on the event of a fall in the price level generated by an excess supply on the commodity market. It is arguable that this event, when accompanied by a fall in money wages, is in contrast with the direct forces postulate in 'pure theory', which implies that flexible relative prices grant market clearing. While Patinkin accepts this standard adjustment mechanism in his analysis of involuntary unemployment insofar as he stresses that flexible money wages imply full employment, he seems to forget it when introducing the Pigou effect into the Classical model. That this effect directly interferes with the adjustment mechanism based on the flexibility of relative prices only is not hard to see. A fall in money wages implies the existence of an excess supply of labour. For the Classical adjustment mechanism to operate, not just the money wage but also the real wage must fall in order to restore full employment. For this to happen the price level must be given when the money wage falls—i.e. the Quantity theory must hold because this allows for an independent determination of the price level. However, if a fall in the money wage leads to (or is accompanied by) an equiproportionate fall in the price level, such an equilibrating mechanism cannot work and is simply *replaced* by the other mechanism based on the flexibility of the price level and the real-balance effect. In contrast with Patinkin, it can thus be argued that the latter is an *alternative*, rather than a complementary, equilibrating mechanism which cannot find room within the Classical framework.<sup>16</sup>

Patinkin's mistake is quite likely due to his failure to make a sharp distinction between two very different events which are both capable of generating a real-balance effect: namely, a change in the real stock of money  $M/P$  brought about by a change in  $M$  holding  $P$  constant and a change in that stock due to a change in  $P$  holding  $M$  constant. These two events have very different implications as the former refers to the transmission mechanism of monetary policy, while the latter is the automatic adjustment mechanism generated spontaneously by the market forces. The point of this distinction is that it is only the first event which is actually part of the Classical model insofar as it is consistent with the Quantity theory.

To see this point, suffice it to consider how, in this theory, changes in the money supply bring about proportional changes in the price level. Quantity theorists assume that if people find their holdings of money balances doubled at a constant price level as a result of a money injection by the central bank, they will attempt to spend the money which is in excess of their needs on the goods market. Given the existence of general conditions of full employment, such an attempt will only exert an upward pressure upon prices

which will last until the new equilibrium position is attained (i.e. when prices will double). Under the assumptions made by Patinkin, this increase in the money supply will not affect relative prices and the rate of interest (i.e. money is neutral). The important point to stress about this process is that, unlike an automatic adjustment mechanism, it follows from a policy decision and is not necessarily linked to unemployment. In fact, it can be argued that when the money supply is increased in the Quantity theory world, the focus is on the transition from one equilibrium price level to another, rather than on how to restore full employment. Indeed, conditions of full employment must be assumed for the standard Quantity theory results to be obtained.

*The symmetric treatment of aggregate demand and supply*

It is arguable that Patinkin's aggregate demand and supply framework violates the canons of atomism. His attempt to regard the two curves as being independent and symmetric, like the demand and supply for an individual good, implies that other data beyond agents' preferences and technology also play a role in macroeconomics. To see this point, it is important to realize that the very idea that aggregate demand can shift while aggregate supply stays put is quite simply unwarranted within the Classical framework. As noted, for example, by Schumpeter, only in partial equilibrium analysis (e.g. when the focus is on a given industry) is it legitimate to regard demand and cost schedules as independent:

The demand schedule for the product of the industry in question is derived from the income generated by all the others: its own contribution to total income being negligible, that schedule may be considered as given independently of its own supply and so may... the prices of the factors it uses.

(Schumpeter 1954:617)

In general equilibrium analysis, instead, this is no longer possible. On the one hand, the very application of the terms 'demand' and 'supply' at the aggregate level is suspect. On the other, the conclusion that the two functions are interdependent follows from Say's Law, which underlies the general equilibrium model:

If we do insist on applying the terms demand and supply to social totals, we must be careful to bear in mind that they must mean something that is entirely different from what they mean in their usual acceptance. In particular, this aggregate demand and supply are not independent of each other because the components demands for the output of any industry (or firm or individual) come from the supplies of all the other industries (or firms or individuals) and therefore will

in most cases increase...if these supplies increase and decrease if these supplies decrease. This is the proposition which... I call Say's Law...the law...amounts to a recognition of the general interdependence of economic quantities...and therefore has a place...in the history of the emergence of the concept of general equilibrium.

(Schumpeter 1954:617–18)<sup>17</sup>

In defence of his argument about aggregate demand shifts, Patinkin could retort that Say's Law is not a necessary feature of general equilibrium analysis; in the latter, only Walras's Law needs to hold. However, this view appears erroneous. It can be argued, in fact, that only Say's Law is in line with orthodox premisses. One can think of two reasons why Walras's Law may be incompatible with these premisses. It must be emphasized that this incompatibility does not refer to Walras's Law regarded as an identity. In particular, statements such as 'if  $n-1$  markets are in equilibrium, then the  $n$ th market is also in equilibrium' or 'the sum of excess demands is always zero', which are often used to summarize this law, are hardly questionable. Walras's Law is to be called into question instead when it is used, as in Patinkin's work, to draw substantive implications about agents' behaviour. For instance, Patinkin stresses that while Say's Law implies that the excess demand for money is always zero, Walras's Law allows instead for a positive excess demand for money matched by an excess supply of both labour and commodities. This statement implies that: (a) a positive excess demand exists for money even in equilibrium; (b) an excess supply of labour generating falling money wages coexists with an excess supply of commodities generating falling absolute prices. As already noted, these two implications are not in tune with the standard orthodox premisses. In the first place, as already noted, Patinkin does not manage to show the existence of a positive excess demand for money in equilibrium.

Second, as for the excess supply on the commodity market generating a fall in the price level, it must be noted that, when not accompanied by an equiproportional change in the money supply, this event is difficult to reconcile with the Quantity theory. This is so for at least two reasons. One is that this assumption violates the causality implied by this theory, according to which it is only a change in the money supply that is able to bring about a change in the price level. The second is that Patinkin's emphasis on the real-balance effect induced by this price change leads him to blur the distinction between short-run (disequilibrium) and long-run phenomena. On the one hand, he admits that the real-balance effect is a simple, short-run phenomenon which disappears in the long run and is thus irrelevant with respect to the propositions of the Quantity theory based on comparative statics. As argued by Archibald and Lipsey (1958), this is due to the fact that in Classical theory there is a unique stationary equilibrium dependent only upon preferences, resources and technology and not upon the

distribution of real balances. On the other, however, he regards this effect as crucial for the definition of a relatively inelastic demand curve for nominal transactions balances determining the market equilibrium curve which, like the Quantity theory, holds in the long-run.<sup>18</sup>

### **Critiques from Keynes's standpoint**

Patinkin's attempt to provide microfoundations for Keynes's principle of effective demand and monetary analysis on the grounds of representative agent models tends to rule out key aspects of the *General Theory*, such as the very idea of the speculative motive, the link between the principle of effective demand and firms' maximizing behaviour and Keynes's view of the working of the price mechanism.

### ***Back to the speculative motive***

As already stressed, Keynes's speculative motive can be understood only in the light of his conception of liquidity preference, based on systemic elements not under the control of agents. This view explains why Keynes, unlike Patinkin, makes no reference to agents' preferences and does not regard money as a normal good subject to the standard utility maximization assumptions underlying a representative agent model. While this model tends to unify the treatment of all motives for holding money by reducing them to the same analytical structure, Keynes instead stresses their peculiar characteristics. He actually provides a separate account of these motives, stressing different determinants for each. While systemic elements of an institutional kind underlie the transactions and precautionary motives (e.g. the system of payments and national income), systemic elements of the world-3 type underlie the speculative motive (e.g. the given state of expectations over the 'normal' rate).

On these grounds, it can be argued that it is misleading to regard, as Patinkin does, factors such as price expectations and money illusion as being relevant for both the speculative and transactions money. As stressed, for example, by Chick (1977:55), speculators do not simply care for price level changes; they are concerned with capital gains, rather than with the real value of money holdings.

### ***Keynes's aggregate demand and supply***

The link between maximization and the principle of effective demand is an important aspect of *General Theory*. It is arguable that Keynes states this link because, unlike Patinkin, he manages to divorce his reference to the maximizing assumptions from the basic general equilibrium data. In other words, for Keynes the fact that firms maximize does not imply that these

data play a unique causal role in the analysis. To grasp this point, it is necessary to see how his use of the aggregate demand and supply apparatus can be justified. Let us begin by stressing that Patinkin is right in assuming that Keynes's aggregate demand is independent of aggregate supply. As pointed out, for example, by Leontief, this is indeed a feature of the *General Theory*:

Discussing...the response of total employment to a given change in aggregate demand, Mr. Keynes makes its reaction dependent upon the shape—in particular, the elasticity—of the aggregate supply function. He obviously implies a situation in which one of the two functions 'shifts' while the other retains its shape and its position unchanged.

(Leontief 1936a:350)

However, the reason why this situation is actually possible for Keynes is not grasped by Patinkin. He believes that an independent shift in aggregate demand is not a peculiar feature of Keynes's approach, but an event which is also compatible with Classical theory and thus something that can be taken somehow for granted. This view is quite simply misleading. As already noted, in Classical theory such shifts are normally ruled out by the basic interdependence of the aggregate demand and supply functions. This means that asserting the possibility of demand shifts amounts to a departure from the theory, and this needs to be carefully justified. This is what we now have to do with Keynes. One possible rationalization is provided by Leontief himself:

The classical concept of general equilibrium presupposes the existence of a great number of independent data (production functions, indifference functions) which simultaneously determine the quantities, prices and all other variables of the system...Mr Keynes's implicit equations of aggregate supply and aggregate demand are removed a great number of steps from any basic assumption and data. Even so Mr. Keynes himself would hardly deny the obvious observation that both functions depend upon an identical set of primary data, i.e. that they are fundamentally interdependent.

(Leontief 1936a:349–50)

This passage clarifies the basic issue. Leontief's message is that Keynes's aggregate demand and supply functions are removed from the basic data of general equilibrium theory, though he regards this not as a sign of Keynes's actual autonomy from the theory and foundation for an alternative approach, but as a flaw, an instance of implicit theorizing, since Keynes himself cannot but believe in the fundamental interdependence of the two functions. In my view, it is instead precisely the denial of this belief which



underlies Keynes's stance. According to him, the two functions are not interdependent for one basic reason: namely, because aggregate demand relies on a different type of data with respect to aggregate supply. This is clearly shown by the fact that Keynes defines both functions in relation to firms' behaviour. If exactly the same data were involved in their definition, Keynes's approach could be clearly dismissed as being inconsistent or redundant with respect to standard theory, and Leontief's critique would be fully justified.

Keynes's reference to the different data underlying the two curves is linked to his attempt to highlight two different aspects of firms' behaviour, in line with his view of the dual nature of economic agents. According to this perspective, self-interest (captured by maximization assumptions) does not occur in a vacuum, but within a broad context which we have called 'coordination' between agents. This context can be regarded as the premiss for the pursuit of self-interest as it involves a number of simplifying practices that help agents to perform their private calculations. On these grounds, the aggregate demand curve can be interpreted as reflecting firms' attempts to coordinate their efforts to estimate future levels of aggregate demand depending upon the propensities of consumers and investors. There are two points to note here. The first is that, as already noted, consumption and investment depend not solely upon the general equilibrium data, but also upon systemic elements, such as institutional features and 'popular' models. The second is that firms must try to become acquainted with these elements, especially with those governing investment. This is what accounts for Keynes's emphasis on firms' short-run expectations in his definition of aggregate demand:

Thus the behaviour of each individual firm in deciding its daily output will be determined by its *short-term expectations*...as to the cost of output on various possible scales and...as to the sale-proceeds of this output; though, in the case of additions to capital equipment and even of sales to distributors, these short-term expectations will largely depend on the long-term (or medium term) expectations of other parties. It is upon these various expectations that the amount of employment which the firms offer will depend.

(Keynes 1936:47; original emphasis)

On the other hand, the aggregate supply curve captures a different aspect of firms' behaviour: that of self-interest. This curve reflects the fact that firms follow the rules of maximizing behaviour—for example, that prices must cover costs—which ensure that the conditions of economic efficiency are met. Again there are two points to note. First, the basic factors which account for this curve are not unlike the ones underlying cost functions in standard theory—i.e. technological factors. Second, the major difference with respect to standard theory is that these factors do not play a unique causal role in

the analysis; in particular, they do not determine firms' labour demand. According to Keynes, this role is played instead by the aggregate psychological data underlying aggregate demand. This is why the aggregate supply curve in the *General Theory* is actually an *ex-post* market equilibrium curve, in line with Keynes's Marshallian background (e.g. Leijonhufvud 1974).

This curve does not show how a representative firm would behave in relation to each price level in a given market form as in modern micro theory, but accounts for the decisions actually taken by a large number of firms on the grounds of the models underlying the aggregate demand function. This interpretation is in line with Keynes's 'statistical' view of aggregates. That is to say, points along the aggregate supply curve reflect the changing number of firms involved in the production decisions. As aggregate demand rises, for example, a larger number of firms will produce at higher costs (due to the fact that less efficient firms enter the market). No qualitative statements about individual firms' behaviour are directly involved. Keynes argues that they do maximize but, in his analysis, fails to explain how.

*The compatibility between maximization and the principle of effective demand*

It should be clear at this point why Keynes departs from Patinkin. In the first place, the latter regards maximization and the principle of effective demand as being incompatible insofar as he tries to collapse the two dimensions of Keynes's analysis into his representative firm model. The incompatibility arises because this model and the principle of effective demand imply two alternative ways to determine firms' demand for labour. In Keynes's perspective, this incompatibility quite simply disappears. On the grounds of his hierarchical view of the levels of explanation, he manages to account for the causal role played by effective demand without ruling out technological factors. In particular, Keynes's emphasis on aggregate demand does not simply imply a reversal of Say's Law. Aggregate supply conditions play a role in his analysis as well, acting as a constraint on the level of output.

In the second place, while the representative firm model rests on the link between the production function, the marginal productivity of the labour curve and the real wage, for Keynes this link is broken. In particular, the logic of his approach is that when aggregate demand shifts in such a way as to create involuntary unemployment, firms' demand for labour is no longer a function of the real wage but depends upon the level of effective demand. This claim, however, requires further explanation since it seems to be at loggerheads with Keynes's acceptance of the first postulate of the Classical theory of employment, often regarded as proof of his compromise with the marginalist framework.

Now, on the grounds of the previous remarks, it seems that there is no real contrast between the principle of effective demand and the first postulate of Classical theory. By subscribing to this postulate, Keynes only intends to accept the existence of a relationship between real wages and employment, rather than the causal role played by the technological factors underlying the marginal productivity of labour curve (e.g. Davidson 1967). In his view, firms demand labour as a function of their short-run expectations about aggregate demand, rather than seeking to equate the marginal product of labour and the real wage. Thus, if aggregate demand increases, firms will increase their demand without waiting for a fall in real wages. It is true that for him too the real wage actually falls, but this event occurs for just the opposite reason with respect to orthodox theory: namely, a fall in real wages turns out to be the effect of an increase in employment as the latter induces a rise in the price level. As Keynes puts it: ‘The propensity to consume and the rate of new investment determine between them the volume of employment, and the volume of employment is uniquely related to a given level of real wages—not *the other way round*’ (Keynes 1936:30; emphasis added). In other words, the inverse relation between the level of employment and the real wage in the *General Theory* is simply an *ex-post* market equilibrium one.

The opposite causal link between real wages and employment postulated by Keynes and Classical theory can be traced entirely to the fact that, while the latter rests on the representative firm model, Keynes instead adopts an autonomous macroeconomic perspective. The behaviour of the representative firm is analysed under given conditions, including technology and the real wage. The latter is given for the individual firm because both the money wage and the price level are fixed by factors such as the quantity of money which are not under its control. Nor does the problem of estimating demand arise for the firm. Under the assumption of perfect competition assumed by Patinkin, the level of demand for each firm is given by the price for its own good which is fixed by the market.

For Keynes, most of these data do not exist insofar as he focuses directly on macroeconomic analysis. In particular, the real wage is not given for firms because the price level is not fixed by independent factors, but is the outcome of their predictions about aggregate demand, on the one hand, and supply conditions, on the other. These remarks ought to suffice *per se* to show why the determination of aggregate demand is logically prior to the determination of the real wage for Keynes. As prices are not a datum for firms, the latter are compelled to form expectations about the demand for their goods in a different way from that assumed by orthodox theory: namely, by referring to the systemic elements which underlie the components of aggregate demand.

On these grounds, we are led to confirm our claim that a representative agent model, such as Patinkin’s, should not be used as a bridge between

micro and macro analysis. It should not be used in a genuine macroeconomic perspective because, in the latter, conditions—the level of employment, first and foremost—are no longer ‘given’. As Patinkin shows, as soon as the full employment assumption is dropped, the standard representative firm model which underlies the Classical theory of aggregate supply breaks down and the analysis of firms’ behaviour becomes indeterminate. Only a model where technology is not assumed to play a unique causal role, such as Keynes’s, is general enough to accommodate the possibility of a changing level of output without sacrificing the principle of rational behaviour.

### *On the price inelasticity of the aggregate demand function*

As noted by Patinkin, in the *General Theory* the price level does not adjust aggregate demand and supply in such a way as to grant full employment. It seems plausible to suggest that this is due to Keynes’s hypothesis about his aggregate demand and supply framework, rather than to the price inelasticity of the aggregate demand function, as suggested by Patinkin. The crucial point is that in Keynes’s theory the intersection of the two curves does not imply full employment as in Patinkin’s model because the basic general equilibrium data do not play a unique causal role in his analysis.

In order to make this clear, it is important to note that Keynes’s aggregate supply is unlike Patinkin’s. While the latter is drawn as a vertical line for a given real wage, Keynes regards it instead as an upward sloping curve drawn for a given money wage. In the price/income space, this means that, along the curve, the real wage falls as the price level rises, thus reflecting the fact that the labour market does not play a causal role in the *General Theory*. On the one hand, the demand for labour does not depend on the marginal productivity of labour, but on the level of effective demand. On the other, the labour supply does not depend on the real wage, but on the relative wage. The crucial point stressed by Keynes is that while workers refuse money wage cuts as they distort wage differentials, they tolerate instead a fall in the real wage due to an increase in the price level. This implies that not just the production function but also workers’ tastes do not play a causal role. It is sufficient to consider, for example, that in the case in which the economy recovers from a recession, so that the intersection of the aggregate demand and supply determines a higher price level and a lower real wage, workers do not withdraw their labour supply (as they should if they were acting according to the Classical postulates).

That Keynes’s aggregate supply involves a degree of freedom in the determination of the level of output with respect to labour market conditions also has another key implication: unlike Patinkin, Keynes dismisses the concept of potential output relating to the full employment real wage predetermined on the labour market. No gap between potential and actual output and no market pressure for the attainment of the full employment

price level and real wage thus need to arise. The equilibrium is granted not by satisfying firms' potential output conditions, but by fulfilling their short-run expectations concerning aggregate demand which can occur at any level of employment.

### **Concluding remarks**

In this chapter, I have focused on Patinkin's interpretation of Keynes. I have shown that, while making a genuine effort to generalize the standard paradigm, Patinkin too fails to meet the standard of 'pure theory'. Since he relies on the notion of 'equilibrium over time', money and expectations still remain inessential additions to the standard framework. Moreover, his aggregate demand and supply apparatus violates the key assumptions of atomism and the smooth working of the price mechanism.

On the other hand, due to his reliance on the representative agent models in his analysis of money and involuntary unemployment, Patinkin also rules out important features of the *General Theory* such as the peculiarity of the speculative motive and the compatibility between maximizing behaviour and the principle of effective demand.

Part III  
MICROFOUNDATIONS



## NEW CLASSICAL MICROFOUNDATIONS

In this chapter and in the two following I focus on the debate that has been taking place in macroeconomics since the publication of the second edition of Patinkin's *Money, Interest and Prices* (1965). It is generally agreed that this debate has revealed that the consensus once commanded by the Neoclassical Synthesis in both theory and policy no longer exists. As Solow points out, it is useful to make a distinction between an *external* and an *internal* reason for this. The external reason was 'the stagflation of the 1970s and the failure of the prevailing macroeconomics to come up immediately with a plausible analysis of it, preferably one with painless policy implications' (Solow, 1986:196), while the internal reason was 'a failure of intellectual purity. The profession was seized with an irresistible urge that macroeconomic theory should have microeconomic foundations and more than merely *proforma*' (ibid.: 96).<sup>1</sup> Solow goes on to explain what this actually meant:

What the modern macroeconomist wanted [in the 1970s] was that aggregative statements should be rigorously derived from a completely specified microeconomic model. How could anyone be against that? ... Deep down we all accept a sort of economic atomism. Everything that happens must ultimately be understood as the outcome of the actions of individual agents in a given technological and legal environment.

(Solow 1986:186)

In the following pages, I focus on the internal reason for the fall of the Neoclassical Synthesis and thus on the microfoundations debate. In this chapter, I analyse the New Classical approach to microfoundations. For simplicity's sake, I group under this label both 'representative' Monetarists, like Friedman, Brunner and Meltzer, and New Classical macroeconomists, like Lucas. In this book, reference to these authors is useful for two reasons. The first is that by criticizing the Keynesian tradition they reveal the internal inconsistencies of the Neoclassical Synthesis which account for its decline



as a dominant paradigm of macroeconomics. The second is that they contribute to the interpretation of Keynes in terms of standard methodological canons.

Despite their strong critique of the Keynesian tradition, it would be wrong to believe that the New Classicals depart from the Neoclassical Synthesis in a radical way. In line with the American Keynesian tradition, they rely on general equilibrium methodology and regard macroeconomics as an essentially pragmatic discipline. The original contribution made by the New Classicals is to use the constructive method in the analysis of expectations as well as to extend the application of the direct forces paradigm to the Classical macro model. In particular, while accepting Patinkin's aggregate demand and supply framework, they seek to place more emphasis on the aggregate supply side than he does, in order to establish symmetry between the two forces. They do so by extending to the labour market the kind of microfoundations analysis started by the Neoclassical Synthesis with reference to the aggregates of the demand side.

Below I show that these innovations also have implications for the New Classicals' interpretation of Keynes. While endorsing Samuelson's view that Keynes's approach is to a large extent *ad hoc* and concerned with disequilibrium concepts, they regard these concepts as useless. In their view, it is possible to account for both short-run and long-run analysis on the grounds of a unifying framework based on orthodox principles. It ultimately emerges that New Classical microfoundations stories can also be criticized for opposite reasons. First, they too fail to meet the standards of 'pure theory' as they do not fully apply the constructive method to money and expectations and violate the canons of atomism and direct forces. Second, due to their neglect of Keynes's methodological background, they are bound to rule out key aspects of his work, such as his concept of rationality.

### Friedman

The Monetarist approach represents a major step in the evolution of the microfoundations debate. In what follows, for simplicity's sake, I focus on Friedman, making only passing reference to other important contributions, such as those of Brunner and Meltzer. Unlike advocates of the Neoclassical Synthesis, Friedman makes a distinction between three versions of 'pragmatic' macro. In particular, he stresses the difference not just between the Monetarists or Classics and the Keynesians, but also that between the Neoclassical Synthesis and Keynes.

#### *Marshallian aspects of Friedman's method*

As for the relation between Keynesians and Monetarists, it is not easy to outline Friedman's view precisely as he makes several seemingly

contradictory remarks. On the one hand, like Patinkin, he seems to reject the existence of a sharp gap between the two approaches. He too accepts the IS-LM model, for example, and regards the basic differences between them as being of an empirical kind only (Friedman 1971:61).<sup>2</sup> On the other hand, however, he emphasizes that Keynesians and Monetarists differ at the methodological level. In particular, he points out that while the Neoclassical Synthesis relies on a Walrasian methodology, his Monetarist approach is more Marshallian. In this way, Friedman seems to break with ‘pure theory’ altogether and even to find a link with Keynes: ‘Keynes was no Walrasian seeking, like Patinkin, and to a lesser extent Tobin, a general and abstract system of all-embracing simultaneous equations. He was a Marshallian, an empirical scientist seeking a simple, fruitful hypothesis’ (Friedman 1974:144–5).<sup>3</sup>

According to Friedman, an important difference between the two approaches is that while general equilibrium theorists accept conventionalism and seek a more universal, lasting understanding of the workings of the economy—i.e. a true theory of the economy—Marshallians instead put forward an instrumentalist view of methodology, according to which what matters is not the realism of assumptions, but their predictive success (e.g. Boland 1982: 152).<sup>4</sup> He stresses, for example, that in the Marshallian approach, theory is an engine for the discovery of concrete truth and its value lies ‘in explaining facts, in predicting the consequences of changes in the economic environment’ (Friedman 1953:90–1). He then argues that this approach is based on partial equilibrium analysis. It implies that:

There is no such a thing as ‘the’ theory, there are theories for different problems or purposes; there is nothing inconsistent or wrong about using a theory that treats the real interest rate as constant in analyzing fluctuations in nominal income but using a theory that treats the real interest rate as variable in analyzing fluctuations in real income; the one theory may be more useful for the one purpose, the other theory for the other. We lose generality by this procedure, but gain simplicity and precision.

(Friedman 1974:146)

Friedman’s methodological views are also shared by other Monetarists. For example, Brunner (1970) criticizes Klein for stressing that economic fluctuations are due to several events in various parts of the system and for building large-scale econometric models explicitly to interrelate all the various parts of the economic system. He then claims that, contrariwise, the basic feature of the Monetarists’ methodology is the quest for simplicity—i.e. the attempt to build simple models and single out a small subset of factors capable of explaining some particular economic events. In particular, like Friedman, he regards monetary forces as being the main (if not the only)

factor which explain cycles. In other words, it can be argued that Marshallian Monetarists regard abstraction, generality and mathematical elegance as secondary features, while for Walrasians these have somehow become:

ends in themselves, criteria by which to judge economic theory. Facts are to be described, not explained. Theory is to be tested by the accuracy of its ‘assumptions’ as photographic descriptions of reality, not by the correctness of the predictions that can be derived from it.  
(Friedman 1953:91)

### *Friedman as a Walrasian*

Despite these claims, however, there are reasons to believe that Friedman does not actually depart too much from Patinkin. Reliance on partial equilibrium analysis is not enough to regard him as Marshallian. In the first place, one can note that Friedman’s critique of the ‘missing equation’ in both the simple Quantity theory and Keynesian models—i.e. the fact that in these models there is a variable (either the price level or the level of income) which is not determined endogenously but has to be taken from outside—is not very Marshallian. Marshall would, arguably, have been more willing to accept exogenous variables.

Second, Friedman often relies on Walrasian analysis. This analysis, for example, underlies his view of the determination of the full employment real income level as the ‘missing equation’ of the simple Quantity theory model or his definition of the natural rate of unemployment. He argues that this rate is:

the level that would be ground out by the Walrasian system of general equilibrium equations, provided there is embedded in them the actual characteristics of the labour and commodity markets, including market imperfections, stochastic variability in demand and supplies, the cost of gathering information about job vacancies.  
(Friedman 1968:102)

Moreover, Friedman’s view of the transmission mechanism of monetary impulses makes sense only in a general equilibrium context. He notes that many assets (both of a real and financial kind) are involved in the chain of substitution induced by a change in the quantity of money. This is also true for his application of the theorems of welfare economics to a monetary economy (see Friedman 1969; also Hahn 1982a:1).

In the end, Friedman arguably paves the way for the more extensive application of the general equilibrium canons to macroeconomics which characterizes the New Classical approach with respect to the Neoclassical Synthesis. He does so by placing the emphasis on important issues, such as

the role of expectations and price flexibility, which in his view have been neglected by the Keynesian models, and thus justify the critique that the latter lack microfoundations.

*Friedman's application of the constructive method and the direct forces paradigm*

Friedman tries to apply the constructive method to expectations. This is an innovation with respect to both the more standard products of the Neoclassical Synthesis, such as the income-expenditure model, which fail to consider expectations altogether, and the more advanced analyses of *Value and Capital*, the microfoundations literature and Patinkin, which, to varying degrees, take them into account. Unlike the latter contributions, Friedman no longer ignores uncertainty and takes expectations as simple exogenous data. He adopts instead the adaptive expectations hypothesis, an instance of a theory of endogenous expectations formation. As Begg, for example, points out, this theory means:

the specification of a rule by which individuals revise their expectations in the light of new information. The hypothesis of adaptive expectations, introduced by Cagan...postulates that individuals use information on past forecasting errors to revise current expectations.

(Begg 1982:23)

Furthermore, Friedman follows the significant advance in information and search theory of the late 1960s (e.g. Alchian 1970; Phelps 1967), which starts by rejecting the view, underlying the models of the Neoclassical Synthesis, that information is perfect and costless.

On the other hand, Friedman extends the application of the direct forces paradigm to macro analysis. He does so in two ways. The first is to stress the role of relative price flexibility in all markets. This view leads him to depart from the models of the Neoclassical Synthesis, relying on the assumption of rigid prices and wages which he regards as being completely *ad hoc*.<sup>5</sup> Friedman stresses some of the negative consequences of this assumption. First, it leaves the authors of the Neoclassical Synthesis without a theoretical link between their short-run and long-run models, given that many of them accept the view that the price level is, in the long run, determined by the Quantity theory. Second, it implies the reversal of the Marshallian relative speeds of adjustment of quantities and prices, so that it can be argued that, for Keynesian economics, the entire adjustment takes place through quantities rather than prices. Third, it makes the distinction between real and nominal magnitudes quite irrelevant. Fourth, it accounts for the differences between Monetarists and Keynesians in their analysis of the transmission mechanism of monetary impulses. In particular, it explains

why, for the Keynesians, changes in the quantity of money affect directly only the prices of financial assets (e.g. bonds), hence the rate of interest, while for the Monetarists they affect a much broader range of assets.

It must be noted that for Friedman, as for Brunner and Meltzer, it is the issue of the allocative role of relative prices that justifies the difference between the Neoclassical Synthesis and Keynes and the similarity between the latter and Monetarism. In particular, Brunner and Meltzer suggest that, despite Klein's aggregation view, the models of the Neoclassical Synthesis imply a separation between aggregate analysis (i.e. macro) and allocative theory dealing with relative prices (i.e. micro), which is sharper than the separation intended by Keynes. In their view, Keynes attached a lot of weight to the working of the price mechanism and accepted the basic principles of standard value theory. However, he could not deal with unemployment on the grounds of this theory, as he clearly recognized that 'the price theory of his day did not, and could not, explain unemployment. Two alternatives were available: one a reformulation of price theory, the other a framework that separated macro- and microtheory' (Brunner and Meltzer 1974:65). Brunner and Meltzer admit that Keynes chose the latter alternative, but also note that he made this choice 'not completely and not without qualification. Careful readers from Hicks (1937) to Leijonhufvud (1968) have been able to find substantial portions of price theory remaining in the *General Theory* (Brunner and Meltzer 1974:65). Thus they argue that it is the Neoclassical Synthesis that has pushed Keynesian theory onto the wrong track as it has tried from the start to obliterate the elements of price theory which exist in Keynes's work.<sup>6</sup>

Friedman's second way of extending the application of the direct forces paradigm is to reconsider the relation between aggregate demand and supply addressed in Patinkin's model. In particular, he seems to suggest that, although Patinkin's framework is an important advance with respect to the first models of the Neoclassical Synthesis, it cannot be regarded as satisfactory since it still places too much emphasis on the aggregate demand side. While it is true, for example, that this model analyses the effects of price level changes and the dynamic adjustment path of the economy in conditions of unemployment, it neglects the role of relative prices and price expectations as determinants of workers' and firms' behaviour. In particular, it can be argued that, from Friedman's standpoint, Patinkin's model is objectionable because it fails to extend the microfoundations approaches developed in the 1950s to the working of the labour market, and thus to the economy as a whole.

### *Friedman's modelling strategy*

By combining these two innovations, Friedman addresses what he regards as the basic challenge for macroeconomics: namely, analysis of fluctuations

in economic activity characterized by changes in both prices and output on the grounds of the tools of Neoclassical value theory—a challenge never addressed by the standard Classical or Keynesian macroeconomic models. As for Classical models, he argues that, in general, they fail because they still rely on the old-fashioned value theory of the 1930s. This theory leads to the conclusion that income is always at its full employment level so that fluctuations would take the form wholly of fluctuations in prices, as is the case, for instance, with Fisher's Quantity theory or Hicks's *Value and Capital*. On the other hand, Friedman criticizes Keynesian models like Patinkin's, which still refer to the *General Theory* as a disequilibrium theory addressing the departure from long-run Classical equilibrium. In his view, this shows that Patinkin is unable to account for both short-run and long-run movements of the economy on the grounds of the same unifying framework based on Neoclassical value theory.

In order to remedy these flaws, Friedman refers to modern value theory based on the new information and search theories. This allows one to construct models which, while yielding the standard Quantity theory results in the long run, may also be able to account for short-run deviations in output from the long-run norm without making any reference to Keynes's disequilibrium analysis:

One of the significant advances in recent years in relative price theory is the development of more sophisticated price adjustment models that allow the rates of adjustment of both price and quantity to vary continuously between instantaneous and very slow adjustment.

(Friedman 1971:19)

One of the basic features of Friedman's analysis is the emphasis on the role of expectations. In particular, he regards the difference between anticipated and actual magnitudes as the driving force behind short-run fluctuations. His central idea is that, while in the short run there might be a discrepancy between the two magnitudes, in the state of long-run equilibrium they are bound to coincide as, by definition, in such a state all expectations are realized. He thus regards long-run equilibrium as determined by the Quantity theory plus the Walrasian general equilibrium equations providing the level of full employment real output and short-run equilibrium as determined by an adjustment process in which the rate of adjustment is a function of the discrepancy between the actual and the anticipated value of a variable or its rate of change. He assumes that a single disturbance will set up discrepancies that will, in the course of time, be eliminated. The speed at which this process takes place depends upon assumptions about agents' expectations. As already noted, Friedman argues that these are of an adaptive kind—i.e. they are determined entirely by the past history of the particular variable in question (1971:55).

*The Phillips Curve*

An important application of this kind of analysis is to be found in Friedman's work on the expectations adjusted Phillips Curve (Friedman 1968, 1977; also Phelps 1967). In the latter, Friedman criticizes the original negatively sloping Phillips Curve, seen by Keynesians as offering policy-makers a stable trade-off between inflation and unemployment. In particular, he argues that the Keynesians: (a) interpret the relation between unemployment and inflation as a causal relation between the former and the latter: a certain unemployment target implies a certain inflation rate (Friedman 1977:456); (b) fail to distinguish between nominal and real wages due to the assumption of given prices (Friedman 1968:103). Friedman instead argues that the causal link between inflation and unemployment is the opposite of that suggested by Keynesians and that the distinction between nominal and real wages matters. This view reflects the crucial Classical premiss of his analysis—i.e. that maximizing firms and workers determine both full employment and the equilibrium real wage on the labour market.

On these grounds, Friedman constructs his analysis of the Phillips Curve, which can be summarized as follows. His first step is to argue that only real wages matter for employment. This is because he assumes that both workers and employers are free of money illusion so that they look not just at the nominal wage, but also at the prices expected to prevail throughout the term of the labour commitment. Friedman's second step is to point out that the existence of long-term labour commitments (due to imperfect information)<sup>7</sup> plays a crucial role:

First, there is not instantaneous market clearing (as in markets for perishable foods) but only a lagged adjustment of both prices and quantity to changes in demand or supply...second, that commitments entered into depend not only on current observable prices but also on prices expected to prevail throughout the term of commitment.

(Friedman 1977:456)

It must be noted that despite Friedman's willingness to depart from the Neoclassical Synthesis, his emphasis on a difference in kind between the labour market and the market for perishable goods is not unlike the distinction between fixed and flexible price markets made by many Keynesians (e.g. Hicks 1965).

Friedman's third step is to show that there is no need to assume a stable Phillips Curve in order to explain the apparent tendency for an acceleration of inflation to reduce unemployment: 'that can be explained by the impact of *unanticipated* changes in nominal demand on markets characterized by long-term commitments with respect to both capital and labour' (Friedman 1977:456; original emphasis). Only surprises matter, because if inflation

were fully anticipated by everybody there would always be full employment. To make this clear, Friedman begins his analysis from an initial stable position of the economy in which employment is at its natural or full employment level. He thus assumes that, for whatever reason, an unanticipated acceleration in aggregate nominal demand takes place. Prices will then start to rise. The crucial point is that this price change will tend to generate differences of opinions between workers and employers about the changes in the real wage. On the one hand, employers will interpret the price level rise at least partly as an increase in the relative price of the good they are selling. They will thus try to produce more and will be willing to pay higher nominal wages than before in order to attract additional workers. The real wage that matters to firms is the wage in terms of the price of their product, and they perceive that price as higher than before. A higher nominal wage can therefore mean a lower real wage as perceived by firms. On the other hand, what matters to workers is the real wage in terms of the price level given that they consume all goods in general. However, the point is that they will adjust their expectations about the price level more slowly than firms will adjust their expectations about the relative price of the individual good they produce. It is this kind of asymmetry between workers and employers which is bound to generate real effects. As Friedman puts it:

A rise in nominal wages may be perceived by workers as a rise in real wages and hence call forth an increased supply at the same time that it is perceived by employers as a fall in real wages and hence calls forth an increased offer of jobs.

(Friedman 1977:457)

However, he argues that this situation is temporary. If the higher rate of growth of aggregate demand and prices continues, perceptions in the end will adjust to reality and the initial effect will disappear. This is the basis for Friedman's claim that the trade-off between inflation and unemployment is only a short-run phenomenon; it vanishes in the long run (i.e the Phillips Curve becomes vertical) when agents adjust their expectations to the new state of nominal aggregate demand. In conclusion, Friedman summarizes the key points of his analysis as follows:

What matters is not inflation per se but unanticipated inflation; there is no stable trade-off between inflation and unemployment; there is a 'natural level of unemployment' which is consistent with the real forces and with accurate perceptions; unemployment can be kept below that level only by an accelerating inflation.

(Friedman 1977:456)



Friedman's analysis of the Phillips Curve has key implications for the aggregate demand and supply framework which Monetarists borrow from Patinkin. While the latter relies on the vertical aggregate supply curve, Friedman's analysis allows the distinction between short-run and long-run supply curves that is now common in macroeconomics textbooks (e.g. Dornbush and Fischer 1995: Chapter 16). In the latter only the long-run curve is vertical, while the short-run curve is drawn as relatively flat because of the slow response of wages to a change in output and employment due to the existence of long-term contracts and workers' adaptive expectations. Thus shifts in aggregate demand are met by changes in output as well as prices.

### Lucas

While accepting the Friedman view that macroeconomics is an essentially pragmatic discipline, Lucas makes a few major innovations, especially in his conception of the Classical model. Unlike Friedman, he regards this model as being much closer to 'pure theory' than to the basic Keynesian models. This is why, albeit praising Friedman for paving the way for a general equilibrium explanation of business cycles, Lucas criticizes his lack of systematic theorizing firmly rooted in the Walrasian tradition (Lucas 1980; also Hoover 1988:228).<sup>8</sup> To remedy this flaw, Lucas seeks to extend the application of the canons of 'pure theory' to macro analysis, placing the emphasis on atomism and the constructive method.

As for atomism, it is to be noted that, like Patinkin, Lucas regards the Classical model as including an aggregate demand function derived as the sum of consumption, investment (and public expenditure) functions, specified in atomistic terms on the grounds of the new micro theories produced in the 1950s. As for the constructive method, Lucas too refers to the representative agent device and the temporary equilibrium method of *Value and Capital*. However, Lucas actually departs from the original Hicksian framework as he adopts a new notion of equilibrium. It is the latter that underlies his original contributions concerning the application of atomism and the constructive method to Classical macro theory.

### *The stochastic notion of equilibrium*

While authors like Friedman and Patinkin rely on the deterministic or static notion of equilibrium which is common to all Keynesian and (old) Classical theories, Lucas subscribes instead to the more recent stochastic notion of equilibrium due to Arrow (1953) and Debreu (1959), aimed at solving the problem of encompassing the uncertain future within the confines of general equilibrium. For this purpose, Arrow and Debreu simply multiplied the number of commodities to be treated by specifying the date and the

contingency in which each good would be delivered. Based on the complete markets assumption whereby all markets for contingent future deliveries exist, they could draw the conclusion that, as in the standard general equilibrium model, the Walrasian auctioneer has to perform only once to find the equilibrium.

It should be noted that, like Hicks and Patinkin, Lucas does not rely on the complete market assumption. He admits that some of the futures markets are missing so that there is trading at every date and agents have to form expectations about future market states. Instead of allowing for intertemporal disequilibrium à la Hicks, however, Lucas follows Patinkin and relies on the notion of ‘equilibrium over time’ as a theoretical benchmark. For this equilibrium to be achieved, expectations must be realized. From this point of view, Lucas’s specific assumption that agents’ expectations are rational is not unlike Patinkin’s certain expectations. As stressed by Tobin:

Rational expectations theory may be regarded as an attempt to meet the problem that motivated the Arrow-Debreu construction and to approximate the Arrow-Debreu conclusions without postulating the unrealistically elaborate set of markets for contingent future deliveries. Economic theory has always required realization of expectations...as a *steady state equilibrium* condition...the condition is that people expect what actually happens. Certainly it makes no sense to postulate a steady state in which agents fail to learn from experience and persistently act on forecasts that prove erroneous. Rationality of expectations in this limited sense is nothing new. Nor is it necessary to assume any particular process of expectation formation.

(Tobin 1980:24–5; original emphasis)

This does not mean that the difference between the deterministic and the stochastic notions of equilibrium is irrelevant. Indeed, quite the opposite is true. The new conception grants an extension of the meaning of ‘equilibrium’. While for the first notion equilibrium simply means that the economy is at rest, for the second an economy following a multivariate stochastic process is described as being in equilibrium. This change has several implications. The first is that the notion of stochastic equilibrium allows realizations to diverge from expected values due to the occurrence of shocks, although the latter are assumed to follow stable probability laws (e.g. Sheffrin 1983:15).

### *Stochasticism and atomism*

The second implication concerns the application of atomism to macroeconomics. The point is that the new notion of equilibrium implies a

different view of the link between micro and macro with respect to the Neoclassical Synthesis and Friedman. While the latter regard the laws of the two disciplines as being strictly analogous (as supposed, for example, by Klein), the stochastic notion implies at once a more flexible relationship and a more important role for micro theory. As for the flexibility aspect, it is arguable that in Lucas's theory, while aggregate laws are still obtained on the grounds of individual laws (i.e. those concerning the behaviour of the representative agent) as in the Neoclassical Synthesis, aggregate phenomena no longer appear as being causally determined by micro theory; the latter turns out to be only a good approximation with a high probability of success. The point is that the uncertainty envisaged by the stochastic view implies a certain amount of 'disorder' at the micro level. It is sufficient to note, for example, that as information is imperfect, one can never be sure what expectations each individual will form.

As emphasized by Boland, a consequence of this view is that a macroeconomic approach such as Lucas's 'can only be concerned with the behaviour of the average individual in the hope that any uncertainty concerning one individual will be cancelled out by the simultaneous consideration of all other individuals' (Boland 1986:123). Another consequence is that individual laws of behaviour are not meant to apply at the aggregate level exactly, but only on average. As noted again by Boland, given that 'no individual's expectations can be predicted exactly, the choices made by the average individual may be considered random variables, much like those discussed in the typical elementary statistical textbook' (*ibid.*: 123).

On these grounds, two important remarks need to be made. The first is that the stochastic view is not as modern as it may seem. In particular, it should not prompt an analogy between Lucas's New Classical macroeconomics and quantum physics. It is true that, as stressed, for example, by Einstein, the laws of the quantum physics 'are of a statistical character. This means: they concern not one single system but an aggregation of identical systems; they cannot be verified by measurement of one individual, but only by a series of repeated measurements' (Einstein and Infeld 1938:299). However, while quantum physics actually completes the destruction of the old mechanistic model started by Einstein, the New Classical macroeconomics achieves nothing which is comparable to it in its own field; it is much more conservative, as it retains the essence of the general equilibrium model. Indeed, by encompassing the stochastic approach, it tries hard to extend the explanatory power of this model to phenomena like expectations and money, which were neglected within the deterministic approach.

If an analogy between a physical theory and Lucas's view is to be drawn, it seems more correct to look instead at the kinetic theory of matter put forward in the nineteenth century. While this theory attempted to explain the phenomenon of heat in terms of the mechanistic model—i.e. to reduce it

to the interaction between elementary particles of matter—it also implied an important change in the traditional conception of physics. It led theorists to make a distinction between a macro and a micro vision of the physical processes, not unlike the one we find in Lucas. While in the old deterministic model particles were deemed to be homogeneous with perceivable phenomena of experience, in the new theory the mechanical behaviour of molecules could not be treated in individual but only in statistical terms. This meant allowing for a particle constituting a body to have mechanical properties very different from the body to which it belongs. The apparent uniformity of a body is no longer the sum of the individual uniformities of its particles but the average of real deformities. As Einstein makes clear:

We have seen in classical physics that if we know the position and velocity of a material point at a certain instant and the forces acting upon it, we can predict its future path. We also saw how the mechanical point of view was applied to the kinetic theory of matter. But in this theory a new idea arose from our reasoning... There is a vessel containing gas. In attempting to trace the motion of every particle one would have to commence by finding the initial states, that is, the initial positions and velocities of all the particles. Even if this were possible, it would take more than a human lifetime to set down the result on paper...the *method of statistics*...dispenses with any exact knowledge of initial states... We become indifferent to the fate of the individual gas particles. What we seek to determine are average values typifying the whole aggregation... By applying the statistical method we cannot foretell the behaviour of an individual in a crowd. We can only foretell the chance, the probability, that it will behave in some particular manner.

(Einstein and Infeld 1938:297–8; original emphasis)

As Einstein stresses, despite their common reference to statistical laws, quantum physics and the kinetic theory of matter are very different:

It seems that the new quantum physics resembles somewhat the kinetic theory of matter, since both are of a statistical nature and both refer to great aggregations. But this is not so! In this analogy an understanding not only of the similarities but also of the differences is most important. The similarity between the kinetic theory of matter and quantum physics lies chiefly in their statistical character. But what are the differences? If we wish to know how many men and women over the age of twenty live in a city, we must get every citizen to fill up a form under the headings ‘male’, ‘female’, and ‘age’. Provided every answer is correct, we can obtain, by counting and segregating them, a result of a statistical nature. The individual names and addresses on the form are of no

account. Our statistical view is gained by the knowledge of individual cases. Similarly, in the kinetic theory of matter, we have statistical laws governing the aggregation, gained on the basis of individual laws. But in quantum physics the state of affairs is entirely different. Here the statistical laws are given immediately. The individual laws are discarded... Quantum physics abandons individual laws of elementary particles and states directly the statistical laws governing aggregations.

(Einstein and Infeld 1938:301)

The second remark about the stochastic notion of equilibrium is that the degrees of freedom in the relationship between micro and macro which it allows have one paradoxical effect: more specifically, they cause Lucas to take the ideal-type nature of Neoclassical theory to its extreme, to stretch the logic of atomism to its limit, rather than to support any autonomy of macro with respect to micro. Indeed for him just the opposite is true. Strictly speaking, he argues that in principle, insofar as it is superfluous, macro should disappear altogether.<sup>9</sup> Its only difference from micro is that the individuals it considers are representative agents (e.g. Hillard 1992:65; Leijonhufvud 1992:26–8).

The reason why he comes to this drastic conclusion is simple: if standard micro theory and the general equilibrium model do not need to be exactly true at any point in time, they can be regarded as being always true. The crucial implication of the stochastic notion of equilibrium is that it leads Lucas to rule out any disequilibrium notion, and thus the standard distinction between disequilibrium processes and permanent equilibrium states accepted by the Neoclassical Synthesis as well as by Friedman. Disequilibrium is reduced to the status of normally distributed ‘disturbances’ in statistical theory. Equilibrium is not achieved only in the steady states, but can also be seen as underlying phenomenic reality. On these grounds, Lucas interprets observed phenomena, such as time series correlations, in equilibrium terms. In Lucas and Sargent (1979) it is argued that this means that at each point in time two basic postulates are satisfied: (a) that markets clear; (b) that agents act in their own self-interest:

One essential feature of equilibrium models is that all markets clear, or that all observed price and quantities are viewed as outcomes of decisions taken by individual firms and households. In practice this has meant a conventional, competitive supply-equals-demand assumption.

(Lucas and Sargent 1979:310–11)

### *Stochasticism and the constructive method*

The stochastic notion of equilibrium also underlies the innovation made by Lucas in the application of the constructive method. In his view, one of the

most objectionable aspects of Friedman's approach is its reliance on 'disequilibrium' elements—such as the adaptive expectations hypothesis and his reference to the existence of long-term contracts—to account for the dynamic adjustment process towards long-run equilibrium. He thus seeks to remedy this flaw by applying the constructive method to the modelling of expectations. In Lucas's view, although the adaptive expectations hypothesis—i.e. the attempt to endogenize expectations within the axiomatic framework—is a first step in the right direction, it can be criticized on several counts from the standpoint of equilibrium theory. One of its objectionable features is that it is *ad hoc*; i.e. it is not derived from optimization. In particular, it offers no theoretical rationale to explain the magnitude of the adjustment parameter reflecting the way agents revise their expectations. Moreover, as this hypothesis is entirely backward looking, it implies a suboptimal use of available information and the possibility of systematically biased expectations for many periods in succession (e.g. Begg 1982:26; Pesaran 1987:17–21). In the end, this hypothesis can also be criticized because it is of a partial equilibrium kind; for example, it models the expected value of a variable by a distributed lag function applied to past values of that variable alone. This neglects the fact that, in a simultaneous equations macro model, future values of endogenous variables are likely to depend on the values of many variables within the model (see Begg 1982:29–30).

To remedy these flaws, Lucas thus suggests we rely on Muth's rational expectations hypothesis, which is instead consistent with agents' optimizing behaviour. As noted by Pesaran (1987:49), this hypothesis appears as an indispensable part of a consistent development of the expected utility maximization theory of decision under uncertainty. Lucas claims that its crucial feature is not to assume that agents have perfect information,<sup>10</sup> but that they make the best possible use of the limited information available and make no systematic mistake. Moreover, in contrast with the partial equilibrium nature of adaptive expectations, it assumes that agents know the entire structure of the model and the previous values of all the key variables within the model. The rational expectations hypothesis actually implies that agents' subjective probabilities tend to coincide with the predictions of the theory (i.e. the 'objective' probability distribution of outcomes or 'true' expectations). In application, this hypothesis involves setting the expected (in the statistical sense) value of a future economic variable equal to its predicted value (see Begg 1982:1, 30, 259; Sheffrin 1983:8; Simon 1976:79).<sup>11</sup>

There are four important points to stress. First, the rational expectations hypothesis implies that expectations are not arbitrary, but eventually determined by objective factors. As stressed by Simon, this hypothesis amounts to the attempt to 'objectify the treatment of uncertainty by removing it from the decision-maker to nature' (Simon 1976:79). This view is similar to Hicks's claim in 'Suggestion'. Although it is true that, for Lucas,

expectations are generated by the ‘true’ model of the economy, for him, as for Hicks, they ultimately have to conform to physical reality (i.e. observed frequencies). Second, Lucas admits that this hypothesis is unrealistic, that it is not meant to represent how agents actually form expectations (e.g. Pesaran 1987:21–2). However, he does not regard it as being of theoretical interest only. Like Friedman, Lucas argues that it is not the realism of assumptions that matters, but their predictive power. In his view, even if theoretical models are highly artificial fictions, they must, for example, be capable of imitating how real economies react to policy changes (e.g. Lucas 1977; Rogers 1989:133).

Third, exactly as microfoundations approaches did in the 1950s, Lucas needs to ‘operationalize’ his theory. The rational expectations hypothesis in the formulation of Muth is too general to be really useful in applied research. In order to derive some testable propositions from it, it needs to be narrowed down on the basis of a few simplifying assumptions and *ad hoc* restrictions, such as those of the uniqueness of equilibrium, stationariness and certainty equivalence, which enable Lucas to rule out uncertainty, indeterminacy and instability of equilibrium (e.g. Davidson 1982–3; Vercelli 1987:86, 130– 1). Fourth, given the coincidence it involves between subjective forecasts of events and their observed frequencies, this hypothesis is applicable ‘in situations in which the probabilities of interest concern a fairly well-defined recurrent event, situations of “risk” in Knight’s terminology’ (Lucas 1977:15), while it will be useless in situations ‘in which one cannot guess which, if any, observable frequencies are relevant: situations which Knight called “uncertainty” ... In cases of uncertainty, economic reasoning will be of no value’ (ibid.: 15).

### *On Keynes*

The stochastic view leads Lucas to make a brusque departure from the standard macro approaches, including those of Keynes and the Neoclassical Synthesis. Like Samuelson, Lucas regards all Keynesian macro as relying on *ad hoc* or disequilibrium propositions which describe agents as either departing from the standard canons of rationality or being constrained by some unexplained exogenous factor. However, unlike Samuelson he rules it out as being irrelevant. Let us start by focusing on Lucas’s critique of Keynes. He argues that the *General Theory* is without foundation in maximization and general equilibrium analysis. Referring to Leontief’s paper (1947), he points out that Keynes creates macroeconomics as an autonomous branch of theory based on rules of thumb:

The creation of a distinct branch of theory with its own distinct postulates was Keynes’ conscious aim... After freeing himself of the straightjacket imposed by the classical postulates, Keynes described a

model in which rules of thumb, such as the consumption function and liquidity preference schedule, took the place of decision functions that a classical economist would insist be derived from the theory of choice.  
(Lucas and Sargent 1979:300)

Moreover, Lucas (1978) stresses that, for Keynes, unemployment was not explainable as a consequence of individual choices. In particular, he made a distinction between voluntary and involuntary unemployment because he believed that two different kinds of theory were needed to explain observed unemployment rates. While standard classical theory could account for voluntary or frictional unemployment, his own special theory was necessary for dealing with involuntary unemployment. However, like Friedman, Brunner and Meltzer, Lucas argues that Keynes's approach was amply justified by the lack of adequate analytical tools in the 1930s. In particular, observed phenomena such as the positive correlation between prices and employment could not be reconciled with Classical theory as, in that period, the latter was summarized by the simple Quantity theory, according to which output is determined at its full employment level independently of both the price level and aggregate demand. Business cycles could only be explained on the grounds of changes in the velocity of circulation of money, *V*.

### *On the Neoclassical Synthesis*

In Lucas's view, Keynes's basic flaws also underlie the Neoclassical Synthesis. Like Friedman, he argues that its models lack microfoundations. Although authors like Modigliani and Tobin actually started to use the theory of choice for generating macro behaviour relations, the Neoclassical Synthesis in general has not gone far enough along this route:

Our point here is certainly not to assert that Keynesian economists have completely foregone any use of optimizing microeconomic theory as a guide... [but] there is a point beyond which Keynesian models must suspend the hypothesis either of cleared markets or of optimizing agents if they are to possess the operating characteristics and policy implications that are the hallmarks of Keynesian economics.  
(Lucas and Sargent 1979:301)

Furthermore, Lucas insists that, due to its reliance on a static or deterministic notion of equilibrium, the Neoclassical Synthesis is bound to accommodate the observed 'dynamic' facts concerning business cycles as purely disequilibrium phenomena and build disequilibrium models. He argues that a prominent instance of this approach is to be found in Samuelson's *Foundations*, where an attempt is made to reconcile a few dynamic elements concerning the adjustment process of wages and prices (e.g. his dynamic



equation stating that the rate of change of prices or wages is a function of excess demand) with the static general equilibrium model (Lucas 1980).

Lucas stresses two consequences of this disequilibrium approach. In the first place, it leads Keynesians to regard business cycles as market failures and thus perceive any policy which allowed the system to reach full employment as an improvement. Second, it explains why Keynesians are bound to construct macroeconomic models with several objectionable features. In particular, as these models do not rely on the general equilibrium model but capture only the phenomonic level of reality, they simply describe the decision rules which agents have found it useful to adopt over some previous period without explaining why these rules were adopted (e.g. Vercelli 1987:123–4). Moreover, they introduce free parameters and impose *ad hoc* restrictions on expectations—i.e. without deriving them on the grounds of a priori theoretical considerations. In Lucas's view, these flaws explain why Keynesian econometric models, while being quite good at imitating the actual behaviour of the economy, are instead useless for making conditional forecasts and assessing the consequences of policy changes (Lucas 1977:12; Lucas and Sargent 1979:99–304; Pesaran 1987:1). The point is that the parameters of these models, unlike those of general equilibrium, are not invariant to policy changes. This highlights the basic difference between the two approaches. While general equilibrium is based on structural parameters, such as agents' preferences and technology, which are bound to be stable, the parameters of Keynesian models are unstable as they reflect erratic movements and phenomonic rules of conduct (e.g. Vercelli 1987:22–4).

### *Lucas's modelling strategy*

The key differences between Lucas and Friedman *vis-à-vis* the modelling of expectations are reflected in their respective explanations of business cycles. It must be noted that Lucas's purpose is not unlike Friedman's: he too seeks to explain business cycles on the grounds of Neoclassical value theory — i.e. to provide what he calls an equilibrium theory of business cycles. Indeed, he regards much of his work simply as 'an attempt to understand and make more explicit the implicit model underlying the policy proposals of Henry Simons, Milton Friedman' (1977:25). Lucas also accepts Friedman's key concepts, such as the natural rate, and his explanation of the Phillips Curve based on agents' confusion between changes in relative prices and changes in absolute prices brought about by unanticipated changes in the money supply. However, he departs from Friedman on at least two points: the first concerns the explanation of wage rigidity, the second the modelling of expectations.

Speaking of wage rigidity, Lucas does not regard the existence of long-term contracts and asymmetric expectations between workers and firms

with respect to unanticipated inflation as a valid explanation for money wage rigidity and the positive correlation between prices and output. On the one hand, he considers Friedman's reference to long-term contracts to justify the lagged adjustment of both prices and quantity to changes in demand and the lack of instantaneous market clearing as another 'disequilibrium' element to be ruled out. The problem with this assumption is that these contracts are not explained on the grounds of agents' optimizing decisions, but are simply taken as given as they are 'drawn contingent on restricted information sets that are exogenously imposed and that are assumed to be independent of monetary and fiscal regimes' (Lucas and Sargent 1979:311).

On the other hand, he believes that the phenomenon of money wage rigidity and the positive correlation between prices and output may be accounted for on the basis of a view of the decision problem facing agents which is similar to that held by Hicks in *Value and Capital*. Hicks, in fact, explains the rigidity of wages by the fact that both workers and firms persuade themselves that changes in the price level are for some time temporary, but once they become convinced that these changes are permanent, there is a tendency for wages to alter (Hicks 1946:270–1). In order to capture the behaviour supply described by Hicks, Lucas constructs models focusing on the behaviour of a representative worker-producer. He starts by dealing with his response to an increase in the selling price of the good he produces. He points out that if the change is perceived to be permanent, it should not affect employment. On the other hand, if the change is perceived to be temporary, employment will change substantially as the producer will substitute labour today for labour tomorrow. Lucas thus stresses the relevance of this kind of analysis for business cycle theory: 'I have described a producer who responds to small price fluctuations with large fluctuations in output and employment: exactly what we observe over the cycle. The description rests on economically intelligible substitution effects, not on unintelligible "disequilibria"' (Lucas 1977:17).

Lucas also notes, however, that to account for observed business cycles, reference to agents' confusion between permanent and temporary price changes is not enough as the latter concerns only relative prices. The observed time series shows instead the correlation between price level and income. Like Friedman, Lucas thus argues that the agent also makes a confusion between relative and general price changes:

For the same reason that permanent and transitory relative price movements cannot be sorted out with certainty at the time, neither can relative and general movements be distinguished. General price increases, exactly as will relative price increases, will induce movements in the same direction in employment and investment.

(Lucas 1977:21)

As for the second major difference from Friedman, Lucas holds that the adaptive expectations hypothesis leads to an inadequate formulation of the natural rate view. As it implies that agents form systematically biased expectations, it permits both short-run and long-run Phillips like trade-offs between inflation and real output, which are in contrast with the natural rate view (Lucas 1972: 54). Lucas thus emphasizes that only the rational expectations hypothesis is consistent with the natural rate theory. On the grounds of this hypothesis, the natural rate view rules out trade-offs even in the short run. Deviations from the natural rate may occur but are random or unsystematic. In other words, Lucas stresses that while, like Friedman's, his equilibrium theory predicts positive correlations between the inflation rate and the level of output, it also 'asserts that those correlations do not depict trade-offs that can be exploited by a policy authority. That is, the theory predicts that there is no way that the monetary authority can follow a systematic activist policy' (Lucas and Sargent 1979:307).

Lucas believes that equilibrium models like his own hold distinctive advantages over their competitors. On the one hand, they permit conditional forecasts and assessments of the consequences of policy changes. He points out, for instance, that an equilibrium model is 'by definition constructed so as to predict how agents with stable tastes and technology will choose to respond to a new situation' (Lucas 1977:12). On the other, he stresses that he does not expect the New Classical macroeconomic models to provide 'better' empirical estimates with respect to the Keynesian models. The real challenge is to improve the story economists are able to tell—i.e. the way in which they rationalize empirical evidence. From this point of view, he regards his story based on equilibrium models as clearly superior to alternative stories based on the view that 'markets do not clear'. In particular, he argues that this story sounds more consistent without necessarily being more 'unrealistic' than the others:

The facts we actually have, however, are simply the available time series on employment and wage rates... Cleared markets is simply a principle, not verifiable by direct observation, which may or may not be useful in constructing successful hypotheses about the behaviour of these series. Alternative principles, such as the postulate of the existence of a third-party auctioneer inducing wage rigidity and uncleared markets, are similarly 'unrealistic', in the not especially important sense of not offering a good description of observed market institutions.

(Lucas and Sargent 1979:311)

### **Critiques from a Classical standpoint**

In the light of 'pure theory', it would appear correct to argue that Lucas's New Classical macroeconomics is an unsuccessful approach, one which fails

to solve the main problem it addresses: namely, the need to accommodate money and expectations within the basic orthodox paradigm and explain business cycles as equilibrium phenomena. Indeed, one might also argue that, even after Lucas's revolution, Keynes's claim that Classical theory applies only to a particular case is still justified. There are at least two major reasons for drawing this conclusion.

In the first place, by borrowing much of his analytical apparatus from Patinkin, Lucas fails to solve the inconsistency problems which the latter addressed. The first of these concerns the inconsistency between the direct forces postulate and the aggregate demand and supply apparatus. As we have already seen, while that postulate stresses the smooth working of the relative price mechanism that acts directly to equilibrate demand and supply on all markets, the aggregate demand function (inversely related to the price level) implies instead that relative prices actually fail to perform this task. For Lucas, this problem is arguably more serious than for Patinkin. While the latter could, in principle, claim that this inconsistency is justified by his focus on disequilibrium states, the same justification certainly does not hold for Lucas. He appears to be one of the strongest supporters of the direct forces postulate due to his emphasis on the assumption of continuous market clearing.

The second problem concerns the inconsistency between aggregate demand and supply apparatus and atomism. As already noted, the very construction of this apparatus implies the possibility that one curve shifts independently from the other, an event which can only be rationalized by introducing other data in the analysis besides those underlying the general equilibrium model.<sup>12</sup> This problem too proves more serious for Lucas than for Patinkin, as he explicitly aims to provide explanations which refer exclusively to the basic parameters of general equilibrium theory.

In the second place, Lucas fails to apply Hicks's full-blown constructive method to the analysis of money and expectations. For him, as for Patinkin, this failure can be traced to his notion of 'equilibrium over time', which implies the neglect of true uncertainty. This is not balanced by the fact that Lucas endorses the stochastic equilibrium view, as the latter allows him to retain the essentials of general equilibrium, but without overcoming its deepest limitations. That Lucas ends up by relying on a truncated form of constructive method is confirmed by many authors. On the one hand, as noted, for example, by Stiglitz (1988:313), Rogers (1989:133) and Mehrling (1996:75), he does not really make any progress in the search for the microfoundations of the Quantity theory. As stressed again by Hahn, no economy that is isomorphic to the fictional economy analysed by Lucas can 'be the basis of interesting monetary theory' (1982d:39).

On the other hand, although the rational expectations hypothesis attempts to perform the endogenous determination of expectations in line with the canons of general equilibrium, it is still true that this attempt is largely

unsatisfactory from the ‘pure theory’ standpoint. A number of limits of this hypothesis have been stressed by Hahn:

We have no theory of expectations firmly founded on elementary principles comparable, say to our theory of consumer choice. Clearly, expectations must be based on the agent’s observations, which of course is meant to include the history of such observations. But, the transformation of observation into expectations requires the agent to hold a theory, or...to have a model. This model itself will not be independent of the history of observations. Indeed, learning largely consists of updating of models of this kind. Although we have Bayes’s theorem, very little is known about such learning in an economic context. *There is thus a great temptation to short-circuit the problem, at least in first approach, and to consider only economic states in which learning has ceased.* These will be states in which the realization of expected variables provides no disconfirmation of the theory and the beliefs held in the light of that theory and the past realization of the variables. Thus, in such states, the probability distribution over economic variables that agents hold cause them to take actions which in turn generate just this probability distribution. This is the *idea of rational expectations equilibrium.*

(Hahn 1982d:3–4; emphasis added)

Many similar remarks can be found in the literature. For example, Begg stresses that rational expectations cannot be said to be rational—i.e. to conform with individual optimization—until the process by which information is acquired by agents is modelled explicitly:

We do not yet know how much costly information it is optimal to acquire...I have chiefly discussed a paradigm in which we pretend that individuals act as if they already know the structure of the model we are analysing. However useful, that cannot be the end of the story. The research which I am advocating will yield a more plausible account of the process of expectations formation.

(Begg 1982:263)

Frydman and Phelps even draw the firm conclusion that ‘the assumption of rational expectations is simply *ad hoc*, as it cannot be justified by an appeal to the postulate that individual agents process “optimally” the information available to them’ (1983a:17). The view that it might be difficult to reconcile rational expectations with the basic individual optimality assumption in economics is also put forward by Sheffrin (1983:16).

The consequence of Lucas’s failure to introduce money and expectations into the standard framework is simple: he cannot really realize his promise

to achieve a true generalization of the Classical model beyond the long-run steady state and therefore account for business cycles as equilibrium or normal phenomena. To see this point, it is sufficient to reflect on the use of the standard general equilibrium model as the benchmark of Classical theory. From this standpoint, it is relatively easy to assess both Friedman and Lucas's views. Let us start with Friedman. In line with Weber and Hayek, he seems to be perfectly aware that this key ideal type is unrealistic and cannot directly accommodate real-world phenomena, such as business cycles and unemployment. These phenomena are not, however, totally impervious to the orthodox paradigm; they can still be accounted for in terms of 'imperfections' —i.e. empirical deviations from the norm. Friedman thus places the emphasis on either agents' temporary deviations from the rationality axioms (i.e. money illusion, confusion between absolute and relative prices and reliance on *ad hoc* rules in expectations' formation), or exogenous institutional factors, such as long-term contracts. As Lucas stresses, however, one obvious implication of Friedman's approach is that, despite its insights, it manages to account for business cycles and unemployment only as disequilibrium phenomena. The deviations from the norm are only 'empirical' as they are not accounted for in terms of the basic optimization paradigm. Friedman fails to make any real advance with respect to the Neoclassical Synthesis and old Classicals such as Pigou.

In my view, it can be argued that this is also true for Lucas. He is perfectly aware that to transform Friedman's insights into an equilibrium theory of fluctuations means transforming his 'empirical' deviations into 'normal' phenomena. This is why he adopts the stochastic notion of equilibrium which somehow rules out the distinction between deviations and norm, and insists on dismissing the *ad hoc* adaptive expectations hypothesis. However, Lucas fails to realize that without showing the rational expectations hypothesis to be fully consistent with the optimality assumption, his explanation of the cycle, of the positive correlation between the price level and output, is also open to the same critique that was raised against Friedman: namely, that it too relies on 'empirical' deviations from the norm. This point is well emphasized by Tobin, who notes for example that Lucas's explanation relies on a particular specification about the information available to buyers and sellers,<sup>13</sup> which turns out to be nothing but an *ad hoc* element, a sophisticated form of money illusion (see Hahn 1982d:60–1; Rogers 1989:133; Tobin 1980:42).

### Critiques from Keynes's standpoint

Friedman and Lucas's neglect of Keynes's methodological background leads them to draw conclusions that are actually inconsistent with the *General Theory*. In particular, although these authors correctly regard Keynes as being

incompatible with the general equilibrium model, their view that his theory is unscientific and relies on rules of thumb is quite simply misleading as it denies his alternative conception of rationality and science.

As already stressed, following his rejection of the clear-cut distinction between primary and secondary qualities of individual agents which underlies the general equilibrium model, Keynes holds a broader conception of rationality with respect to orthodoxy. He believes that maximization is not the only type of rational behaviour; other types are also possible, such as those of consumers and speculators. The important point to note is that these alternative types of behaviour have nothing to do with rules of thumb. While the latter are subjective and arbitrary, for Keynes such types of behaviour are objective. In line with his macrofoundations perspective, he regards them as being intersubjectively established, rather than simply reflecting individual psychology.

The generality of Keynes's notion of rationality can be shown by focusing on one important issue: the phenomenon of money wage rigidity, which justifies the upward-sloping aggregate supply function. It can be argued that, while this phenomenon is accounted for by Friedman and Lucas in *ad hoc* terms, it finds a natural explanation in the *General Theory*. Neoclassical theory faces problems in addressing this issue because it starts from an abstract view of rationality whereby workers seek to maximize utility and their labour supply is, in general, an increasing function of the real wage. As already noted, this implies a vertical aggregate supply curve which does not allow one to account for the business cycle. In order to obtain some slope in this curve, which is consistent with the positive correlation between prices and output, Neoclassical theory is thus compelled to admit that workers depart somehow from the axioms of rationality and do not really look at real wages; that it is possible to have both a fall in the real wage and an increase in employment by assuming, in particular, that money wages are rigid and, at least for a while, do not follow the increase in the price level generated by demand policies. This is the reason why Neoclassical theorists are bound to introduce in an *ex-post* fashion various types of *ad hoc* explanation for money wage rigidity, such as institutional factors (e.g. long-term contracts) or forms of money illusions.

The fact that workers accept a fall in the real wage without withdrawing their labour supply, which causes problems of internal consistency for Neoclassical theory, is one of the pillars of the *General Theory*. In particular, Keynes does not regard it as a form of irrational behaviour. Indeed, he takes it as workers' normal response in conditions of uncertainty. The reason why he can do so is that he begins by stressing that labour supply is not a function of the real wage, but simply of the money wage because workers and firms strike the wage bargain in money terms. It is not difficult to see that in this way Keynes manages to establish a more general relation between labour supply and wages.

In order to make this clear, it is sufficient to note that, in conditions of uncertainty workers, like all agents, act according to certain conventional criteria. One of the key conventions is to assume that the future is like the past, which is compatible with a more or less stable environment. It is important not to confuse stability with stationariness. Stability is compatible, for example, with a physiological level of inflation which makes 'the wheel go round'. This means, for example, that once a given money wage bargain is struck, it is not called into question by the existence of this moderate level of inflation. Workers accept it without withdrawing their labour supply. In other words, there is a degree of malleability involved in adopting conventions. So long as inflation remains below a certain threshold, it is more important for workers to look at the relative wage, at the fact that cross-sector wage differentials remain intact, rather than at the absolute wage.

Two remarks are in order here. First, this view provides the foundation of Keynes's claim that workers' preferences do not play a unique causal role as in general equilibrium theory, so that it is possible to talk about involuntary unemployment instead of linking unemployment to high real wages. He stresses the existence of a mechanism through which firms manage to solve the problem of the compatibility between a certain level of employment and the level of the real wage. While in the Classical model real wages must fall before an increase in employment is eventually possible, for Keynes firms may adjust prices to costs (within limits) in *ex-post* fashion. Given the money wage and labour productivity, firms may fix prices to maximize profits.

Second, it is important to note that this mechanism is not a matter of individual firms' decisions and market forms; it involves a purely macroeconomic reasoning. The point is that the determination of the price level results from the intersection of aggregate demand and supply. As already noted, these two curves involve a distinction between two aspects of firms' behaviour which makes sense only at the macroeconomic level. It is at this level that the basic difference between Keynes and the Classical model lies. In particular, the crucial point is that, while in the latter the price level is given by the Quantity equation so that the flexibility of the real wage is a matter of flexibility of the money wage, for Keynes the price level is a malleable variable, at least insofar as actual historical conditions allow firms to transfer costs onto prices.

That Keynes's view is more general than the one put forward by Classical theory is shown by the fact that it is actually capable of encompassing the latter as a particular case. This is true whenever, for example, inflation increases above the threshold in the proximity of full employment. At high inflation, a period of greater uncertainty corresponds. This induces people to drop the convention that the future is like the past and to fall back on other conventions, such as the reliance on popular models. They may tend,



for example, to focus almost exclusively on those models that regard inflation as growing faster and faster to the point that inflationary expectations erase standard behaviour and calculations altogether. In this case, it is true that workers look at the real wage and call for continuous revisions of the money wage bargain in order to keep track of inflation. However, this is only a particular case which has little to do with the ‘normal’ cycles we observe. The mistake of Classical theory is to regard it as the basis of a normal or structural relationship between wage and employment in order to claim that workers’ preferences always play a causal role in the analysis and rule out the possibility of involuntary unemployment. That this is a mistake is shown by their own attempts to reintroduce Keynesian considerations concerning money wage rigidity from the back door of money illusion and similar factors.

In conclusion, it can be argued that it is the fact that the conventional data underlying aggregate demand play a causal role in Keynes’s analysis that makes a difference with respect to old and new Classical theory. It is because of these data that aggregate demand is independent of aggregate supply, and the price level is an endogenous variable determined by the intersection of the two curves in such a way as to cover costs. It is because the price level is so determined that firms have an alternative way of reducing the real wage at their disposal; hence workers’ preferences are not crucial in determining the real wage and the level of employment.

This conclusion is not called into question by the existence of some analogies between Keynes’s view on expectations and the rational expectations approach. It is certainly true that, as stressed by several authors (e.g. Dardi 1994:103; Hahn 1983a:229), both place the emphasis on the generative process of agents’ opinion and suggest that expectations are not arbitrary but generated by theories. In particular, for both Keynes and Lucas, expectations are coordinated efficiently; individuals share the same model and expectations turn out to be self-fulfilling prophecies. This view has led Hahn, for example, to regard Keynes’s bootstrap equilibrium view as being equivalent to the idea of rational expectations equilibrium. However right this analogy, it should not be pushed too far. It is worth considering one crucial difference between Lucas and Keynes on this issue. The point is that while, for the former, expectations are endogenous in that they come to reflect objective (world-1) determinants, such as observed frequencies, for the latter, instead, expectations remain exogenous—i.e. their generative process is external to the model. This allows them to play a causal role in the analysis which Lucas simply rules out. This vital difference is, to some extent, captured by Hahn (1983a:229) who argues that, while for Lucas the agent discovers what the world is really like irrespective of other agents, this is not so for Keynes. In his view, agents do not know or learn the true probabilities of the economic world, but rather shape with their beliefs reality itself. It is world-3 objectivity that rules the roost.

### Concluding remarks

In this chapter, I have analysed the New Classical approach to microfoundations with reference to the contributions of Friedman and Lucas. This approach can also be criticized for opposite reasons. On the one hand, despite the innovations brought about by Lucas's stochastic view, it actually fails to incorporate phenomena like money and expectations into general equilibrium theory. Moreover, Lucas's attempt to provide a convincing account of business cycles violates the canons of atomism and the direct forces paradigm, just like Patinkin's aggregate demand and supply framework. It also suffers from a kind of internal consistency problem as it starts with an assumption of perfect rationality and is then compelled to introduce money illusion by the back door in order to obtain an upward-sloping aggregate supply function.

On the other hand, despite its firm grasp of the inconsistency between Keynes and general equilibrium theory, the New Classical approach overlooks the methodological foundations of the *General Theory*. It is thus bound to misinterpret Keynes's theory of rationality by stressing, in particular, that in his view agents rely on rules of thumb, rather than on objective criteria of behaviour.

## KEYNESIAN MICROFOUNDATIONS I: THE WALRASIAN BENCHMARK

In this chapter I begin to analyse the Keynesian approach to microfoundations, dealing with the ‘representative’ contributions of several leading members of three Keynesian families who regard the Walrasian model as the benchmark of their analysis. In particular, I focus on Disequilibriumists like Clower, Leijonhufvud, Barro, Grossman and Malinvaud, on New Keynesian economists like Stiglitz and a general equilibrium theorist like Hahn. For simplicity’s sake, I call all these authors New Keynesians.

Like the New Classicals, the New Keynesians are important characters in our story because they too highlight the internal inconsistencies of the Neoclassical Synthesis and provide an interpretation of Keynes in terms of standard methodological canons. Not unlike Patinkin, in most cases they accept the notion of equilibrium over time as a benchmark of economic theory and the use of aggregates. They break with standard macroeconomics, however, when they explicitly drop the direct forces paradigm, one of its key postulates. They hold the view that prices do not equilibrate demand and supply as they tend to be rigid and suggest we account for these rigidities on the grounds of new micro theories of the phenomena of imperfect competition and imperfect information.

Below, I show that this innovation affects their interpretation of Keynes. While agreeing with Lucas that his theory is somewhat *ad hoc*, the New Keynesians tend to stress that his views are still relevant for modern economies, provided they are rigorously restated in terms of the new micro theories. I ultimately show that they can also be criticized for opposite reasons. On the one hand, by dropping the direct forces paradigm they tend to rule out a unifying picture of the economy as a whole, somehow related to the ‘first principles’ as required by ‘pure theory’. On the other, their neglect of Keynes’s methodological background forces them to dismiss a few key features of his analysis, such as his view of the working of the price mechanism.

## Disequibrists

### *The relationship between ‘pure theory’ and ‘pragmatic’ macroeconomics*

While sharing many of Patinkin’s conclusions, the Disequibrists start to call into question his pragmatic view of macroeconomics. The pragmatic view was held by those theorists who, like the American Keynesians, accepted the basic canons of ‘pure theory’, but were actually incapable of applying them to a full extent to the construction of macro models. As already noted, this is true in particular for the use of the constructive method to extend the explanatory power of general equilibrium to money and expectations. Both objective and subjective factors explain why these theorists refrained from performing the project of ‘pure theory’. Among the former, one could suggest the existence of intrinsic limits on the possibility of generalizing the Walrasian model because money and expectations are bound to be only secondary features within this model and thus no amount of intellectual effort can actually ever accomplish the transition from the logic of choice to a full-blown monetary economy. Among the subjective reasons, one could think instead of the fact that many Keynesians were eager to simplify and skip the most difficult issues for the purpose of providing ready answers to urgent policy issues. In order to accomplish this task, it was enough for them to rely on a rough-and-ready approach in the shape of some short-run variant of a full-blown general equilibrium model.

The Disequibrists break with this approach. First, their search for microfoundations is by itself an anti-pragmatic move; it involves a certain distance from ‘real-world’ concerns and the need to simplify. As stressed by Solow, this search is not really significant for applied macroeconomics: ‘It was never demonstrated that worrying about rigorous microfoundations would lead to more reliable empirical macroeconomic relationships, nor has it done so. The demand was a matter of principle, not expediency’ (Solow 1986:196). Second, they do not subscribe to ‘pure theory’ à la Hicks. Their project is not to extend the general equilibrium model, but, on the contrary, to depart from it. They tend to use it as a theoretical norm, not as a descriptive model. In particular, while Disequibrists subscribe to the notion of Walrasian long-run equilibrium, they recognize that it is limited as it applies only to stationary states; it leaves a vast ‘disequilibrium’ territory unaccounted for.

It is to be noted, however, that Disequibrists do not reject all the canons of ‘pure theory’. On the contrary, they retain most of them. In particular, they share Patinkin’s commitment to atomism and the use of the constructive method. As far as atomism is concerned, it is sufficient to note that they too refer to aggregates specified in atomistic terms and reject the existence of a sharp gap between micro and macroeconomics which underlies the

standard models of the Neoclassical Synthesis. Leijonhufvud, for example, criticizes Samuelson's *Foundations*, in which 'Keynesian theory is regarded as *sui generis*—as a brand of theory which we cannot relate to the general theory of value. There is no way we can get there from here' (Leijonhufvud 1968:130). As for the constructive method, the Disequilibriumists rely on the same representative agent models used by Patinkin (1965).

The point where Disequilibriumists innovate with respect to Patinkin is when they explicitly reject the direct forces paradigm. While for Patinkin, disequilibrium is due to a low price elasticity of the aggregate demand function, for these economists instead it occurs because prices themselves are incapable of equilibrating demand and supply as they tend to be rigid. There are two points to note about price rigidity as intended by the Disequilibriumists. First, it is not meant to be a permanent feature of the economy. It is sufficient to note, for example, that Malinvaud criticizes Barro and Grossman for neglecting the short-run nature of the fix-price assumption and claims that Walrasian equilibrium is the appropriate benchmark for long-run analysis as, in the long run, all prices are flexible (Malinvaud 1985:34).

Second, it requires important changes in the modelling strategy followed by Patinkin and the Neoclassical Synthesis in general. While, for the latter, the phenomenon of wage and price rigidity is mainly of an empirical or institutional kind and thus fails to affect standard value theory, for the Disequilibriumists it must be made somehow endogenous to macro models through a series of reforms of value theory: i.e. the so-called microfoundations.<sup>1</sup> These reforms are carried out by applying the constructive method to issues related to the malfunctioning of the price mechanism. The focus is on the maximizing behaviour of agents in disequilibrium states which follow from the absence of the auctioneer. Instances of this approach are Clower's Dual Decision Hypothesis, Leijonhufvud's analysis of information failures and Barro and Grossman's fix-price models dealing with agents' behaviour under a non-market clearing price vector.

On these grounds, the Disequilibriumists also make innovations in their interpretation of Keynes. Not unlike Patinkin, they regard him as dealing with the territory of disequilibrium. However, in their view, Patinkin, like most authors of the Neoclassical Synthesis, fails to realize that Keynes himself thinks in terms of value theory, and he is thus the butt of a number of criticisms. The first is that his reliance on a one-good model due to his use of the aggregate production function leads him to neglect the role played by relative prices and, in particular, by the rate of interest in Keynes's theory. According to Leijonhufvud, for example, unemployment in this theory is due mainly to wrong asset demand prices (i.e. to a rate of interest which is too high) rather than to wrong money wages.<sup>2</sup> Second, it does not occur to Patinkin that the *General Theory* can be regarded 'as part of a great over-all effort to *extend* the use of the (largely received) tools of general value theory beyond the area

represented by problems of general equilibrium and into the area of macrodisequilibrium' (Leijonhufvud 1968:333; original emphasis).

### *Clower's Dual Decision Hypothesis*

In order to implement the extension which Keynes began rigorously, the Disequilibriumists call for revisions of standard value theory as the latter underlies only Walrasian equilibrium states. One of these revisions is the Dual Decision Hypothesis proposed by Clower (1965) in 'The Keynesian Counterrevolution: A Theoretical Appraisal'. Here, he starts by pointing out that the reason why standard theory is not suitable to deal with the disequilibrium states and short-run adjustment processes analysed by Keynes is that 'it yields no direct information about the magnitude of *realized* as distinct from *planned* transactions under disequilibrium conditions.' (Clower 1965:108; original emphasis). Moreover, 'it assumes that the forces tending at any instant to change market prices are independent of realized transactions at the same moment' (ibid.: 108; original emphasis). In other words, standard theory assumes that no disequilibrium transactions occur and income magnitudes do not appear as independent variables in market excess demand functions, but only as choice variables for maximization. It is on this basis that Clower draws the conclusion that the 'Keynesian consumption function and other market relations involving income as an independent variable cannot be derived explicitly from any existing theory of general equilibrium' (ibid.: 112). He thus argues that to account for Keynes's consumption function there is a need to make an innovation with respect to standard theory concerning not the basic axioms of rational behaviour, but the budget constraint relevant to the consumer.

In order to make this clear, Clower claims that Keynes's departure from standard theory is his rejection of the view, which underpins general equilibrium, that selling, buying and saving plans are all carried out simultaneously so that all household decisions are accomplished at a single stroke. In the *General Theory*, he provides instead a dichotomized account of consumption and saving decisions. For Clower, the orthodox view is plausible only as long as the analysis deals with *virtual* economic processes, where each household can be considered as an isolated performer of conceptual experiments. Keynes's view is, instead, more relevant for describing *ongoing* economic processes in which households are seen as part of a connected market system. In particular, it applies to situations of chronic disequilibrium when not every household can sell and buy what it pleases and realized current receipts impose an extra constraint beyond the familiar budget constraint. The point is that in these conditions 'planned consumption as expressed in effective market offers to buy will necessarily be less than desired consumption as given by the demand function of orthodox analysis' (Clower 1965:118).

Based on this, Clower claims that Keynes's consumption function can only be rationalized in terms of what he calls the Dual Decision Hypothesis. This states that in a situation in which realized current income is less than notional income, the notional demand and supply functions of the consumer do not provide relevant market signals. Current income receipts impose an operative constraint on the consumer, who is thus forced to make a second round of decision-making. It is arguable that only these constrained demand functions (together with the notional supply functions) constitute relevant market signalling devices. In the end, Clower stresses that involuntary underconsumption is the other side of involuntary unemployment and that 'Keynes either had a dual decision hypothesis at the back of his mind, or most of the *General Theory* is theoretical nonsense' (1965:120).

It must be noted that, along these lines, Clower (1967) also deals with the transactions role of money. He does so by proposing the so-called 'cash-in-advance' constraint. This is meant to capture the fact that in a money economy there is an asymmetric relation between money and non-money commodities, as money buys goods, goods buy money, but goods do not buy goods. In Clower's view, this is an advance with respect to Patinkin, as the injunction about goods not directly buying goods is not implied by the standard general equilibrium budget constraint used by him. This constraint is simply the accounting identity that the total value of all purchases must equal the total value of all sales (see also Ostroy and Starr 1990:7).

### *Leijonhufvud's removal of the auctioneer*

Another revision of standard general equilibrium theory which is similar to Clower's is the one suggested by Leijonhufvud (1968), who stresses that the passage from the standard Walrasian model to the *General Theory* can be accomplished by simply dispensing with the tatonnement mechanism: i.e. by removing the auctioneer. If there is no auctioneer, trading may take place at 'false prices' (i.e. prices which do not allow the realization of all desired transactions), and the generation of information needed to coordinate economic activities in a large system will take time and involve economic costs. According to Leijonhufvud, this kind of information failure, together with the fact that information is no longer costless, explains the relative stickiness of wages and prices.

There are two points to note here. First, this view leads Leijonhufvud to criticize those authors of the Neoclassical Synthesis who regard the imperfect flexibility of wages and prices as induced either by monopolistic practices, such as minimum wage laws and unions, or by assumptions of money illusion built into some pieces of Keynes's theory, for example, in the speculative demand of money or the labour supply function (Leijonhufvud 1968:67). In particular, he argues that, for Keynes, disequilibrium phenomena such as imperfect price flexibility and involuntary unemployment occur even if agents

do not violate the canons of individual rationality (e.g. they still maximize utility and respond to price incentives).

Second, if prices are no longer perfectly flexible, it is not possible for demand shocks to be accommodated entirely with the familiar price adjustment mechanism; there is room for income-constrained processes (and involuntary unemployment) to take place. He thus concludes that unemployment is due to a communication failure, the information sufficient to ensure the efficient coordination of activity not being generated and disseminated in time (Leijonhufvud 1968:272). He believes that this is the main insight of the *General Theory*. In particular, Keynes's basic contribution is to reverse the Marshallian ranking of price and quantity speeds of adjustment: while, for Marshall, the initial response to a decline in demand is a price adjustment, and quantity adjustment takes place only after a lapse of time, for Keynes the reverse is true. However, Leijonhufvud emphasizes that it is misleading to think that Keynes's results are due to the assumption of rigid prices and wages. In order to support his view of income-constrained processes, it is enough to suppose that price velocities are not infinite. In particular, he argues that 'only if price flexibilities were almost perfect would income constrained processes be of little interest to us.' (Leijonhufvud 1968:67).

### *Barro, Grossman and Malinvaud: the fix-price method*

Another important step in the Disequilibriumists' strategy is represented by the models proposed by Barro, Grossman and Malinvaud, which have many features in common. By combining Clower and Leijonhufvud's insights on the Dual Decision Hypothesis and the relative stickiness of prices and wages, these authors suggest an original synthesis of the main propositions of this approach. They manage to integrate into a single model of general disequilibrium the two complementary pieces of analysis made by Patinkin and Clower, which were only of a 'partial' disequilibrium kind, the first dealing with the causality running from the level of excess supply in the market of current output to the state of excess supply in the labour market; the second with the reverse influence of the level of excess supply in the labour market upon the state of excess supply in the market for current output. Let us now deal with two key features of this approach: namely, its reliance on what Hicks (1965) denoted as the fix-price method and its focus on intermarket relations.

As for the fix-price method, two points should be stressed. The first is that it does not imply that prices are to be treated as constant, but simply that they are exogenous: i.e. the model does not explicitly investigate the forces making for changes in them. The second is that this method is not new and does not imply by itself the rejection of the direct forces postulate. It is sufficient to note, for example, that the Neoclassical Synthesis also relies



on price rigidities. However, the Disequilibriumists make at least two innovations with respect to it which actually imply the rejection of that postulate. The first is that they start to investigate the analytical implications of the fix-price assumption for the analysis of individual behaviour instead of simply focusing, like the Neoclassical Synthesis, on its implications for the economy as a whole or for markets. The Disequilibriumists in particular analyse the maximizing behaviour of a representative household and a representative firm under the assumption of a given non-equilibrium price vector and seek to work out the levels of income and employment implied by such a vector.

The second innovation is that these economists are more aware than the Neoclassical Synthesis that the fix-price method must not be taken for granted, as it is the way out of a real problem involved in the modelling of the price adjustment mechanism in terms of first principles. For example, Malinvaud admits that, at least in principle, price rigidity should not be completely exogenous to the analysis. That is to say, theory should recognize some feedbacks from excess demand or excess supply to prices and be able to account for wage/price stickiness in terms of rational behaviour. In particular, in contrast with the Neoclassical Synthesis, he argues that price rigidity is not a purely institutional fact, but due to 'some fundamental features in the social organization, as well as to costs in information gathering, in contracting and in adjusting exchange relationships to a permanently moving environment' (Malinvaud 1985:viii).<sup>3</sup>

However, he puts forward at least two reasons why these rationalizations of price rigidities are difficult to deal with in macroeconomics, and why it is therefore better to rely on the fix-price method. First, they 'are not easy to formalize, to study and to confront with incomplete market clearing of varying form and magnitude' (Malinvaud 1985:viii). Second, they involve the assumption of imperfect competition which impairs the simplicity of macroeconomic analysis. It is useful to go into some detail about this point, as it is crucial for the microfoundations debate. First, it is important to see why there is a need to drop the perfect competition assumption in the analysis of the adjustment processes in an atomistic market. As stressed by Leijonhufvud, for example, the reason is that this assumption implies that all agents are price-takers: i.e. they face infinitely elastic supply and demand curves at given prices. One problem with this price-taking assumption is that it rules out states in which markets do not clear at the actual price of the moment because it implies perfect knowledge and absence of any costs connected with the act of changing price (or the rate of output) that 'would enable the traders in an atomistic market to detect and to move instantaneously to the new price equilibrium following a disturbance' (Leijonhufvud 1968:77).

Another reason why it is necessary to dispense with the price-taking assumption is that, as argued by Arrow (1959), it is not compatible with a situation in which there is no auctioneer, as in this case there is no one who

makes decisions on prices. On these grounds, Leijonhufvud thus draws the conclusion that to analyse disequilibrium processes characterized by the absence of perfect knowledge on the part of agents or of any mechanism that would supply the needed information without cost, it is necessary to rely on the price-making assumption. In this regard, he refers to Alchian's search theory based on information costs (see Leijonhufvud 1968:76).<sup>4</sup>

On the other hand, it is also important to understand precisely why imperfect competition rules out the simplicity of macro analysis. As we shall see, it is not simply a matter of sheer technical difficulty; although this too plays a role in justifying the scepticism towards the use of this assumption in macroeconomics. As Malinvaud puts it: 'The reasons explaining price rigidities have a good deal in common with those explaining imperfect competition... potentially...this imperfect competition approach is more general, but of course much more cumbersome to put into operation' (Malinvaud 1985:ix).

*Barro, Grossman and Malinvaud: the focus on intermarket relations*

The focus on intermarket relations (*spillover effects*) is the second significant feature of the general disequilibrium approach. In particular, these authors regard this feature as the key difference between two basic views of unemployment: namely, that held by the Keynesians, for whom this phenomenon is due to the lack of effective demand, and the one put forward by the Classics, according to which it is caused by too high a real wage. This point is strongly emphasized by Malinvaud. He holds that while the Keynesian view calls for a general equilibrium framework in which suppliers are rationed both on the labour and the goods market (i.e. there exists excess supply in both markets), the Classical view relies instead on a partial equilibrium analysis: i.e. it considers the labour market in isolation and neglects the intermarket relationships (see Malinvaud 1985:1).

The important point to note about this view is that Barro, Grossman and Malinvaud underline that the lack of effective demand underlying Keynesian unemployment is due essentially to a price level which is too high to clear the goods market. Thus they argue that, unlike Classical unemployment, Keynesian unemployment does not require an increase in the real wage above the level consistent with full employment equilibrium (e.g. Barro and Grossman 1971:86). On these grounds, they draw two conclusions.

The first is the rather paradoxical one that unemployment in the *General Theory* is not of the Keynesian but of the Classical type. In their view, the reason why unemployment in Keynes's theory is not due to an insufficient level of aggregate demand is quite simply that the latter does not occur, given that for Keynes the price level is not rigid, but adjusts to its 'right' level to clear the goods market (e.g. Barro and Grossman 1976:63; Malinvaud

1985:34). Moreover, the view that in the *General Theory* unemployment is due to a real wage which is too high to clear the labour market is confirmed by the fact that for Keynes, as for the Classics, the demand for labour is inversely and uniquely correlated to the real wage (e.g. Grossman 1972:28). The second conclusion drawn by these authors is that in their model the impact of the excess supply of goods on firms' demand for labour removes the above-mentioned Classical relationship between the real wage and employment. They argue that their analysis shows the possibility of a positive relation between real wages and employment which seems to be more consistent with empirical evidence (e.g. Barro and Grossman 1971:82).

### Stiglitz and New Keynesian economics

The New Keynesian economics is another major step in the evolution of the debate on the microfoundations of macroeconomics.<sup>5</sup> For simplicity's sake, I focus here on one of its leading members, Stiglitz. The reference is not meant to be exclusive, however, and I also make passing mentions of other key figures, such as Solow.

#### *The rejection of pragmatism*

Stiglitz starts by accepting the conception of macroeconomics held by the Disequilibriumists. On the one hand, he no longer regards it as a pragmatic discipline. For example, he does not rely on simplified pictures of a full-blown general equilibrium model. On the other, he rejects 'pure theory'. For Stiglitz, as for the Disequilibriumists, the problem is not to extend the standard general equilibrium model, but to drop it. It is sufficient to note his explicit rejection of this model for the analysis of money. Unlike pragmatic macroeconomists such as Tobin, Stiglitz does not merely avoid addressing the difficult issue of the microfoundations of money within the general equilibrium model: i.e. the task of explaining within the standard paradigm of economic theory why paper that makes no intrinsic contribution to utility or technology is held at all and has a positive value in the exchange of goods and services. He argues instead that this model is quite simply incapable of incorporating money. He regards the search for the microfoundations of money as a failure; in particular, he objects to the attempt to put money into the utility function or the production function or the creation of a demand for money function, modelling it as a cash-in-advance constraint. He notes, for example, that this approach does not explain why money is required for transactions, but simply assumes as much (Stiglitz 1988:313).

It would be wrong, however, to believe that Stiglitz rejects all the canons of 'pure theory'. He too sticks to atomism and the constructive method. Speaking of the former, he calls into question the split between micro and macro created by the Neoclassical Synthesis, with micro emphasizing the

virtues of the invisible hand and macro focusing instead on the failures of the market system. In his view, this split resulted from the view, stressed by Samuelson, that ‘once unemployment was removed, the classical vision of the efficient market could be restored’ (Greenwald and Stiglitz 1987:119). As for the constructive method, Stiglitz focuses on the behaviour of optimizing agents and seeks to apply it to the explanation of relevant macro phenomena. Not unlike the Disequilibrists, he departs from ‘pure theory’ when he rejects the direct forces paradigm. He too claims that prices are rigid and thus generally fail to balance demand and supply on the key markets. However, he makes a few significant innovations *vis-à-vis* the fix-price assumption.

### *The microfoundations of rigidities*

The first innovation is that Stiglitz provides microfoundations for price rigidities. While the Disequilibrists only start to investigate the problems involved in regarding price rigidity as something more than a mere exogenous phenomenon, Stiglitz actually takes the endogenous explanation of this rigidity in terms of rational behaviour as a kind of new first principle. He argues that the lack of this type of explanation is a crucial weakness of the fix-price method. In his view, not only is this method essentially *ad hoc*, but also turns out to be inconsistent with other assumptions of Disequilibrium models. For instance, it is not clear why a profit maximizing firm satisfying all other Neoclassical assumptions should not cut its price in the face of excess supply (e.g. Greenwald *et al.* 1984:194). Stiglitz thus notes that the basic aim of his work is to provide an explanation of rigidities:

Conventional wisdom has it that a large part of the explanation of Keynesian unemployment is the observed rigidities of wages and prices. What has been lacking, however, is a satisfactory theory... which explains how wages and prices can be at non market-clearing levels.

(Stiglitz 1984:350)

He argues that to accomplish this task, much deeper revisions of standard value theory than the Disequilibrists’ are required. In particular, it is necessary to adapt micro to macroeconomics: i.e. to build a completely new micro capable of accounting for the market failures of real-world economies. For Stiglitz, as for Clower, this adaptation involves not the rejection of the standard axioms of rational behaviour, but the specification of agents’ objective functions and their perceived constraints in an unconventional way: i.e. in different terms with respect to the Walrasian paradigm. This point is also underlined by Solow. Having noted that it is rather empty to talk about optimizing behaviour without specifying agents’ objectives and constraints properly,<sup>6</sup> he argues that the specification of ‘unconventional objectives and

constraints can lead to unconventional results' (Solow 1979:346). It is interesting to note that Solow regards this specification as the search for the 'macrofoundations of microeconomics'. As he puts it: 'If we need good micro-foundations for macroeconomics, we are equally in need of good macro-foundations for microeconomics' (ibid.: 346).

One major element of this new micro is the study of agents' maximizing behaviour under the assumptions of imperfect information, incomplete markets, imperfect competition and adjustment costs, which imply a fundamental departure from the standard competitive analysis also accepted by the Disequilibriumists. In other words, to use a metaphor, it can be argued that Stiglitz and New Keynesian economics in general cross the border of the vast territory of imperfections, which the Disequilibriumists had only seen from a distance.

It is important to note that this move leads Stiglitz to criticize the representative agent models underlying standard macro as well as Disequilibrium theory. He points out that these models have serious drawbacks when applied to macro analysis (Stiglitz 1991:11, 27). First, they are of limited use in investigating problems arising from information asymmetries and coordination failures. As he puts it: 'Asymmetric information could only be reconciled with a representative agent model by assuming a particular kind of schizophrenia on the part of the representative agent' (ibid.: 11). Second, they are not suitable for studying 'market failures':

For when all individuals are identical, there is no need for trades, and there are no consequences of the absence of markets. For instance, risk markets entail the transfer of risk from one individual to another; but if all individuals are identical, the absence of risk markets has no consequences: there would be no trade on those markets, even if they existed.

(Stiglitz 1991:11–12)

### *Imperfections as equilibrium phenomena*

Stiglitz's second innovation with respect to Disequilibrium theory and standard macro approaches is his belief that imperfections and rigidities are not temporary, but permanent or equilibrium phenomena. It should be clear that the focus on market imperfections as such cannot be the novelty of the New Keynesian view. As already noted, the Neoclassical Synthesis also relies on exogenous imperfections to account for the *General Theory*. Moreover, as Solow argues, even Pigou placed the emphasis on the existence of market imperfections (e.g. he discussed many of the institutional factors which hinder the smooth functioning of the labour market, such as market segmentation, the role of habit and custom and trade unionism). However, all these authors saw imperfections as mere disequilibrium phenomena. For example, Pigou

‘concluded that the tendency of the capitalist economy to seek (and find) its full-employment equilibrium was strong enough so that departures from full employment could be regarded as mere episodes’ (Solow 1980:6). It is only when imperfections are regarded as structural phenomena that need explaining that the possibility of accommodating them in the standard framework through the familiar short-run/long-run distinction disappears and a fundamental transformation of the whole economic theory is called for.

The aim of the New Keynesians is to achieve this transformation. In particular, for them it is true what Keynes holds about the concept of equilibrium: namely, that it indicates a position of rest, which is not necessarily associated with market clearing. Thus, for instance, as pointed out by Solow, the labour market may be in equilibrium not in the sense that demand equals supply (i.e. that there is market clearing), but in the sense that in such a market there is ‘a set of wage and employment conventions that no party to the transaction feels impelled to take direct action to change’ (Solow 1985:18).

It is important to note that the emphasis on rigidities as permanent phenomena seems to call into question the role of long-run Walrasian equilibrium as the proper benchmark for macroeconomic theory, which is, for example, underlined by Malinvaud. The point is that the various market failures appear as structural phenomena which impair the tendency towards such equilibrium. In my view, however, this is not a correct conclusion. There is no need to regard the Walrasian model as a descriptive one, accounting for the tendencies in the real-world economy. This model can act as a benchmark solely in the negative sense that it shows what would happen if there were no imperfections—just as Weber’s ideal types do. In this sense, it can be argued that the model is also accepted as a benchmark by Stiglitz. He argues, in particular, that Keynes’s results are due to price and wage rigidity and that, if prices were fully flexible, the Walrasian general equilibrium would prevail. He makes this clear in his (1983) paper, for example, where he claims that his New Keynesian approach:

provides an old answer to an old question: how can we explain unemployment equilibria? The answer provided both by Keynes and by more recent equilibrium analysts, is that there is some rigidity in prices (of factors or commodities) in the economy. It is well-known that if all prices are flexible, all factors...will be fully employed in equilibrium.

(Neary and Stiglitz 1983:199)

### *Partial equilibrium analysis*

Stiglitz’s third innovation with respect to the Disequilibrists is that he relies on a partial equilibrium approach. While Malinvaud, Barro and Grossman

advocate general equilibrium analysis, the emphasis on market imperfections leads Stiglitz to depart from it. He notes, for example, that if it is true that the use of the representative individual or firm is too limiting, the alternative of general equilibrium analysis is also highly questionable. In his view, the method employed in conventional general equilibrium analysis ‘of simply denoting different firms and individuals by different superscripts and subscripts, and forming aggregate demand and supplies by summing up, seems too general’ (Stiglitz 1991:27). He thus calls for a kind of intermediate solution between these two poles: ‘good macroeconomic theory requires the judicious choice of the appropriate level of aggregation, of introducing just enough complexity to be able to explain the phenomena at hand’ (ibid.: 27).

That this modelling strategy suffers from generality is clearly shown by two considerations. First, as Solow admits, the search for ‘realistic’ microfoundations is still a largely uncertain and unfinished business because of the sheer huge number of potential market failures:

The history of modern economic analysis can be written in terms of the study of the sources of market failures. The catalog runs from... monopoly, to monopolistic competition to the importance of public goods and externalities of many other kinds, to...a variety of problems connected with the inadequate, imperfect or asymmetric information and with the likelihood that there will simply be no markets for some of the relevant goods and services.

(Solow 1980:1)

Second, the new micro theories are difficult to piece together in a coherent general framework; in particular, they have not yet provided a universally satisfactory explanation of prices and wages stickiness. This explains why, to use Solow’s words, they ‘have not yet caught on’ (Solow 1986:197), and one is justified in doubting that this approach is a successful research programme. As he declares:

Macroeconomics can hardly just tread water while more realistic micro-foundations are being worked out, taught and tested. In the meanwhile, the older rough-and-ready approach may be the best we can do, and not intolerable. I mean the informal microrationalization of macroeconomic relationships with all of its infuriating reliance on stylized facts, partial econometric analysis, appeals to common sense and even amateur sociology.

(Solow 1986:197)<sup>7</sup>

Basing themselves on these innovations, Stiglitz and the New Keynesians also depart from previous approaches in their interpretation of Keynes. In Stiglitz’s view, while there is no doubt that Keynes had a non-Neoclassical

vision and provided crucial insights into the working of the economy which have been lost in the Neoclassical Synthesis,<sup>8</sup> he is not completely innocent. He too can be criticized for failing to develop adequate microfoundations. For instance, he relies on the perfect markets assumption, which can be shown to be in contrast with several aspects of his theory, such as the distinction between saving and investment and the claim that current income exercises a dominant influence upon consumption (e.g. Greenwald and Stiglitz 1987:119–20). Furthermore, Keynes explains money wage rigidity on the grounds of a sophisticated form of money illusion (e.g. Azariadis and Stiglitz 1983:2; Stiglitz 1991:35). In order to remedy these flaws, it is necessary to account for his insights on the grounds of the new theories developed by the New Keynesians.

### *Explanations of wage rigidity*

Let us now focus on some of these partial equilibrium explanations of rigidities provided by Stiglitz and other New Keynesians on the grounds of the unconventional specification of agents' objectives and constraints. Starting with the labour market, Stiglitz claims that one of the most convincing explanations of wage rigidities is provided by the efficiency wage models. These are based on the hypothesis that there is imperfect information about the characteristics of workers and that the actions of individual workers cannot be adequately monitored. As a result:

The quality of the labour force, its productivity (and hence the firms' profit) may increase with the wage paid... In the face of unemployment, wages may not fall, for firms will recognize that if they lower wages, productivity will decrease, turnover may increase and profits will fall.

(Greenwald and Stiglitz 1987:121)

According to Stiglitz, the fact that the efficiency wage theories yield a market equilibrium in which wages do not fall in the face of unemployment 'immediately suggests the possibility that these theories may provide an important part of the explanation of involuntary unemployment' (Stiglitz 1987:33). It should be noted, however, that this is not the only explanation of wage rigidity provided by the New Keynesians. Solow, for example, focuses on two other unorthodox ways of accounting for it. The first is hinted at in the *General Theory*. He stresses that, for Keynes, the phenomenon of money wage downward stickiness is due to workers' concern for their relative wage. When facing conditions of involuntary unemployment, workers usually resist wage cutting, not because they are unwilling to accept a universal reduction in the nominal wage, but because they fear that to accept a wage cut is to accept a reduced relative wage. In Solow's view this argument is:



unconventional because relative wages figure as an object of preference; workers are supposed to want to protect traditional wage differentials. This is not any kind of money illusion; relative wages are real, not nominal, quantities. The unconventionality lies deeper. The implicit utility functions in this story are not exclusively individualistic.

(Solow 1979:347)

The second instance of unconventional explanation of wage rigidity is provided by Akerlof's work on social conventions (e.g. Akerlof 1980).<sup>9</sup> Solow points out that Akerlof admits a stable equilibrium in which a social convention is widely observed. People are induced to obey the convention because so many believe in it and take a dim view of violators. He then stresses that if a 'fair wage' is an instance of convention, then it is easy to show that shifts in demand can generate unemployment when the fair wage is too high. It is important to stress that the efficiency wage theory, as well as the other rationalizations of wage rigidity, are in contrast with Keynes's analysis of involuntary unemployment. While it is true that the market equilibrium which all these theories yield is not one of full employment, it is still the outcome of rational voluntary choices. This point is not missed by Solow, who hastens to argue that it is wrong to regard the unemployment thus generated as entirely voluntary. As he points out, 'the sense in which observing social conventions is a voluntary act is not exactly the sense in which choosing chicken fricassee rather than pork chops is a voluntary act' (Solow 1979:349).

### *Explanations of interest rate rigidity*

In his analysis of the capital market, Stiglitz seeks to explain why there is a need to focus on credit as opposed to money in contrast with general equilibrium analysis and why the latter is incapable of dealing with credit. On the one hand, he points out that general equilibrium analysis focuses on money as a means of transaction, as shown by the Quantity theory. But according to Stiglitz, the transactions based monetary theory is irrelevant for modern economies since the latter are essentially based on credit (Stiglitz 1988:309–11). On the other hand, he claims that the general equilibrium model is not helpful in understanding credit, which can be created—and, in the same way, destroyed—with almost no input of conventional factors. Moreover, this model encourages us to think of the price of credit (the interest rate) as being a price like any other. In Stiglitz's view, instead, the interest rate is not like a conventional price because credit is based on information.

In this regard, he underlines that models which are essentially analogous to the efficiency wage theories can be used to explain why interest rates may be rigid, and thus fail to achieve equality between the demand and supply of credit. Having stressed that his analysis of capital markets also

focuses on imperfections which are due to phenomena such as imperfect and costly information and missing future markets, Stiglitz points out that if banks are risk averse, and if there is some uncertainty about the consequences of changes in the rate of interest, keeping the latter unchanged in the face of certain disturbances may be fully rational. In particular, this is due to the fact that there are asymmetries of information between banks and borrowers. Banks do not know how the money they lend is being invested. An increase in the rate of interest charged to borrowers will, in general, increase the average riskiness of the projects a bank is financing. This is either because borrowers switch to riskier projects (moral hazard problem) or because safer projects become relatively less attractive and so investors with safe projects do not apply for loans (adverse selection problem). As Stiglitz points out:

The effect on the riskiness of loans may outweigh the direct gain to the bank from increasing its interest rate. Thus, the bank's profit may be maximized at an interest rate at which there is an excess demand for loanable funds.

(Greenwald *et al.* 1984:195)

In other words, due to the asymmetries of information on the credit market, the profit-maximizing interest rate may occur at a point in which firms' access to capital is limited: i.e there is credit rationing. This means that, on the market, prices do not provide an adequate screening mechanism and credit allocations have to be made on other bases than prices (Stiglitz 1988:312). On these grounds, Stiglitz stresses the analogy between his analysis of the capital market and that of the labour market:

In each of these cases, the story is the same. Because quality (labour efficiency, bankruptcy probability) changes as the price (wage, interest rate) changes, excess supply or demand may persist without any tendency for prices (wages, interest rates) to move to correct the market imbalance.

(Stiglitz 1987:7)

As for price rigidities, one of the explanations Stiglitz refers to is the one based on the assumption that customers are imperfectly informed about the characteristics (i.e. the quality) of products. He stresses, for instance, that in such conditions the reason why firms may not lower prices in the face of a downward shift in the demand for their product is that to do so might be interpreted as a signal of a deterioration in quality (Stiglitz 1984:351, 1987:38). Other explanations that Stiglitz provides for the phenomenon of price rigidity are based on costly search and kinked demand curves, on the one hand, and recent developments in oligopoly theory, such as those on

limit pricing, entry deterrence and collusive behaviour, on the other (Stiglitz 1984).

An important point to note about Stiglitz's reference to oligopoly theory is that, like Malinvaud, he is aware of its complexity; that this theory does not easily lend itself to providing insights into macroeconomic behaviour 'because of the plethora of possible patterns of interactions of firms in oligopolistic markets' (1984:353). However, instead of refraining from using it, he goes on to suggest that it creates no special difficulty as there is no need to claim 'that a particular oligopoly model describes behaviour in all oligopolistic industries; only that it provides insights into the behaviour of some' (1984:353).

## Hahn

### *The 'understanding' method*

Hahn's approach is another significant step in the evolution of the debate on the microfoundations of macroeconomics. In line with the other microfoundations theorists, he starts by calling into question both 'pragmatic' macroeconomics (he is one of the strongest critics of models like IS-LM, which he labels 'arithmetic') and 'pure theory'. For example, Hahn clearly believes that the project to extend the explanatory power of the standard general equilibrium to money and expectations is doomed to failure. Moreover, like the Disequilibriumists and Stiglitz, he objects to a key postulate of 'pure theory', such as the direct forces paradigm, by stressing that the price mechanism does not work smoothly to clear all markets.

However, Hahn departs from these theorists in the positive side of his contribution. Unlike them, he comes very close to conceiving a research project which is as ambitious as the one underlying 'pure theory' itself. He even goes as far as to account for money and expectations in general equilibrium terms. This view is in line with Hicks's *Value and Capital*, which Hahn regards as a key source of inspiration: 'There can be few books which have had as much influence on the course of economic theory not only in the years which immediately followed its publication but to its day' (Hahn 1994: 17). The crucial point to stress, however, is that he refers to a quite different version of general equilibrium with respect to Hicks.

Hahn begins by regarding the Arrow and Debreu version of Walrasian general equilibrium theory as the benchmark of his analysis. He stresses that although this model is not of any descriptive value, as it implies that all transactions occur at a single initial date and there is no room for money (e.g. Hahn 1984b:2), it plays a significant role in macroeconomics for at least two reasons. The first is that it sets the standard of rigorous analysis. Even departures from it must be dealt with in the same rigorous fashion as the Arrow-Debreu model itself. This is the reason why Hahn advocates the

adoption of a method which is closely related to that underlying ‘pure theory’, a method which he calls ‘understanding’. The latter rests on three canons:

- 1 Atomism, meaning the reliance on the axioms of individual rationality in theorizing about the agent; in line with *Value and Capital*, he argues that macroeconomics cannot be regarded as a separate subject dealing with a set of aggregates models, but is simply ‘the project of deducing something about the behaviour of such aggregates as income and employment from the microtheory which we have’ (Hahn 1982a:311).
- 2 The constructive method or reductionism, the attempt to locate explanations in the actions of individual agents.<sup>10</sup>
- 3 The need for some notion of (general) equilibrium (Hahn 1984a:1–2).

The second reason for using the Arrow-Debreu model is that it prompts the relevant questions: ‘if market economies do not deliver their Arrow-Debreu fruits the explanation must be sought in those features of actual economies which do not appear in that construction’ (Hahn 1984c:3). Among these features, for Hahn as for Hicks, expectations and money play a predominant role. He is aware that to account for them is no easy task since it entails dropping some of the assumptions which underlie the Arrow-Debreu model.

### *Departures from the Arrow-Debreu model*

Hahn stresses that to make sense of money and expectations there must be some coordination failure in the system; there must be a lack of mechanisms by which intertemporal decisions can be coordinated (e.g. Hahn 1982c:124). This view implies the rejection of one of the main assumptions of the original Arrow-Debreu model, namely the complete markets assumption, which states that there are markets for all goods.<sup>11</sup> For a coordination failure to occur, some of these markets must be absent: ‘some of the disorders of a capitalist society which Keynes considered can be traced to the absence of some of these Arrow-Debreu markets.’ (Hahn 1981:73).

Markets may be missing for many reasons. Among these, Hahn mentions the existence of factors such as asymmetric information— ‘when agents have different information, some of the required markets cannot exist’ (1981:81)—and transaction costs— ‘if exchange is costly...then certain markets will not open because it does not pay to do so’ (ibid.: 73)—which also figure in partial equilibrium stories à la Stiglitz. Indeed, Hahn’s contribution is to show that a general equilibrium perspective is the proper setting for discussing the role of these factors.<sup>12</sup> He then goes on to analyse the consequences of this lack of markets. In the first place, there will be trading at every date, and agents will have to form expectations about the future:

Once these markets are incomplete, rather terrible things happen to the theory. The economy will now have trading at every date...we are dealing with a sequence economy. Agents' actions at any date will now depend on their beliefs concerning future events...and on the prices which will rule *given these events*.

(Hahn 1981:81; original emphasis)

So far, Hahn's views do not differ from Hicks's or from those of New Classical like Lucas. But the next step in his analysis leads him to break new ground in the realm of general equilibrium theory. In particular, he notes that if there is a coordination failure due to the absence of markets, agents will find the assumption of perfect competition falsified. For instance, they will be rationed: i.e. they will not be able to sell or buy as much as they want. Moreover, in the absence of an auctioneer that sets the prices they will also have to make decisions about price and wage changes (Hahn 1977:186). This is a major departure with respect to Lucas's and Hicks's 'pure theory'. Dropping the assumption of perfect competition actually implies the rejection of the third postulate of this theory: i.e. the direct forces paradigm.

Hahn underlines that an important feature of an imperfectly competitive economy is that it exhibits intrinsic externalities: i.e. situations in which the actions of any one agent affect others.<sup>13</sup> In order to stress their significance, he draws on analogies with game theory. He notes that a widely used concept of the latter, like Nash equilibrium, displays externality: agents have chosen their best strategy given the strategy of others. This perspective prompts him to make a few significant innovations with respect to other Keynesian microfoundations approaches.

### *A critique of other microfoundations projects*

The first innovation concerns the theory of money. Hahn agrees with Stiglitz that the attempts carried out so far to account for the role of money in a general equilibrium perspective are unsatisfactory. However, unlike Stiglitz, he stresses that money matters in modern economies and must be dealt with in systemic terms by taking the missing markets issue into due consideration. Hahn's crucial point is that there is no need to regard standard general equilibrium analysis as the only possible type of systemic approach. The theory of externalities provides a plausible alternative.

Hahn's second innovation is to reject the view of macroeconomics as a distinct or *ad hoc* discipline with respect to full-blown general equilibrium theory. In contrast with Disequilibriumists and New Keynesians, he sharply criticizes the very project of providing microfoundations for macroeconomics. As he puts it: 'such a project is absurd—what exactly are we asked to provide

foundations for?’ (Hahn 1983a:223).<sup>14</sup> A major reason for rejecting the ‘microfoundations’ approach is that it seems to be internally inconsistent. On the one hand, it implies a kind of holistic view, according to which macroeconomics is an autonomous subject with respect to full-blown general equilibrium theory so that, for example, it can be argued that ‘there are macroeconomic propositions which have been established without reference to the action and interaction of agents’. On the other hand, however, it also implies the opposite view, namely that ‘what we now propose to do is to establish these same propositions by studying these actions and interactions’ (Hahn 1983b:1). According to Hahn, holism is to be rejected. General equilibrium provides the only way of modelling the interaction of rational economic agents.<sup>15</sup>

On these grounds, Hahn criticizes the specific modelling strategies underlying the microfoundations project. First, he rejects the representative agent models built by the Disequilibriumists insofar as they suggest the idea that there are propositions of macroeconomics which are derivable from an agreed body of doctrine called ‘microeconomics’ corresponding to Walrasian theory. In Hahn’s view, it is wrong to regard the latter as synonymous of microeconomics; it is only a particular micro theory. Thus instead of relying, like the Disequilibriumists, on models based on representative agents and standard Walrasian microeconomics,<sup>16</sup> alternative micro theories which are more in tune with Keynes must be developed. As he puts it, ‘it can hardly be the case that models which look on the world as if there were a single firm, a single household, and a single good thereby create some new kind of economic theory’ (Hahn 1982a:311).

Second, Hahn also calls into question the view of macroeconomics as a collection of partial equilibrium explanations held by Stiglitz. The reason why these explanations are unsatisfactory is that they aim at simplicity. According to him, simplicity turns on something that is called ‘insights’ or getting to the ‘essentials’: ‘Simplicity consists in ignoring all matters which are not directly germane to the qualitative result which you wish to establish. For example, simple partial analysis suffices to demonstrate the possibility of a backward sloping supply curve of labour’ (Hahn 1982b:331). He then admits that such simplifications can be useful in that ‘it is only simple models which we can bring to the point of empirical application’ (ibid.: 331). However, he soon underlines the limitations of these simple models. First of all, they lack generality:

In order to know, indeed even to have a feel, that the simple model has yielded an essential insight, the more general theoretical possibilities must be understood. In other words one must be sure that the simplification was not essential to the insight one claims to have gained.  
(Hahn 1982b:331–2)

Second, in its empirical applications the insight derived from the simple model may be far from simple: ‘Thus one only needs a single industry theory to establish that there may be divergencies between private and social cost. One needs a good deal more than that before one could advocate taxes or subsidies to eliminate these divergencies’ (1982b:332). In the end, Hahn draws the conclusion that ‘simple theory can be serious theory; I doubt that it can be sufficient theory’ (ibid.: 332).

The reason why, for him, theorists should not be satisfied with ‘simplicity’ and reliance on ‘insights’ is that he regards formal rigour and internal consistency as the basic prerequisites of economic theory. This is perhaps due to the unreliability or inconclusiveness of other criteria for choosing among theories, such as those based on the role of empirical evidence. In particular, in contrast with Friedman’s ‘as if positivist methodology, Hahn views theorizing in economics as an attempt to ‘understand’ rather than seek predictions:

I view it as an ongoing attempt to bring some order into our thinking about economic phenomena and as the creation of a language in which these attempts can be discussed. I do not expect this activity to reach very many definite conclusions. I shall call the attempt at orderly thinking the attempt to understand. It is plain that we can claim understanding of an event without claiming that we can predict it...there are very many elements which enter into the explanation of an event. This in turn hinders prediction and so also falsification. In economics it is certainly hard to think of any theory which has been conclusively falsified.

(Hahn 1984a:4–5)<sup>17</sup>

Hahn’s commitment to this view is so strong that he claims that unless macroeconomic propositions, including clever ‘insights’ such as those of the *General Theory*, are properly ‘understood’ —i.e. given an orderly and coherent explanation in terms of the first principles and general equilibrium—they should never be used to provide answers to more practical questions and make firm policy suggestions.

However, despite these criticisms of ‘simple’ models, Hahn too ends up in practice by building models which somehow lack the required degree of generality due to the great difficulty of achieving ‘results’ (i.e. the successful demonstration of propositions) on the grounds of his approach. He stresses, for example, that general equilibrium explanations are technically so demanding that they place very strong restrictions on theorists’ modelling strategies. On the one hand, he notes that his attempts to build non-Walrasian theories have to rely on departures from the Walrasian setting which are only minimal. On the other, these departures are not ‘cumulative’: i.e. they are not carried out simultaneously but only one at a time. In Hahn’s view, the achievement of a descriptive theory of a Keynesian kind is best

regarded as the development of a sequence of ‘reforms’ of the original Arrow-Debreu model (Hahn 1973b:141), a view which is not so unlike Stiglitz’s placing the emphasis on a sequence of partial equilibrium reforms.

This piecemeal stance explains why Hahn regards his non-Walrasian approach as still being rather ‘primitive’ in comparison with the standard Walrasian approach underlying the New Classical models: ‘I have tried to give some alternatives, but I confess that they are primitive. The Lucasians have the advantage of a well-worked theory of competitive equilibrium’ (Hahn 1982d:106). Only in the future will this gap perhaps be closed:

Of the two models the Walrasian is theoretically more securely based because a great deal of very good work has gone into its making. But the non-Walrasian construction is sufficiently coherent to warrant the belief that it can in due course be as polished and as rightly knit as its Walrasian competitor.

(Hahn 1980:293)

### *Critique of the fix-price method*

Hahn’s third innovation concerns the critique of the fix-price assumption. In his view, several aspects of this assumption must be called into question. The first is that it does not explain prices on the grounds of agents’ decisions. On this point, his critique is not unlike Stiglitz’s. However, Hahn departs from the latter in one important respect, seeking to deal with the issue of price rigidities in such a way as to be consistent with Keynes. In order to accomplish this task, he makes an important change in terminology. He is aware that, strictly speaking, the *General Theory* is not about rigidities as shown, for example, by Chapter 19, where money wage flexibility is considered, or Chapter 21 where the price level is determined by aggregate demand and supply. Hahn thus seeks to make his analysis compatible with price flexibility. Instead of simply talking about exogenous or endogenous price rigidities like Stiglitz, he uses the term ‘rigidity’ only to refer to Disequilibriumists’ fix-price method which provides no explanation of rigidities. He talks about ‘flexibility’ instead when referring to the endogenous explanation of these rigidities. As he puts it: Prices are flexible when there are no obstacles to price change when it is to someone’s advantage to do so. More formally, prices in a given theory are flexible when their formation is endogenous to the theory’ (Hahn 1982d:49). On these grounds, Hahn is thus able to point out that the fix-price method is certainly an un-Keynesian feature, as in the *General Theory* the limited downward flexibility of wages is not a matter of assumption, but the result of agents’ behaviour (e.g. workers’ concern for their relative wage). In other words, for Keynes wages are not rigid but flexible.

Another objectionable feature of the fix-price method for Hahn is that it leads one to regard price and wage rigidities as causes of unemployment:



[This method] is something of a sledgehammer and cannot on its own lead to an adequate theory. If the 'Keynesian Revolution' had consisted of a model of fixed prices it would not only not have been a revolution, it would have been a banal account of current opinion. Keynes's contemporaries (e.g. Pigou) were agreed that the unemployment of the 1930s was due to what they called rigid wages and prices. They did not need Keynes to support them.

(Hahn 1984b:17)<sup>18</sup>

Hahn thus holds that the Disequilibriumists miss Keynes's crucial view that even if wages and prices were flexible matters they would not be better for the economy: 'he maintained that even if money wages were not fixed...it would not help the unemployment situation or if it did would do so only uncertainly and very messily.' (1984b:17).

In the end, Hahn criticizes the fix-price assumption for its failure to demonstrate the existence of out-of-equilibrium adjustment processes which can be shown to be grounded in rational behaviour (e.g. Hahn 1977). In his view, this is not only the Disequilibriumists' fault. It reflects a general problem which arises whenever the working of the price mechanism is treated as a postulate. In particular, the standard model relying on the direct forces paradigm also faces the same problem. Hahn is led, for example, to criticize New Classical theorists like Lucas for relying on the assumptions of uniqueness and stability of equilibrium which cannot be shown to derive from the first principles (Hahn 1983a:223–4). He points out that Lucas's model considers only situations in which the invisible hand has already accomplished its task, focusing only on equilibrium states. But this is only half the story. Lucas does not provide any theory derivable from the first principles of how Walrasian equilibrium comes to be established. In particular, in his model there is no theory of price and wage formation; even if prices are flexible:

They are not properly endogenous to the fundamental theory, because there is no theory of the actions of agents that explains how prices come to be such as to clear Walrasian markets. It is an article of faith...they always do so... But I do not find it helpful to have a central problem of economic theory, and indeed of economic policy, treated in this way. However, I also readily admit that it is easier to live by faith, and that at the moment a fully worked out theory of price (and wage) formation is not to be had.

(Hahn 1982d:49)

### *On Keynes*

As this summary of his methodology shows, Hahn makes many references to Keynes. It is important to note that his innovations with respect to other

microfoundations approaches find their counterpart in his interpretation of Keynes. Hahn draws a sharp distinction between the insights contained in the *General Theory* and the Neoclassical Synthesis. On the one hand, he argues that the short-run Walrasian equilibrium approach built by such a school leaves a vast part of the *General Theory* unaccounted for. More specifically, it fails to make sense of the Keynesian dependence of agents' choices on quantities as well as on prices (e.g. the consumption function and the demand for money) (Hahn 1977:177).

On the other, Hahn notes that Keynes cannot be made fully responsible for the gap between micro and macroeconomics created by the Neoclassical Synthesis. For example, he underlines that over two-thirds of Keynes's book consists of microeconomic propositions (Hahn 1973a:64). However, like Stiglitz, he too admits that Keynes is not completely innocent. The point is that he never manages to get his micro theory to mesh properly with the rest of what he has to say. In his view, this failure is due to the fact that Keynes accepts the assumption of perfect competition and, more in general, retains a Marshallian foundation, which accounts for the rather slack or 'lazy' analytical style of his book. He points out, for example, that:

Keynes deals essentially with a Marshallian 'representative or average' agent and that is reflected in the work of practical men when they speak of say 'the investment of manufacturing industry' or of 'the savings of the private sector'. This of course is a drastic shortcut and it leads to macroeconomics that envious air of sound common sense. But certainly one must ask whether such a short cut is justified and...whether it will lead to significant errors.

(Hahn 1973a:65)

Let us now focus on some of Hahn's reforms, made to demonstrate Keynes's basic insights, such as the notion of bootstrap equilibria, the possibility of involuntary unemployment, the responsiveness of agents to quantity as well as price signals and the role of money, on the grounds of the theory of externalities.<sup>19</sup>

### *The notion of bootstrap equilibrium*

Hahn points out that this notion is best defined in contrast with the standard notion of equilibrium which applies to an Arrow-Debreu economy, fully described once tastes, endowments and technology are given. He thus points out that 'such an economy may have multiple equilibria but they are all Pareto-efficient which is another way of saying that the market in no way distorts the underlying reality of the economy' (Hahn 1984b:8). The notion of bootstrap equilibrium refers instead to 'states of the economy which are sustained by mutually consistent expectations which obscure the underlying

reality of the economy' (ibid.: 8). Thus bootstrap equilibria may not be Pareto-efficient.

The important point Hahn emphasizes is that, while orthodox theorists hold that states which are not Pareto-efficient will not persist, as agents will recognize the possibility of mutual improvement and will exploit it, this is not the case for Keynes. The existence of an externality generated by the state of bootstrap equilibrium may prevent price signals from bringing about Pareto-efficient allocations. As Hahn puts it: 'I may realize that the path of the economy is a Pareto-bad one. But how do I get off it? If other agents' expectations are given and being fulfilled the wisest course for me may be to stay on the track' (1984b:8). In other words, Pareto-improving moves may fail to be undertaken due to the externality generated by the equilibrium requirement of correct expectations. 'For what is a correct expectation for us depends on the expectations of others' (ibid: 9). In Hahn's view, had Keynes written twenty years later, he would have accepted the following summary of one of his main insights: 'that there were co-operative equilibria which Pareto-dominate the non-cooperative outcome of a market economy' (Hahn 1984a:16). He would have regarded government as a surrogate for cooperation, for internalizing the intrinsic externalities.

### *Agents' responsiveness to both price and quantity signals*

To avoid the flaws of the fix-price method, Hahn tries to build models which account simultaneously for both unemployment and endogenous price setting. One of his favourite models relies on the notion of conjectural equilibrium, which attempts a general equilibrium analysis of non-perfect competition. The crucial insight behind this notion is the following: if it is true that agents observe not only the price but also the amount they can trade, they then must consider whether they can affect the limitations on their trading by offering to trade at different prices. This means that, as in monopolistic competition, they have to make conjectures about the demand curve for their product.<sup>20</sup> Given their conjectures, agents choose price and quantity offers to maximize their utility. On these grounds, Hahn describes a conjectural equilibrium as 'a state of the economy such that actions of agents are compatible and such that, given the conjectures, no price can be advantageously changed by an agent' (Hahn 1977:186, 1978, 1989a). One implication of Hahn's concept of conjectural equilibrium in a general equilibrium context is that an agent's conjecture 'must refer to the reaction of the whole economy to the action of the conjecturing agent' (Hahn 1989a:102). This amounts, for instance, to assuming that firms can correctly calculate general equilibrium responses to their actions.

An important question which arises is the source of conjectures. If these are taken exogenously, as Hahn points out, many states might be

conjectural equilibria. However, in this case it can be argued that not much has been gained, and almost any action might give rise to a conjectural equilibrium. For this reason, ‘one may feel that conjectural equilibrium requires that conjectures are in some sense correct, “rational”’ (Hahn 1989a:99). However, Hahn also admits that conjectures ‘may not be derivable from some first principles of rationality’ (ibid.: 105). In particular, he notes that, ‘it seems to me quite proper to find their description in history’ (ibid.: 105).

### *Involuntary unemployment*

Hahn shows that the notion of conjectural equilibrium is able to account for situations of involuntary unemployment. The latter simply means that ‘at the going wage and prices the agents would wish to supply more labour’ (Hahn 1977:187). In order to explain why, in these conditions, the wage is not reduced, Hahn assumes that money wages are quoted by the sellers of labour and that they make conjectures about the demand for their labour. In particular, households hold beliefs as to how their ration of labour would respond to a change in the wage they quote. He thus points out that if a conjectural equilibrium is reached, then it will be a non-Walrasian unemployment equilibrium in which ‘the wage is neither fixed, nor arbitrary, nor inflexible. It is what it is because no agent finds it advantageous to change it’ (1977:187).

Hahn also provides alternative rationalizations of both involuntary unemployment and limited downward wage flexibility. One of these focuses on Keynes’s argument that workers care about their position in the wage distribution as well as about their actual wage. While finding it very persuasive, he argues that it is not complete; another part of the story must be added:

Now suppose that a worker would prefer to work than not to work at a wage lower than the one now prevailing *provided* all other wages were lower as well but not otherwise. There is then a ‘kink’ at the *status quo* of the wage distribution...a feature required for Keynes’s argument but neglected by him. This situation would not entail rigid wages. Instead it would mean that over a range the unemployed would be unwilling to lower their wage relatively to that of other workers. It is once again a case of externality.

(Hahn 1984b:11–12; original emphasis)

Hahn stresses that, once again, we need collective action to realize a potential Pareto-improvement as the money wage will not be lowered by any single worker and the Classical adjustment mechanism will not take place. In particular, if all workers agreed to lower wages jointly:

or if the authorities simply increased people's cash balances then the same Pareto-superior higher employment state can be attained. There is thus here a failure of the Invisible Hand and if Keynes is about anything he must be about that.

(Hahn 1984b:13)

Hahn believes that a disadvantage of Keynes's argument is that it cannot be easily incorporated into a general equilibrium model (Hahn 1984c:3). He then tries to provide alternative justifications for the phenomenon of the limited downward flexibility of wages which do not suffer from this deficiency. One of these is based on the lack of coordination between firms in wage reduction (*ibid.*: 6–7). Another turns on the notion of 'fairness', with Hahn, for instance, assuming that workers cannot set economy-wide wages by means of a monopolistic agreement:

Once a worker offers to work at a wage different from that prevailing it is every man for himself. 'Fairness' concerns the agreed rule when it is permissible to start such a process. The rule is...agreed before the economy opens. The rule may be against the self-interest of a worker at the beginning of the second period but he adheres to it because it could also have been in his interest to respect it and when the rule was agreed he did not know on which side he would be. So fairness here is a trigger rule: it decides when individuals can follow their self-interest in not adhering to the given wage.

(Hahn 1984c:10)

This citation reveals a basic feature of Hahn's approach which is in line with Stiglitz and Solow. In the 'fairness' explanation of limited wage flexibility, he appeals not just to the assumption of maximizing behaviour under the standard constraints (e.g. the budget constraint and prices). He also specifies some further constraints and objectives of agents' behaviour: e.g. the fact that they have to deal with an agreed rule. In other words, for Hahn as for New Keynesians, what makes for an explanation is not simply the fact that at any moment agents do what they prefer to do (i.e. maximize), but also the specification of what agents can do. These specifications may change according to the problem at hand and reflect exogenous factors, such as observed phenomena, institutions and conventions. Here is just another example of this kind of approach. When dealing with the explanation of unemployment equilibrium, Hahn notes the role of such elements as unions, social actions and training costs in posing constraints on maximizing individual behaviour:

If an unemployed worker cannot accept a lower wage without union agreement...and if an employer cannot lower the offered wage without courting a costly strike then everybody may be doing what they prefer

and yet the offers to work at the current wage can exceed the demand for such work.

(Hahn 1984c:10)

It would be wrong, however, to draw the conclusion that Hahn relies on exogenous constraints or rigidities, like the old Classical and the Neoclassical Synthesis. Unlike the latter, he seeks to show that each rule set by institutions or conventions is a kind of social Nash equilibrium, and thus that it is in agents' interest to adhere to it.

### *The theory of money*

Hahn argues that the theory of externalities can also account for the role of money. He criticizes the approach based on the so-called Clower's rule that 'only money buys goods', which seems to give money a job to do and says something about the 'technology' of exchanges. In his view, the problem with this rule is that it 'assumes what should be explained. For the requirement that only money buys goods is simply a postulate, and one that makes sense only if money indeed has a positive exchange value' (Hahn 1982d:21). He then suggests that Clower's rule must be shown to be a social Nash equilibrium rather than a postulate. The best way to do so is to focus on the institution of fiat money and enquire into the circumstances that make it a stable institution: i.e. that allow it to survive. He notes that a good starting point is Tobin's remark that money is like language:

My speaking English is useful insofar as you do also; just so, money is acceptable to me provided it is acceptable to you. One can think of this argument as a Nash equilibrium. Once there is a rule that transactions should proceed via money, it is not advantageous for an agent to attempt to deviate from this rule. Moreover, the rule ensures its own viability, in the sense that, if it is adhered to, money will have positive exchange value even when there are rival assets.

(Hahn 1982d:21–2)

It must be noted, however, that Hahn very honestly admits—in line with his self-critical stance about the deficiencies which undermine his approach—that besides these informal remarks, there is no rigorous demonstration that Clower's rule is indeed a social Nash equilibrium.<sup>21</sup>

### **Critiques from a Classical standpoint**

The main objection to the New Keynesian microfoundations approach is that its departure from 'pure theory' is too weak. This weakness, which undermines the New Keynesians' attempt to compete with the standard paradigm, has to

do with the core of their research programme. This tries to achieve two key goals. The first is negative: the New Keynesians criticize the standard paradigm by rejecting the direct forces postulate. The second is constructive: these authors seek to build an alternative approach capable of reconciling the ‘first principles’ of rational behaviour (which the New Keynesians share with the New Classicals) with the non-market clearing results of Keynesian theory. For this purpose, they seek to transform those factors which appear as imperfections or deviations from the standard postulates into ‘normal’ or equilibrium phenomena. The programme is unsuccessful, however, and New Keynesians fail to achieve either of these goals.

There are two points to note. In the first place, it has to be said that their critique of the standard paradigm—virtually saying that Classical theory should be dropped because it relies on postulates—is not valid. In the second place, it can be shown that, instead of providing an alternative paradigm, the New Keynesian research programme can actually be reduced to the old one.

*On the role of a postulate concerning the price mechanism  
in macroeconomics*

The reason why the New Keynesians’ critique of ‘pure theory’ is not valid is that it seeks to separate the auctioneer from the ‘first principles’. This move appears to be self-defeating, and fails to pave the way for a new macroeconomics built upon the ‘first principles’. The New Keynesians do not seem to realize that the introduction of the auctioneer to the standard paradigm—i.e. the idea that flexible prices are just assumed to grant equilibrium—is not an *ad hoc* aspect which can be removed at will, leaving the ‘first principles’ intact, but is a necessary simplification in the way of achieving one basic result: namely, to provide a unifying picture of the economy as a whole on the grounds of these principles. In other words, it can be argued that, from the standpoint of ‘pure theory’, the mistake of these theorists is to confuse pragmatism with necessary simplification.

One could certainly agree, for example, with Hahn’s critique of the pragmatic choices made by the American Keynesians and the New Classicals: i.e. that they are unable to solve the problem of incorporating money and expectations into general equilibrium. However, he is wrong to drop the direct forces postulate in order to find a solution to this problem. This postulate, arguably, is not the cause but the consequence of the impasse faced by Classical theory. The following points should be considered. First, as noted before, the true reason why this theory is unable to accommodate money and expectations and forced to be pragmatic is that it accepts atomism and the constructive method. Second, while Hahn rightly stresses the crucial role of the idea of stability in Classical theory, he is wrong to claim that it should be rigorously demonstrated. It seems clear that without a complete theory of money and expectations, the tendency of disequilibrium states to converge

towards full employment equilibrium can only be a matter of postulate to be accepted on the grounds of pure ‘faith’. The use of the auctioneer in Classical theory thus actually appears as a necessary ‘defensive’ move for it allows drastic simplification of stability analysis. Third, Hahn’s critique thus has one paradoxical, and certainly unintended result; namely, that it removes not the obstacles that impair the generalization of the basic general equilibrium model, but the model itself. It is arguable that this is not a fair critique of Classical theory. Ruling out general equilibrium theory altogether could only be justified if it were considered quite simply wrong. However, it seems more correct to do as Keynes does and regard this theory as being limited rather than wrong, just like its Newtonian counterpart. In particular, while it is incapable of accounting for money, expectations and business cycles, it does make substantive propositions which have their field of application under given circumstances (e.g. full employment).

Fourth, to demonstrate how equilibrium is established on the grounds of the standard principles of behaviour is not only a very difficult task, but also goes against the basic view—maintained by Keynes and the Classics alike—that macroeconomics is the study of the unintended outcomes of individual choices. Reducing the working of the price mechanism to a postulate implies recognizing its impersonal character, the fact that it cannot be reduced to agents’ voluntary choices, as clearly implied, for example, by Smith’s invisible hand metaphor. The auctioneer in general equilibrium and the aggregate psychological data in Keynes’s theory are alternative ways of stressing that the coordination issue is exogenous to macroeconomic theory and must be taken as a postulate. The true challenge for a critic of Classical theory is to replace the direct forces postulate not with a demonstration of how the equilibrium price system is established, but with another postulate which stresses the non-market clearing role of prices, without taking them as rigid.

### *Why New Keynesians fail to provide an alternative paradigm*

That the direct forces postulate is essential for building macroeconomics on the grounds of the ‘first principles’ can also be confirmed in negative terms by assessing the main options which New Keynesians have followed after dismissing that postulate. It can be shown that none of them is actually capable of providing an alternative macroeconomic framework. The first option is to rely, like the Disequilibrists, on the fix-price assumption. This option seems correct in that it recognizes that the working of the price mechanism must be taken for granted in macroeconomics; that it cannot be made endogenous to the analysis without calling into question the degree of simplification required by this discipline. However, there is no doubt that the fix-price assumption is implausible, although not for the reason that it is a postulate, as Stiglitz and Hahn seem to think. It is implausible because it violates one basic stylized



fact of capitalist economies, and one which was certainly not neglected by Keynes: namely, that prices in general are flexible (although only to a varying degree and they do not always grant equilibrium).

The second option, followed by Hahn and Stiglitz, is to start from the view that the price mechanism does not work smoothly as prices may be rigid, and then to seek to make rigidities endogenous to the analysis. This modelling strategy actually implies the introduction of the imperfect competition assumption in macroeconomics. The problem with this assumption is that it seems to yield only rather negative results. On the one hand, it gives the impression of ruling out the standard paradigm. On the other, however, it cannot be used to construct an alternative paradigm and turns out to be consistent with the old.

Let us start from the first point. There is little doubt that the imperfect competition assumption seems to undermine the old paradigm. It does not simply make the analysis more difficult; it also puts the very existence of the familiar type of macroeconomics at risk. This is made clear by Hicks in *Value and Capital*, where he suggests that dropping perfect competition and adopting the alternative assumption must have rather negative consequences on 'pure theory':

It has to be recognized that a general abandonment of the assumption of perfect competition, a universal adoption of the assumption of monopoly, must have very destructive consequences for economic theory...the basis on which economic laws can be constructed is therefore shorn away.

(Hicks 1946:83–4)

In particular, imperfect competition undermines the possibility of achieving that minimal level of aggregation which is necessary to discuss macroeconomic issues in a Classical context. It is sufficient to note, for example, that it rules out the use of the representative agent device and the derivation of market demand and supply curves, without which it is impossible to focus on more than one market at a time and deal with intermarket relations as any genuine macroeconomic analysis would require theorists to do.

However, it must be noted that this inconsistency between imperfect competition and the standard paradigm is not absolute. It can be argued that the introduction of this assumption in macroeconomics ultimately leaves the standard paradigm almost intact. To see this point we must answer two different questions:

- 1 Why does the imperfect competition assumption fail to provide a new paradigm?
- 2 Why, in the end, can it be reduced to the standard one?

To answer the first question, I would suggest that the most likely explanation for this failure is that New Keynesians make one basic mistake inasmuch as they regard the assumption of imperfect competition as a direct critique of that of perfect competition and thus place the two assumptions on the same footing. Now it can be argued that this move is incorrect as it implies a misunderstanding of the nature of ideal types used in standard theory. As I have pointed out, ideal types are auxiliary simplifying assumptions which are introduced in this theory to solve the problem of transition from the logic of choice to dynamic competitive equilibrium. They have two main features. First, while not being arbitrary constructions, they are not ‘true’ descriptions of the world, but rather hypothetical or pure cases, limiting concepts which overcome all forms of correspondence or necessary linkage between theoretical concepts and reality. I have shown, for example, that the *homo economicus* abstraction takes the rationality postulate to an extreme, purifying it from any unnecessary elements. It follows that ideal types are pure combinations of selected aspects which hardly ever show up in reality. What counts for their validity is not their descriptive adequacy but only their internal consistency. The more they are rigorous and precise, the better they play their role. Second, despite their unrealism, ideal types are not useless. On the contrary, they can still be used as a benchmark to check the rationality of actual decisions in real-world economies. In particular, the behaviour of actual individuals is explained by determining the extent to which it is not ideal or perfectly rational (e.g. because of the existence of imperfections in their knowledge of the data or their irrationality). In conclusion, the ideal-type methodology is based on two stages: the first seeks to establish the pure case; the second to use it as a benchmark to assess real-world economies. The first stage is concerned with basic postulates and abstraction from detail, the second with empirical phenomena and exceptions to postulates.

On these grounds, it is not difficult to see why the imperfect competition assumption is unable to generate new norms. On the one hand, it does not solve the transition problem. As stressed by Hahn, there is simply no alternative general equilibrium model based on imperfect competition. On the other, it is clear that this assumption is not a norm comparable to the case of perfect competition. Unlike the latter, it is not an ideal type because it is used for descriptive purposes in the attempt to build a more ‘realistic’ paradigm. It seems instead to be a rationalization of those empirical phenomena which constitute departures from the ‘true’ norm. In other words, from the methodological point of view, the imperfect competition stories actually refer to the second, rather than the first stage of ideal-type methodology. Instead of establishing new or alternative pure cases, they amount to rigorous formulations of the (potentially endless) factual statements about why real-world economies do not behave as in the pure case. It is important to note that the fact that they are rigorous formulations

does not determine a change in their status. They remain empirical exceptions to the standard postulates and thus play the same role as the informal descriptions of imperfections provided by the old Classical and the Neoclassical Synthesis.

In this light, the failure of imperfect competition to provide a new norm is not surprising. As stressed by Keynes and Einstein alike, what is required to build a new norm is not a list of (factual) exceptions to the standard postulates, but new postulates. From this point of view, the New Keynesian approach is not on safe ground. Suffice it to consider that its postulates concerning individual behaviour are actually similar to those underlying ‘pure theory’.

*Why the New Keynesian approach can be reduced to the standard paradigm*

We can now see why, instead of generating a new macroeconomic paradigm, the New Keynesian approach can actually be reduced to the old. There are two key points to underline here. First, macroeconomics is about market interrelations, and a macroeconomic theory is defined by the kind of market hierarchy it implies. As noted above, this market hierarchy depends on the data upon which a theory is based. From this standpoint, I have reached the conclusion that there are only two basic paradigms in macroeconomics: namely, ‘pure theory’ and Keynes’s theory.

Second, the imperfect competition stories do not directly affect the macroeconomic, inter-market level as they amount to partial equilibrium analyses of the working of individual markets. However, as they rely on the same data as general equilibrium theory (tastes, technology and endowments) they can only refer to the Classical market sequence. This is confirmed, for example, by the fact that New Keynesians like Stiglitz do not differ greatly from standard theory, ultimately regarding the labour market as playing a prominent role in macroeconomic analysis and placing the emphasis on high real wages as causes of unemployment.

There is no doubt that New Keynesians would tend to reject this conclusion. Stiglitz, for example, would probably object that his analysis focuses on real rigidities in an unconventional way (e.g. he stresses efficiency-wage theory) and breaks with the Quantity theory of money. In my view, however, it is not difficult to see that his claim that real rigidities are a problem—i.e. cause unemployment—makes sense only if this theory still holds. Suffice it to note that for real rigidities to become a problem, nominal price rigidities must correspond to real price rigidities. For example, it must be true that, as in Classical theory, the real wage is rigid because the nominal wage is rigid. Now this correspondence occurs only if, on each market, nominal prices are deflated by a constant price level determined by an independent factor, such as the quantity of money, as indeed is implied by the Quantity theory.

### A critical assessment from Keynes's standpoint

The New Keynesian microfoundations approach also neglects Keynes's methodological background and draws conclusions which are inconsistent with the *General Theory*.<sup>22</sup> Although the New Keynesians recognize that Keynes cannot be reduced to the Neoclassical Synthesis, their view that his insights can be expressed in terms of price rigidities is quite misleading. The point is that this view rules out Keynes's analysis of the working of the price mechanism. As I have already emphasized, Keynes does not need to rely on price rigidities to obtain his typical non-market clearing outcomes. While holding that prices do not play a direct equilibrating role, he argues that they are flexible.

The crucial point to stress is that this result cannot be achieved by reasoning in terms of alternative markets forms. Unlike New Keynesians, Keynes's critique of perfect competition does not amount to discussing imperfections or empirical exceptions to the basic postulates. As already noted, this discussion belongs to the second stage of ideal-types methodology and logically implies full acceptance of the first stage where the pure case (e.g. a full-blown Arrow-Debreu model) is established and accepted as a benchmark. It can be argued that the distinctive characteristic of Keynes's approach is simply to dismiss the ideal-type methodology as such. He does not rely on pure cases. In particular, the separate logic of choice which lies at the heart of general equilibrium theory is simply not considered in the *General Theory*, because he calls into question the basic postulate of atomism and the clear-cut distinction between primary and secondary qualities of agents. In his view, agents are rational and may even maximize. However, maximization is not a postulate because agents need to refer to a 'context' of conventions which help them in making their decisions (without determining them to a full extent). For this reason his theory relies on aggregate conventional data which simply replace the reference to the basic parameters of general equilibrium theory, such as individual preferences and technology.

By placing the emphasis on these new data, Keynes manages to obtain at least two important analytical results. The first is to reject the constructive method of orthodox theory and develop his 'theory of principle' approach whereby a monetary economy is the original starting point of the analysis. This means that key properties of this economy, such as money, expectations and conventions, must be taken as given, instead of being explained in terms of the standard postulates as called for by the microfoundations approaches. In other words, according to Keynes, to discuss these properties there is no need to make a difficult transition from the logic of choice expressed in real terms. Indeed, the concept of a 'real' economy no longer makes sense for him. These points are overlooked by the microfoundations theorists, even when they discuss typical Keynesian issues on the grounds of quite

sophisticated types of constructive method, such as the theory of externality. Thus, for example, Hahn's definition of bootstrap equilibrium as a state referring to mutually consistent expectations which 'obscure' the underlying reality of the economy (expressed by the standard parameters) simply misses the point that, for Keynes, there is no underlying reality to obscure. Similarly, his attempt to account for the establishing of conventions on the grounds of the standard postulates of individual rationality (even if used in the context of strategic interaction underlying game theory), simply reverses the problem that lies at the root of the *General Theory*: i.e. he neglects the fact that, for Keynes, conventions arise precisely because agents fail to act according to the standard postulates (see also Howitt 1997:241). Thus they need to be taken as a premiss for analysing individual behaviour, not as just another object of standard choice theory.

The second important analytical result obtained by Keynes following his emphasis on the new conventional data is that he is able to derive a new market hierarchy based on the principle of effective demand. While the New Keynesian research programme based on imperfect competition ends up by accepting the Classical sequence of markets and the Quantity theory of money, Keynes's sequence implies a sharp break with this theory as well as the standard conclusions about the role of rigid wages. Indeed it is the fact that in this sequence the price level is a malleable variable, determined by aggregate demand and supply, that allows him to break the correspondence between real and nominal rigidities which underlies both Classical theories and many New Keynesians' stories. In particular, while New Keynesians like Stiglitz stress that real rigidities are a problem, Keynes manages to reject this view. The point is that even if nominal prices are sticky downwards, real prices may not be rigid because the price level is no longer a constant but a malleable variable.

Two basic conclusions follow from this view. One is that, for Keynes, nominal price flexibility cannot play the same direct equilibrating role as in Classical theory. A fall in money wages, for example, does not imply a fall in real wages as the price level falls by the same amount, and the adjustment in the labour market needs to wait for the effect of the latter on aggregate demand. The other conclusion is that if workers and firms do not control real wages through the money wage bargain as the price level is no longer given, then it is possible to recognize that the key parameters of the labour market (i.e workers' tastes and technology) do not play a causal role in the analysis, and thus to make sense of concepts, such as involuntary unemployment, which are lost in both Classical and New Keynesian theories.

### Concluding remarks

In this chapter we have analysed the New Keynesian approach to microfoundations. Like its New Classical counterpart, it can be called into

question from opposite standpoints. The fact that it dismisses one of the key postulates of ‘pure theory’ (i.e. that flexible prices grant equilibrium), while retaining the other two (the ‘first principles’ and the constructive method), means that it occupies a sort of middle, seemingly rather uncomfortable position between the two basic paradigms of macroeconomics. It is not a convincing alternative to ‘pure theory’. As Hahn and Solow admit, the various partial equilibrium stories built by them cannot really be pieced together. Moreover, these stories are not autonomous from a macroeconomic representation of a Classical kind, as shown by the fact that the authors in question seek to endogenize real price rigidities which only make sense if the Quantity theory holds. Yet the New Keynesians’ neglect of Keynes’s methodological background leads them to draw conclusions—for example, that price rigidity is crucial to achieve his typical non-market clearing results—which are incompatible with the *General Theory*. This view rules out Keynes’s analysis of the working of the price mechanism and his view that involuntary unemployment is the result of wrong values of the aggregate conventional data underlying aggregate demand rather than the result of market imperfections.

## KEYNESIAN MICROFOUNDATIONS II: THE MARSHALLIAN BENCHMARK

In this chapter I conclude my analysis of the Keynesian approach to microfoundations. I deal mainly with two types of contributions: on the one hand, those of Victoria Chick, Davidson and Hicks the elder,<sup>1</sup> all ‘representative’ members of that vast area of economic theory generally labelled ‘post-Keynesian’; on the other, those of Clower, Colander, Howitt and Leijonhufvud who—in some cases, dissatisfied with their early general equilibrium perspectives—are among those who have recently established a ‘post-Walrasian’ research programme.

Despite their lack of homogeneity, it can be argued that these two approaches are to a large extent characterized by a refutation of the general equilibrium model and the adoption of Marshall as a possible alternative reference point for the analysis and interpretation of Keynes. Reference to these authors is important as they also call into question the Neoclassical Synthesis and provide an alternative interpretation of Keynes. In doing so, most of them reject key aspects of standard macroeconomics, such as the direct forces paradigm and reductionism. However, they do not dismiss ‘pure theory’ altogether. In particular, many of them refer in various ways to the standard postulates of individual rationality, although this reference is often tempered by the use of the bounded rationality concept or the emphasis on institutional or evolutionary analysis of market forms in ‘historical time’ conditions.

In this chapter, I point out that these innovations influence the way the authors in question interpret Keynes. Post-Keynesians in particular recognize that he departs from general equilibrium theory. Moreover, they stress that his concepts are relevant for modern economies, although they must be shown to be consistent with suitably revised micro theories. In the end, I also show that these approaches can also be criticized for opposite reasons; from either a Classical or a Keynesian viewpoint.

## Chick, Davidson, Hicks and post-Keynesian analysis

*Critique of 'pure theory'*

Like New Keynesians, the post-Keynesians reject 'pragmatic' macroeconomics. On the one hand, while accepting Keynes's aggregates, they seek to link them to appropriate microfoundations. On the other, they do not subscribe to 'pure theory'. In the first place, there is no doubt that they call into question the direct forces postulate. Davidson, for example, points out that Keynes's theory 'did not rely on assumptions that flexible prices automatically clear all markets (that is the axiom of gross substitution)' (1990: 65). Keynes actually rejects this axiom (asserting that everything is a substitute for everything else), arguing in particular that the substitutability of nonproducible liquid assets with producible goods is approximately zero. This explains why, in the *General Theory*, even if prices are flexible, money is not neutral and full employment is not granted:

In an uncertain world...liquidity provides utility by protecting the holder from fear of not being able to meet future contractual commitments. As long as producible goods are not gross substitutes for holding non producible liquid assets (including money) for liquidity purposes, then no change in relative prices can induce income earners to buy producibles with that portion of income they wish to use to purchase additional security from holding liquid assets.

(Davidson 1994:26)

Other post-Keynesians reject the direct forces paradigm by emphasizing, in more standard fashion, the role of price rigidities. Like the Disequilibrists, Hicks argues, for example, that fixed prices are somehow responsible for Keynes's conclusions: 'Keynes, it seems to me, was usually...thinking in a fixprice manner' (Hicks 1974:73). Similarly, he points out that 'it is only to the markets which are flexprice markets that the equilibrium rule applies. Now it would be quite hard to say, in terms of such a model, that effective demand would determine employment' (Hicks 1980:325). However, unlike the Disequilibrists, he does not regard this method as entirely appropriate for dealing with Keynesian issues: 'I do not deny that this fixprice assumption is a useful assumption, up to a point—but only up to a point. (That I believe, is the most it can have been for Keynes himself. He had far too much experience of speculative markets to swallow the fixprice assumption whole)' (Hicks 1974:23).

Second, post-Keynesians tend to dismiss the general equilibrium model altogether. This does not appear to be a novelty, for example, with respect to New Keynesians like Stiglitz. However, post-Keynesians actually depart



from the latter in that they reject this model not just for descriptive purposes, but also as a benchmark of the analysis. In other words, they also dismiss the first stage of ideal-type methodology, not just the second. This point is emphasized by Davidson in particular, who regards the assumptions of the general equilibrium model as being totally unrealistic. In his view, this is due to the fact that:

All Neoclassical theories presume that the economic system resembles the mechanical systems analysed by nineteenth-century physical scientists. The movement over time of such systems is determined by events and laws existing at the initial instant of time. A presumption of Neoclassical theories is that the future path of the economy is already predetermined by the conditions exhibited at the initial instant.  
(Davidson 1991:33)

Moreover, Davidson criticizes Friedman for stressing that:

the dubious basis of fundamental assumptions is irrelevant, and for presuming that individuals and firms ‘behave *as if*’ they lived in the world that neoclassical theory describes—even though it represents a fanciful description of the world we humans inhabit.  
(Davidson 1991:31–2; original emphasis)

According to him, instead, ‘the purpose of theory should be to make the real world intelligible, rather than to substitute an ideal theoretical world remote from the facts of experience in order to make the analysis easily tractable’ (Davidson 1991:30).

Similar remarks are made by Hicks in his late writings. That he no longer sees general equilibrium as a useful benchmark for the analysis of dynamic issues is made clear by the following claim:

We shall not waste time in trying to find in Keynes’s theory a formal coherence, such as is beloved by General Equilibrium theorists, but which a hybrid...cannot be expected to attain. A uniform dynamic theory, of whatever type, should exhibit coherence; but the Keynes theory is not uniform, because the equilibria of its different markets do not mean the same thing.  
(Hicks 1956:230)

Moreover, Hicks even goes so far as to reject the use of any concept of equilibrium in the analysis of the dynamic issues: ‘A state of equilibrium, by definition, is a state in which something, something relevant, is not changing, so the use of an equilibrium concept is a signal that time, in some respect at least, has been put to one side’ (Hicks 1976:289). It

should be noted, however, that for Hicks ‘equilibrium’ has still the same meaning as in standard theory. This is the reason why he suggests the existence of a gap between ‘equilibrium’ and ‘dynamics’, so that dynamic and historical analysis must necessarily be ‘out-of-equilibrium’. It does not occur to him that there can be a different use of the term ‘equilibrium’, such as Keynes’s, which is compatible with historical time analysis.

### *On the Neoclassical Synthesis*

Following their critique of the general equilibrium model, the post-Keynesians also argue that the Neoclassical Synthesis should be called into question. As Chick pointed out, it is the existence of a few formal analogies between the general equilibrium model and IS-LM that explains why the latter turns out to be an unsatisfactory tool of analysis. In particular, the fact that IS-LM relies on a system of simultaneous equations explains why it is incapable of taking into full account the role of production in Keynes’s theory. This model is forced, for example, to leave out the aspect of producers’ output decisions and the short-run expectations on which they are based (Chick 1983:247).

In his late writings, Hicks also calls into question IS-LM for its reliance on equilibrium theory. After claiming that he has become dissatisfied with IS-LM as a tool of representation of Keynes’s theory— ‘I must say that that diagram is now much less popular with me than I think it still is with many other people.’ (Hicks 1976:289–90) —he calls into question the original version of the model for its reference to equilibrium at a point in time. He now regards Keynes’s theory as implying an equilibrium for a ‘short’ period which is not too short: ‘we shall not go far wrong if we think of it as a year... Much more can happen in a year than in a week’ (Hicks 1980:320). Moreover, he criticizes IS-LM for reducing ‘the *General Theory* to equilibrium economics; it is not really *in time*’ (ibid.: 320; original emphasis). For Hicks, there are parts of Keynes’s analysis—such as his notions of marginal efficiency of capital and liquidity preference—which cannot be dealt with on the grounds of the static equilibrium method underlying IS-LM. He notes, for example, that liquidity preference ‘is not at home with Equilibrium’ (Hicks 1979:86).<sup>2</sup>

In a similar vein, Davidson stresses that Neoclassical Keynesians ‘did not quite understand Keynes’s analytical structure’ (Davidson 1991:17), as is shown by the fact that they reduced its relevance to policy issues and retained the neutrality of money that Keynes rejected. In particular, he criticizes these economists for disregarding many important aspects of the *General Theory*, such as Chapter 17 on the essential properties of money, not to mention the detailed monetary analysis Keynes (1930) developed in the *Treatise on Money* and his (1937) finance motive correction to the theory of liquidity

preference. This is the basis of his conclusion that: ‘By the 1960s, what had evolved as mainstream Keynesianism was so different from Keynes’s corrected monetary analysis that Milton Friedman could correctly accuse Keynesians of championing a theory in which money does not matter’ (Davidson 1994: 110).

### *Postulates of individual rationality*

It would be wrong to believe that post-Keynesians rule out any reference to ‘pure theory’. However, due to their dismissal of general equilibrium, their reference to some of its principles is not direct, but mediated, so to speak, by Marshall, with whom they seem to be more in tune. It is sufficient to note, for example, that Hicks now stresses a few key analogies between Marshall and Keynes:

It would have to be insisted that the Keynes equilibrium, like Marshall’s, is a restricted equilibrium, but it would have to be restricted in another way. It would have to be restricted to the determination of employment, within the period that is under consideration, taking that period by itself. It could be static in the restricted sense that employment, during the period, would not be changing. Though such a defence can rarely have been offered explicitly, it is fully in accordance with the Marshallian pedigree which I have been tracing.

(Hicks 1985:59–60)<sup>3</sup>

It is arguable that this shift from Walras to Marshall implies a sort of weakening of the discipline imposed by general equilibrium analysis on macroeconomics, not its complete disappearance. Some canons of general equilibrium are not always clearly dismissed by post-Keynesians, but they are interpreted and applied in a much more flexible way. It may be noted, for example, that post-Keynesians continue, by and large, to subscribe to the postulate of individual rationality. Chick, for example, finds nothing wrong with standard choice theory. In her article on Clower (1978), she rejects his Dual Decision Hypothesis and claims that to account for Keynes’s insights there is no need to revise standard value theory. Not unlike Klein, she holds that Keynes’s consumption function is consistent with the standard theory of the consumer, which implies that households follow the unified decision hypothesis—i.e. *simultaneously* decide how much labour to offer, on the basis of each vector of prices and wages, and how their income shall be allocated between consumption and saving.<sup>4</sup>

Similarly, in Davidson’s view, one of the key departures of Keynes from the old paradigm is to reject one specific axiom of the classical theory of demand, the gross substitution axiom (e.g. Davidson 1994:27). He does not regard Keynes as breaking with utility maximization as such or with standard

profit-maximization assumptions and does not see problems in using the notion of a representative agent. In particular, he employs the concept of a representative firm in his analysis of Keynes's aggregate demand and supply apparatus, stressing the analogies between Keynes and Marshall (e.g. Davidson 1978: Chapter 3, 1994:24). More in general, he accepts the view underlying other Keynesian microfoundations approaches that the problem is 'to develop a microanalysis consistent with Keynes's macro-approach' (Davidson 1990:65).

On the other hand, however, post-Keynesians tend to subscribe to a weaker notion of rationality than the orthodox one. For example, Chick emphasizes the link between Keynes's conception of rationality and Marshall's emphasis on reasonableness (e.g. Chick 1978:1).<sup>5</sup> The latter does not resemble the notion of substantive rationality which underlies the Walrasian paradigm. Hicks notes, for example, that 'the kind of market form that Marshall was envisaging...is consistent with a good deal of ignorance, not only on the part of the ultimate consumers but on the part of the manufacturers' (1985:50). This is due to the fact that, unlike Walras, Marshall does not ignore time and assumes that prices are set by the latter not only with regard to current demand. Indeed, as Davidson also pointed out:

Real-world producers are, according to Marshall...more perceptive than their Walrasian neoclassical counterparts in recognizing the possibility, in a world of uncertainty, of intertemporally related demand for a product so that a depressed current price will induce consumer resistance to higher prices in the future—a phenomenon which is labelled as 'spoiling the market'.

(Davidson 1978:42)

In developing their microfoundations approach, post-Keynesians also refer to more recent conceptions of rationality which are broadly connected with Marshall's. Hicks, for example, embraces Simon's notion of bounded rationality. One of the points he emphasizes is the need to widen the scope of the standard analysis of agents' behaviour by taking account of both internal and external constraints. For this purpose, he starts by assuming that we can deduce agents' behaviour from introspection as suggested by Hayek, 'asking how we ourselves would behave if we found ourselves in such a position'. He then points out that the relevant question to ask is not simply: "What should I do if I were, say, an ideal consumer?" but "What should I do if I were in that position, *and* if I were the kind of person who is being considered? If I were a medieval merchant, or a Greek slave-owner?" (Hicks 1983b:370; original emphasis). In the second place, Hicks argues that even in more modern applications, the subjective approach does not necessarily lead in the direction of simple maximizing:

The chooser may fail to maximise...just because it is too troublesome...a monopolist may well exploit his advantage by not bothering to get very near to the position of maximum profit than by straining himself to get very close to it...I would not be afraid to maintain that the alternatives to maximisation, in price and production policy, which have been investigated by...Simon and his associates, can, if we desire, be interpreted in this manner.

(Hicks 1983b:370–1)

Davidson, on the other hand, refers to the work of Shackle. He criticizes orthodox microfoundations theorists for refusing to consider that ‘Keynes’s analytical structure may have been based on a different microfoundation in which, as Shackle had so admirably demonstrated, probability theory has little or no role’ (Davidson 1990:65). Indeed, for Davidson, Shackle had the merit of quickly advancing this approach ‘by working almost alone since the 1930s’ (ibid.: 65).

It must be noted, however, that by referring to Shackle, Davidson does not actually link Keynes’s analysis to a notion of rationality which is broader or weaker than the orthodox one. The point is that Shackle advocates a sharp polarization between rationality and irrationality. On the one hand, he regards the former as being expressed by the axioms of standard choice theory. On the other, he regards many of Keynes’s insights about time and decision-making under uncertainty as implying agents’ irrationality. The point is that, in this context, they face crucial decisions which depend only on their subjective conjectures and reasoned imagination.<sup>6</sup> Shackle thus draws the conclusion that ‘time and logic are alien to each other. The one entails ignorance, the other pre-supposes a sufficient axiom system, a system embracing everything relevant. The void of future, but relevant, time destroys the possibility of logic’ (Shackle 1972:254).

Not surprisingly, setting out from this narrow view of rationality, Davidson considers important aspects of the *General Theory*, such as those concerning investment activity or demand money as being ‘irrational’:

In an uncertain environment, the Keynesian perspective recognizes that human economic behaviour may involve either:

- (a) ‘waiting’ —that is, the desire for liquidity, even in the long-run, so as to avoid committing any earned claims on real resources between choice A or B; and/or
- (b) ‘animal spirits’ decisions involving spontaneous and often apparently an arbitrary choice of investments...

In other words, ‘irrational’ demands for liquidity and/or investment are humanly possible.

(Davidson 1991:40)

### *The constructive method*

Another link between post-Keynesians and ‘pure theory’ concerns the constructive method. The point is that, while certainly rejecting a ‘hard’ reductionist stance, post-Keynesians do not always dismiss this method as a matter of principle. On one issue—namely the attempt to explain price and wage formation, in contrast with the fix-price method adopted by the Disequilibriumists—they appear not to differ from New Keynesians such as Stiglitz. For example, in Chick’s (1983) book on macroeconomics deals with the microfoundations of Keynes’s aggregate supply and focuses on such topics as market forms and price-setting behaviour. One of the key aspects of her analysis is to suggest that ‘Keynes’s representative firm is an anomaly from the point of view of established thinking: it is a small “polypolistic” or atomistic firm which operates under uncertainty and therefore is not a price taker’ (Chick 1983:24–5). Hicks, in turn, claims that the assumption of exogenously fixed wages and prices which is made in the *General Theory* is justified by the fact that this book lacks a satisfactory theory of markets (Hicks 1976:291).

However, it is not difficult to see that also on this issue post-Keynesians depart from the other microfoundations theorists in several respects. First of all, even when they apply the constructive method, as in the case of price and wage formation, the emphasis is placed not on endogenous determination of the market structure, but on a kind of descriptive or institutional theory of markets. This is true especially for Hicks. Instead of relying on the standard tools of imperfect competition to account for the significant degree of price stickiness that characterizes modern economies, he prefers to carry through an evolutionary approach to the study of the relevant market structures. His suggestion for a Keynesian microfoundations research programme is to look at ‘labour markets, and product markets to see how they really work, and can work. Not in the same way in all times and places’ (Hicks 1983c:352). This aspect of Hicks’s analysis is also in line with Marshall. The latter too tried to reflect the actual conditions of England at the time when he was writing and did not rely on the axiomatic theory of the firm and market forms which was to flourish after the 1930s. As Hicks puts it:

There has been much discussion about the precise character of the competition that is assumed by Marshall. It is now accepted that his model is not a strict perfect-competition model, like that of Walras. His firms experience internal as well as external economies; they hold

back for fear of ‘spoiling the market’. That is true, but it is also true that in the particular respect that concerns us here Marshall is on the perfect-competition side of the fence. His firms are not ‘price makers’, as we have learned to think firms to be when they operate in an imperfect market. Prices are not set by firms and then altered if they turn out to be ‘wrong’. They are more flexible than that; so they can be determined by demand and supply, by the bargaining of the market.

(Hicks 1985:49–50)

Second, post-Keynesians tend to rule out the application of the constructive method to money and expectations as a matter of principle. While for other microfoundations theorists the failure to apply this method to such phenomena was a kind of compulsory choice due to either the adoption of partial equilibrium analysis (e.g. Stiglitz) or the difficulty of extending the explanatory power of general equilibrium (e.g. Hahn), post-Keynesians appear instead to be much more aware of the intrinsic limits of the constructive method itself. In his late writings, Hicks, for example, forcefully criticizes the distinction between statics and dynamics made in *Value and Capital*: ‘static theory, as presented, was, in the Walras sense, general equilibrium theory; *my dynamics* was an endeavour to push general equilibrium forward into [the Keynesian] field’ (Hicks 1983c:350; original emphasis). The problem with this distinction is that it has inspired the Neoclassical Synthesis in its attempt to carry through ‘the colonisation of more and more of the dynamic territory by “classical” (if Walrasian was classical) methods. At the height of its success, the colonisation seemed to be complete; “Keynes” had been pushed right over the edge’ (ibid.: 350; original emphasis). Based on this critical perspective, Hicks is thus led to reject the standard option of formalizing expectations as probability distributions and give up his early attempts to investigate the role of money within general equilibrium.

These points are also emphasized by Davidson. On the one hand, unlike Patinkin, he rejects the view that money can be regarded as a normal good subject to the standard rules of utility maximization. He stresses, for example, that in Keynes’s analysis agents’ demand for liquidity is a phenomenon which somehow violates the postulates of Classical analysis, for it is a demand for protection against uncertainty:

People ‘know’ that it is always possible to find oneself without a job or income or sales in an economic environment which can turn hostile without warning. If people become more fearful of these possibilities, this increased anxiety can induce a reduction of purchases out of current income. The resulting increase in planned saving is used to buy protection against the unknown by increasing people’s demand for

money and other liquid assets. This reallocation of income from the purchase of producible goods towards liquid assets will invalidate Say's Law.

(Davidson 1991:67)

Moreover, Davidson emphasizes that this kind of behaviour (which can be regarded as 'waiting') is not necessarily a short-run phenomenon as agents may not receive information about which state prevails in the future: 'In the long run, people may still feel ignorant regarding the future and hence want to stay liquid' (1991:51). It is for this reason that Keynes's theory implies a long-period unemployment equilibrium.

On the other hand, Davidson underlines that expectations cannot be made endogenous to the analysis by relying on statistical probability laws as implied by the constructive method. This is the key departure of Keynes from Classical theory. While, for this theory, the economic system resembles the mechanical systems analysed by nineteenth-century physical scientists, and hence obeys immutable laws and implies a belief in the existence of a calculable future (regarded as being risky but statistically predictable),<sup>7</sup> for Keynes and the post-Keynesians this belief underestimates the importance of human error and ignorance of the future. Their emphasis on the difficulty of making decisions by 'rationally calculating the "odds" in a statistically reliable manner based on past observations' (Davidson 1991:38), causes Davidson to make two related points. The first is to stress the role of animal spirits in Keynes's analysis of expectations, in line with Shackle's views: 'For Shackle as well as for Keynes...the economic future is to be created by human actions. Keynes's emphasis on "animal spirits" driving investment decisions requires an autonomous role for expectations' (Davidson 1990:73). Indeed, 'if expectations...are merely the effects of past time series realisations, then expectations *per se* are irrelevant to the study of economics' (ibid.: 74).

The second is to see an unbridgeable gap between economics and physics, and the natural or 'hard' sciences in general:

Recognition that there are no determinable odds for forecasting future profits and losses leads to the inevitable conclusion that there are no constants in economics comparable to the gravitational constant in physics. Economics is unlike physics in that there are no universal immutable rules and laws which govern all possible future economics outcomes. Accordingly, economics can never resemble the 'hard sciences' and the predictions of economists—unlike those of physicists—cannot always be represented with statistical reliability.

(Davidson 1991:39–40)<sup>8</sup>



*On Keynes*

Although post-Keynesians make continuous references to the *General Theory*, in a generous attempt to restore a more correct interpretation of its core propositions after so many years of distortions, they do not, however, regard themselves as simply restating Keynes's views. In the first place, they do not consider his theory as being entirely flawless. Hicks notes, for example, that some of the weaknesses of IS-LM were justified by the fact that the *General Theory* was a hybrid: 'Keynes's theory has one leg which is *in* time, but another which is not' (Hicks 1976:288; original emphasis). He argues, in particular, that it is 'the multiplier theory (and indeed the whole theory of production and prices which is—somehow—wrapped up in the multiplier theory) which is out of time' (ibid.: 289). In the same vein, Chick points out that Keynes is partly to blame for the lack of microfoundations for his analysis: 'Throughout the *General Theory* Keynes was far from explicit about the link between the decisions of individual units and the behaviour of aggregate variables' (Chick 1983:83).

Second, after criticizing the constructive method of 'pure theory', post-Keynesians try to deal with Keynes's insights by developing alternative modelling strategies which are not always closely linked to the *General Theory*. In what follows, we shall deal with some of the specific strategies suggested by Chick, Davidson and Hicks.

*Chick's sequential analysis*

One of the specific critiques Chick raises against the general equilibrium method is that it leads the Neoclassical Synthesis to misunderstand the relation between the different parts of Keynes's theory: 'The approach of the neoclassical synthesis is one of splitting up the theory into components, tinkering with the parts and never quite enquiring whether they still legitimately fit together into a coherent theory at the macroeconomic level' (Chick 1983: v-vi). She then points out that this 'reductionist' attitude to theory is in contrast with the 'holistic' approach adopted by Keynes, according to which the components of his theory are to be treated not as separate parts, but as elements of the whole picture.

In order to capture this picture, in her (1978) article Chick carries out a sequential representation of the economy as a whole, taking into account the relationship between the key markets and seeking to provide the macrofoundations for the analysis of individuals' choices which were neglected by the Neoclassical Synthesis. She starts by noting that, unlike Walras's exchange model of general equilibrium, where everything happens at once, there is no uncertainty and no role for money to play, the *General Theory* 'presents a model of a *production* economy, using *money*, moving through *time*, subject to *uncertainty* and the possibility of *error*' (Chick

1978:5; original emphasis). Chick does not derive her sequence from reasoning about the lack of future markets. She places special emphasis instead on the fact that production takes time and underlines that this fact has two important implications. First, it is an important source of uncertainty for all agents. On the one hand, firms must commit resources before knowing for certain what the demand for the output will be. Thus they have to act on forecasts of demand. On the other, when planning how much labour to offer, households are not sure whether they will be able to sell it. Second, it entails an ordered *sequence* of economic decisions.

In order to make this clear, Chick refers to a unit production period divided into four subperiods. The first concerns the making of plans by households and firms. Chick assumes that both firms and households are maximizing agents. To maximize profits, firms formulate their short-run expectations of costs and demand and determine their output and supply price on this basis. Their output decision determines the demand for labour. In the attempt to maximize utility, households make their plans concerning labour supply, consumption and saving simultaneously on the basis of their expectations of prices and wages. The second subperiod concerns the opening of the labour market. Having pointed out that in the *General Theory* there is no auctioneer to ensure that demand and supply of labour are in equilibrium, Chick follows Keynes 'in assuming that firms can get all the labour they want at the wage they expected to pay' (1978:6). The third subperiod involves the implementation of the plans. In this regard, she stresses that while all production plans can be met, households instead may not succeed in selling all they wish and may have to revise their planned consumption levels downwards. In the end, the fourth subperiod concerns the opening of the goods market:

If firms' expectations are confirmed, output, prices and offers of employment will not change next period. *This is a state of equilibrium.* This state is independent of whether households' expectations are realised or not and regardless of whether the outcome in the labour market represents an optimal division of time between labour and leisure.

(Chick 1978:7; original emphasis)

Two remarks can be made about this sequence. First, it implies an asymmetry of 'power' between firms and households. While firms always get what they want, households do not. They may not be able to sell all the labour they wish and thus maximize their utility from work and leisure. In Chick's view, this asymmetry:

is not imposed *ad hoc*, nor does it rely on monopoly, irrationality, or market imperfections. These might compound the problem, but the

problem is independent of any of these factors; it arises from the sequential nature of decisions inherent in the productive process.

(Chick 1978:20)

Second, the above sequence explains why the states of the economy characterized by excess supply of labour are equilibrium states—i.e. there are no adjustment forces which push the economy towards full employment. In particular, Chick underlines the reasons why, in Keynes's analysis of unemployment, wages do not tend to fall to clear the labour market. A crucial point is that in the *General Theory*:

Households enter the labour market as individual units; collective bargaining plays no part in the analysis. Even if, taken as a group, they might gain by offering to work at less than the going wage, no individual has any incentive to do so. It is to his advantage to seek the highest wage he can get—until he finds that he is one of those whose labour is not required. By this time, however, it is too late. Firms have already got the labour they want. To take on more men is not profitable, even at a lower wage.

(Chick 1978:19)

### *Hicks on wages and prices*

As already noted, Hicks's analysis of price-wage stickiness is developed essentially on the grounds of an evolutionary approach focusing on actual market structures in 'historical time' conditions. He notes, for example, that in modern economies there are at least two sorts of markets. There are markets where prices are set by producers, such as the markets for industrial products, and markets in which prices are still determined by supply and demand, such as the speculative markets. Thus he draws the conclusion that it is wrong when one is constructing a model 'to simplify by assuming just one sort of market... What we need is a theory which will take account of both sorts of markets' (Hicks 1974:23–4).

Hicks then seeks to justify the passage from flex-price to fix-price markets by referring to historical events, such as the fact that producers at a certain stage of the historical process started to take over the mercantile function which had previously been exercised by a class of specialized merchants:

The manufacturers do it directly, the primary producers indirectly, through the formation of their own associations or by selling organisations equipped with political power. This is, of course, the point at which the question of monopoly becomes important. But that, again cannot in general be understood unless we look at *in time*, as

an aspect of the evolutionary process we have been considering. Why is it that the theory of monopolistic competition, or imperfect competition, to which so much attention was paid in the 1930s, now looks so faded? Because it is quite shockingly *out of time*.

(Hicks 1976:299; original emphasis)

On these grounds, it is not surprising that when Hicks explains how prices are made in fix-price markets, he refers not to the maximization postulates, but to firms' conventional practices in actual economies, such as those stressed by the theorists of 'bounded rationality'.<sup>9</sup> Having noted that in fix-price markets, prices have to be 'made' as they are not determined by demand and supply, he asserts that they are likely to be fixed in the short run so as to cover 'normal' costs. The point is that the definition of 'normal' price or cost is not entirely a matter of economic calculations:

Wherever prices have to be made, there is a question how they shall be made. It is much easier to make them, in a way which seems satisfactory to the parties concerned (because it seems fair), if substantial use can be made of precedent; if one can at least start the bargaining from some presumption that what has been acceptable before will be acceptable again. The particular prices which result from such bargains may not be ideal from the point of view of the economist; but the time and the trouble which would be involved in improving them is simply not worth while.

(Hicks 1974:78–9)

Hicks then stresses that such a view holds for both labour and product markets:

It is of course in the labour market that such considerations are of particular importance; but it is by no means only to the labour market that they apply. Any system of prices (a system of railway fare, just like a system of wage-rates) has to satisfy canons of economic efficiency and canons of fairness—canons which it is very difficult to make compatible. So it is bound to work more easily if it is allowed to acquire, to some degree, the sanction of custom— if it is not, at frequent intervals, being torn up by the roots.

(Hicks 1974:79)

### *Hicks's liquidity theory*

After giving up his attempt to introduce money into general equilibrium, Hicks seeks to follow two alternative routes. The first is to carry out the analysis of the evolution of the various functions of money:

One of the chief things which monetary theory ought to explain is the evolution of money. If we can reduce the main lines of that evolution to a logical pattern, we shall not only have thrown light upon history, we shall have deepened our understanding of money, even modern money, itself.

(Hicks 1967:2)

The second route is to analyse agents' choices concerning liquidity in a sequential fashion in order to account for uncertainty. It must be noted that, in contrast with general equilibrium analysis, Hicks makes no attempt to derive his sequential approach from the consideration of missing markets. He just assumes the sequence. This feature seems to be in line with Marshallian partial equilibrium methodology, which allows for a number of exogenous variables that Walrasians would insist on determining within the model.

Hicks starts by noting that the principles of choice, when liquidity is important, are substantially different from those that are considered in the conventional theory of portfolio selection.<sup>10</sup> While the latter applies either in the case when choice has to be made once and for all or in the case when the sequential choices are independent (Hicks 1974:44), liquidity instead is not a property of single choice. It is a matter of sequence of choices, a related sequence: 'It is concerned with the passage from the known to the unknown— with the knowledge that if we wait we can have more knowledge' (ibid.: 38–9). In Hicks's view, this means that liquidity involves a judgement about the future that is not fully expressible in terms of probability calculations as is the standard practice in equilibrium theory (Hicks 1979: Chapter 8). This is due to the fact that an essential characteristic of liquidity is that it is a matter of uncertain expectations:

The expectations relating to April that could be formed in January were uncertain expectations; but when April is past, the experiences relating to April, which have replaced them, are certain. Thus we cannot avoid the transition in the present from uncertainty to certainty; past and future are inherently different, and cannot be 'averaged'. For this reason alone we seem driven to the conclusion that the Equilibrium method, applied to liquidity over a period, will not do.

(Hicks 1979:85)

He also stresses that the holding of liquid reserves is only one aspect of a much more general kind of behaviour:

It is a matter of provision against an uncertain future—not passive provision (like insurance), but active provision, providing oneself with the ability to take action to meet emergencies which may arise in the

future, and which are such that their particular shape cannot be accurately foreseen. Obviously, then, there can be no question of liquidity...in a stationary state. Liquidity is a problem of the economy *in time*.

(Hicks 1976:288; original emphasis)

A major conclusion of Hicks's analysis is that liquidity allows flexibility. An outstanding kind of flexibility is that given by the market:

A firm which acquires a non-marketable asset...has committed itself to a course of action, extending over considerable time, with a fairly narrow band of subsequent choices attached to it... The acquisition of an easily marketable asset, on the other hand, can easily be revoked. There is not the same diminution of flexibility.

(Hicks 1974:41–2)<sup>11</sup>

Hicks also points out the need to account for the existence of various degrees of liquidity. He thus starts thinking about a genuine balance sheet including several assets, not just one that is artificially restricted to money and bonds (as in the *General Theory*). He then focuses on the consolidated balance sheets of the three main sectors of the economy (Monetary Authority, Financial Sector and Industry) and describes the relationship between them (Hicks 1979:96– 100). In the end, he argues that before such a theory could be applied, 'it would need to be interpreted in terms of institutional settings, which vary from country to country, and within each country from one time to another' (ibid.: 100).

### *Davidson on post-Keynesian theory as analogue to non-Euclidean geometry*

With a view to breaking with the constructive method, Davidson, like Hicks, develops his analysis of money as well as expectations by placing the emphasis on institutions. To see this point, it is worth going into some detail about his research programme, which he regards as being strictly linked to Keynes's basic insights. In line with the way in which Keynes characterizes his revolution with respect to Classical theorists (whom he regards as Euclidean geometers), Davidson describes his programme as an attempt to construct a 'logically consistent post-Keynesian macroeconomic analogue to non-Euclidean geometry' (Davidson 1994:11). He starts by noting that in order to make his revolution Keynes had to reject three basic Classical axioms:

- the axiom of the neutrality of money;
- the gross substitution axiom;

- the axiom of an ergodic economic environment, namely the presumption that future economic events can be reliably predicted by studying the economy's past market price data (Davidson 1994:17).

He then stresses that to develop the post-Keynesian analysis that has evolved from Keynes's original logical framework, there is a need to focus on a few 'essential characteristics of the real world which Keynes believed could be properly captured by overthrowing these three axioms' (Davidson 1994:17). It is in the analysis of these characteristics that Davidson makes clear why institutions are important for our understanding of money. In the first place, he stresses the role played by contracts denominated in money terms in modern economies. He notes for example that in the latter:

*Liquidity* is defined as being able to meet contractual obligations as they come due. Since production and exchange in an entrepreneurial system is organized on a money-contract basis, liquidity implies having access to money to meet purchase and/or debt contractual payments as they come due. When the future is uncertain and hence cash-flows over time cannot be reliably predicted, it is quite sensible to demand and hold money and other liquid assets (readily resaleable from money) to protect oneself from being unable to meet unforeseeable net cash outflow commitments.

(Davidson 1994:18; original emphasis)

In his books, Davidson provides an accurate description of the two types of time-oriented contracts—that is, spot contracts and forward contracts—in developed economies, emphasizing the role of the state, which enforces the discharge of contractual commitments and thus provides the public with assurances of the continuity of contractual arrangements between the present and the future, 'an assurance that is necessary if one is going to hold money as a store of value' (1994:102).<sup>12</sup>

*Second, he emphasizes the face that money possesses two essential 'institutional' characteristics which differentiate it from produced goods: namely, its elasticities of production and substitution are zero. The first means that:*

As Keynes noted, unlike producible goods and services that make up the gross national product of an economy labour cannot be turned on at will by entrepreneurs to produce money in increasing quantities as its spot prices rise in response to an increase in the demand for money.

(Davidson 1994:94–5)

The second instead implies, for example, that an increase in the liquidity premium and, therefore, of demand price of nonproducible liquid assets 'will

not divert people into substituting producible goods as a store of value' (1994:95). Davidson thus stresses that, together with the existence of money contracts: 'It is the existence of these two elasticity properties that creates the possibility of underemployment equilibrium in monetary economies' (ibid.: 95).

In the end, institutions also matter for Davidson's analysis of expectations. Despite his emphasis on their volatility, he does not actually believe that nothing can be said about them. He holds, for example, that in the context of an evolving, real-world economy, 'institutions play a significant role in shaping expectations about the otherwise unforeseeable future. Decisions based on these sensible expectations *create* a path along which the economy travels' (Davidson 1991:32; original emphasis). On these grounds, Davidson thus suggests that 'institutions must be designed to support and stabilise the otherwise transient parameters on which the (economic) structure is based' (Davidson 1990:70).

### Colander, Clower, Howitt, Leijonhufvud and post-Walrasian analysis

#### *Critique of 'pure theory'*

Not unlike other microfoundations approaches, the so-called 'post-Walrasian macroeconomics', recently advocated by Colander, Clower, Howitt and Leijonhufvud, among others,<sup>13</sup> also suggests the need to call into question both 'pragmatic macroeconomics' and 'pure theory'. Like post-Keynesians, post-Walrasians reject, by and large, the basic canons of the latter, such as atomism, the constructive method and the direct forces postulate, and dismiss the general equilibrium model as a benchmark of the analysis. As Colander puts it: 'We have called the alternative approach that we are advocating post-Walrasian to set it in distinct opposition to modern Walrasian or neo-Walrasian work' (1996b:2).

In line with post-Keynesians, post-Walrasians regard Marshall as being a more suitable reference point for macroeconomics. They also stress a few key analogies between Marshall and Keynes. As pointed by Clower, for example, in his (1975) paper, where he breaks with his early general equilibrium type of analysis:

Keynes's basic conception of the organization and working of the economic system was Marshallian rather than Walrasian... Discussion of standard microtheoretical problems of households and business behaviour—by Marshall as well as Keynes—tends... to be vague and, by contemporary standards, unsatisfactory. In Marshallian analysis, economic agents are conceived to be not so much rational as reasonable. Individuals fumble and grope rather than optimize. They



are presumed to know little and care less about efficiency except as competition forces them to attend to it. The coordination of economic activities is carried out within particular markets by traders (manufacturers and bankers as well as wholesalers, brokers and retailers) ... As for the coordination of activities among markets, since that is not anyone's specific concern it may or it may not be done well.  
(Clower 1975:8)

This passage summarizes some of the basic features of the post-Walrasian vision. There are three points to note in particular. The first is that Clower seeks to account for Keynes's basic insights. For post-Walrasians, Keynes is correct in believing that 'his was the general theory and the Classical theory was the special case' (Colander 1996a:64). However, they do not follow the method of the *General Theory* closely, as they often regard Keynes as being responsible for specific errors or omissions which undermine his attempt to generate a progressive research programme (e.g. Clower and Howitt 1996:29). The second point is that, in line with many post-Keynesians, the post-Walrasian vision drops the axiom of global or substantive rationality underlying 'pure theory' to place the emphasis on agents' adaptive behaviour in line with the bounded rationality view (see also Colander 1996b:3; Leijonhufvud 1996).

The third point is that this vision, unlike standard theory, regards the coordination of economic activities as a problem to be analysed, rather than as something to be taken for granted due to the intervention of the auctioneer. Concern for this point is a link between post-Walrasians and general equilibrium theorists such as Hahn. Indeed, like the latter, Colander, Clower, Howitt and Leijonhufvud reject both standard aggregate macroeconomics and the use of the representative agent device and insist on the need to develop a systemic theory capable of accounting for both depression and full employment on the grounds of a unified micro-macro approach stressing interdependence among agents. As Colander writes:

Post Walrasian work...gives up the unique-equilibrium Walrasian competitive framework, replacing it with a multiple equilibrium framework. In a Post Walrasian framework disequilibrium adjustment paths can affect equilibrium outcomes and there is no unique connection between individual decisions and equilibrium outcomes. All decisions are conceived as fully interdependent with other decisions.  
(Colander 1996a:60)

Two remarks are in order here. First, as Colander himself admits, this approach is very complex. Indeed, he notes that 'any resulting formal macroeconomic model that follows from this vision is hopelessly complex

from an analytic standpoint, but the problems it describes are intuitively obvious' (1996a:60).<sup>14</sup> Second, despite these broad analogies, post-Walrasians depart from Hahn on one important point: unlike him, they seek to deal with these issues by relying on the bounded rationality view, rather than on traditional choice theory. This makes a major difference with respect to Hahn's perspective on a number of key issues, such as the relationship between the system and its elements and the treatment of money, expectations and conventions.

### *The macrofoundations of micro*

The reliance of post-Walrasians on the bounded rationality view prompts them, unlike Hahn, to call for the 'macrofoundations of micro'. As already noted, this label is not sufficient in itself to characterize a macroeconomic approach, for even 'pure theory' implies macrofoundations for individual behaviour, such as the assumption of perfect competition and the auctioneer.<sup>15</sup> As Colander stresses, for post-Walrasians a macrofoundations perspective means that 'before there is any hope of undertaking meaningful micro analysis, *one must first determine the macro context within which that micro decision is made*' (Colander 1996a:61; original emphasis). The point is that:

The macro context imposes institutional constraints on individual decisions makers, and these constraints must be considered in deriving any microfoundations to macro. Thus establishing appropriate macrofoundations of micro must logically be done before one establishes any microfoundations of macro, and any micro analysis independent of a macrofoundation is irrelevant game-playing.

(Colander 1996a:61)

Strictly speaking, this view is not an absolute novelty with respect to other Keynesian microfoundations theorists. As I pointed out in the previous chapter, Solow, for example, agrees with the macrofoundations perspective so long as this implies specifying the relevant *unconventional* constraints on the individual—constraints, that is, beyond the standard budget constraints and prices. However, by following the bounded rationality view, post-Walrasians make a step towards a new perspective which is not embraced by New Keynesians: namely, the view that macroeconomics is autonomous from the analysis of individual behaviour. As Colander puts it:

The analytic basis of this macrofoundations-of-micro approach goes back to Herbert Simon's work on bounded rationality (1959). Simon

argues that deciding over an entire range of possible choices exceeds the processing capacity of economic decision making units. Because it does, the decision making process has meaning only with a macro context. *There is no one-to-one mapping between aggregate results and individual decisions. Put another way, the aggregate economy acquires a life of its own.* This view of the aggregate economy suggested by the post-Walrasian approach is, in many ways Austrian, since the information processing achieved by the economic system is not directly related to the information processing of individuals.

(Colander 1996a:62; emphasis added)

On the other hand, post-Walrasians are unwilling to accept two other types of macrofoundation perspectives. The first is provided by standard Keynesian aggregate models, which they regard as 'Keynesian macrofoundations'. Colander stresses, for example, that 'the mechanistic multiplier and the modified IS/LM model are naive and misleading. They involve as much a denial of the importance of institutional structure as does the microfoundations literature' (Colander 1996a:63).

The other perspective is that of post-Keynesians, many of whom also subscribe to Simon's approach. According to Colander, both post-Walrasians and post-Keynesians seek to determine an appropriate macrofoundation. The difference is that post-Keynesians adopt an institutional approach in which:

one uses the real-world economy to simulate the reduce-form relationships. Since these aggregate real-world individual decisions are made contingent on the existing institutional structure, empirical observation is the only way to determine a reasonable macroconstrained choice. The work on wage contours and price ratchets falls within this framework.

(Colander 1996a:64)

Post-Walrasians instead arrive at a macrofoundation by relying either on an analytic or on a computer simulation approach. Colander seems to advocate the former. He holds that an analytic approach amounts to suggesting a modified representative agent model. To make this clear he starts by arguing that this analytic approach should be of a multistep kind and seek to replace the one-step analytic approach currently in use:

The first step would be what might be called a 'deductive institutional approach' in which one analyses the rational choice of economic institutions along the lines suggested by Buchanan's constitutional analysis... Those deductively-derived institutions then become the macrofoundation for microeconomic theorizing. This means that the constraints those institutions impose on individuals must be built into

the micro theorizing. Thus, post-Walrasian economics might have a representative agent but it would be a fundamentally different representative agent than used by New neoKeynesians or New Classics. In its conception the Post Walrasian representative-agent would incorporate macro institutional constraints on its behaviour. More likely, it will have a number of representative agents interacting.  
(Colander 1996a:64)

Leijonhufvud instead proposes the computer simulation approach (1996). An important point he makes clear is that the post-Walrasian macrofoundation perspective does not imply a top-down approach, as one might expect. He stresses that this approach actually underlies standard theory. He notes, for example, that: 'Neoclassical general equilibrium theory is...quintessentially "top down". That is why, in the absence of externalities, it reduces to the optimal solution of a social planner's problem' (Leijonhufvud 1996: 42). Post-Walrasian economics instead can be regarded as relying on a bottom-up approach, as it tries to get a handle on such ill-coordinated processes as high inflation or deep depression. It is here that computers come into the picture. In line with the bounded rationality view, Leijonhufvud actually suggests we regard the economy 'as a network of interacting processors, each one with less capability to process information than would be required of a central processor set to solve the overall allocation problem for the entire system' (1996.: 42). In his view, developments in computer science promise to be helpful in eventually implementing a research programme along such lines.

### *The analysis of money, expectations and conventions*

On the grounds of their bounded rationality view and macrofoundations perspective, the post-Walrasians also depart from Hahn in their analysis of Keynesian issues such as money, expectations and conventions. One of the key features of their analysis is to reject the constructive method. Rather than seeking to introduce these phenomena into general equilibrium theory, they regard them as part of the macrofoundational structure of the economy and seek to model them as such. This point is made clear by Clower and Howitt (1996), for example, in their paper on money. They start by criticizing mechanistic approaches to money, by which they mean 'approaches based on choice-theoretic...foundations, and which introduce *ad hoc* interaction mechanisms to guarantee that individuals will automatically "choose" to hold "money"' (Clower and Howitt 1996:23). In their view, what makes these theories mechanistic is the peculiar procedure, now common in economic theory, 'of injecting institutional details only as needed for a desired result' (ibid.: 23). In other words, these theories:

seek to explain phenomena not by arguing that they are the natural outcome of interactions in real-world systems, but by showing that something remotely reminiscent of the facts to be explained can be described using the 'neo-Walrasian code' of constrained optimization.  
(Clower and Howitt 1996:23)

According to Clower and Howitt, the basic problem with mechanistic theories of money, such as the search-theoretic, the cash-in advance and the overlapping generations models, is that they abstract from institutions that create and sustain markets. In particular, 'mechanistic models ignore the obvious fact that every monetary economy is one where markets are organized by business firms, and the bulk of all exchange transactions are with firms, not with other individuals' (Clower and Howitt 1996:26). Thus they emphasize that by recognizing, for example, the fact that these firms rely on trade credit, 'one is led to a very different definition of money' *ibid.*: 26). Indeed, once one takes into account the crucial role of business firms in establishing markets, the misleading role played by the constructive method in monetary theory becomes clear:

We then recognize that the reason why most individuals use money is not that they are balancing choice alternatives in a maximizing mode, but are simply responding to the unwillingness of firms to deal on any other basis (money is 'a passport for entry' into the market sector of the economy).

(Clower and Howitt 1996:26)

There are two points to note about Clower and Howitt's research programme. The first is that it involves a re-examination of the theory of the firm. However, the two authors emphasize that this does not imply a development of a more elaborate theory of decision-making. The point is that they embrace a systemic point of view according to which what matters is not, for example, how firms coordinate their internal activities without reference to markets as in standard theory, but how they create and operate markets and the price system. In other words, what matters in monetary economics is 'the external market-making aspect of the firm that is essential to our understanding of how the overall economic system coordinates the activities of millions of independent transactors, not the internal aspects of individual decision units' (Clower and Howitt 1996:33). The second point to underline is that they emphasize the links between their approach and Hicks's. They note, for example, that Hicks 'recognized the importance of trading firms and organizations in his writings on money' (*ibid.*: 27).

But that is not all. Similar conclusions about money are drawn by post-Walrasians in their analysis of expectations and uncertainty. Howitt, for

example, criticizes the use of the standard constructive method (which he labels ‘neo-Walrasian code’) to account for conventions. He does not deny that this method can, in principle, capture certain aspects of this phenomenon, as shown, for example, by the popular new theory of herding behaviour. However, in his view this approach turns out to be quite misleading insofar as it implies a deep misunderstanding of the role of conventions: ‘a code that insists on modelling all choice as if it were made by rational anticipation of the consequences is an awkward tool...for describing *mechanisms that exist because of the impossibility of such anticipations*’ (Howitt 1997:241; emphasis added). In other words, for Howitt as for Keynes, people fall back on custom and conventions precisely because in the face of uncertainty they are not in a position to act according to standard decision theory (they are unable, for example, to attach numerical probabilities to all the possible consequences of their actions).

In order to overcome the limits of the neo-Walrasian code, Howitt suggests an approach inspired by behavioural or evolutionary economics. More specifically, he says we have to:

treat customs, conventions, institutions and forecasting schemes not as wild animals to be captured in a rational expectations model, but as mere state variables whose initial conditions are given by history, and whose evolution over time is governed by (possibly very random) laws of motion. Behavioural and expectational mechanisms can thus be taken as they exist, without having to torture them into conformity with an alien code, and their consequences taken into account for short-run analysis. The evolution of these mechanisms over time, under the influence of people learning from mistakes, inventing new mechanisms and eliminating mechanisms ill-suited to the historical context, can then play a central role in the observable dynamic behaviour of the economy.

(Howitt 1997:241)

Interestingly, Howitt is aware that this perspective is not strictly in tune with Keynes. There is no doubt that he praises Keynes’s analysis of uncertainty and, in particular, his method for introducing into economic analysis expectational schemes drawn from the real-world economy. He recognizes, for example, that to deal with the issue of self-fulfilling beliefs ‘we need...to borrow from Keynes, who used his own insights and experience of actual behaviour in financial markets to characterize the way people form beliefs’ (Howitt 1997:250). However, Howitt, like other post-Walrasians, criticizes Keynes for sticking to the equilibrium method and failing to pay attention to adjustment problems. He notes, for example, that ‘Keynes himself seems not to have appreciated the inappropriateness of equilibrium methods as a

tool for analysing co-ordination problems; otherwise he would not have used them in his theory of effective demand' (ibid.: 240).

### **Critiques from a Classical standpoint**

The main objection which a Classical economist accepting the 'pure theory' project would raise against these Marshallian research programmes is that they too, like the New Keynesian approach, are unable to depart from the standard paradigm in a fully convincing way. The problems involved are not the same for all the theorists considered in this chapter due to the lack of homogeneity of their perspectives. In particular, it seems useful to make a distinction between the problems which arise from accepting the standard representative agent device and those which arise from subscribing to the bounded rationality view.

#### *'First principles' and alternative macro theories*

As already noted, post-Keynesian authors like Chick and Davidson (at least in the writings considered here) often refer to the representative agent device in their analysis of Keynes. In particular, it seems that while rejecting general equilibrium theory they still attempt to build a macroeconomic approach which is consistent with both Keynesian non-market clearing results and the standard canons of individual rationality. Just like New Keynesians, these authors do not seem aware that separating the 'first principles' from other postulates of 'pure theory', such as the direct forces paradigm, does not grant a consistent macro analysis. Strictly speaking, on the grounds of 'first principles', only one consistent macro paradigm can be built, and that is 'pure theory'. To make this clear, two points have to be stressed.

The first is that the theories of post-Keynesians, unlike New Keynesians, cannot ultimately be reduced to the Classical macro model (and, in particular, to the sequence of markets which this implies). The point is that to criticize the standard paradigm they do not simply place the emphasis on market imperfections, thus avoiding falling into the trap of partial equilibrium stories or piecemeal reforms of this paradigm. Their critique actually amounts to suggesting that general equilibrium theory provides a misleading representation of the economy as a whole, and that it is necessary to develop an alternative global framework, such as Chick's sequence, based on the principle of effective demand. In other words, post-Keynesian analysis suggests that we replace a Classical macrofoundation of a 'top-down' type, such as the auctioneer, with an alternative macrofoundation of the same type, such as the principle of effective demand.

The second point to note is that, from the standpoint of Classical theory, this approach can be criticized because it relies on the unjustified treatment of too many variables, including the principle of effective demand, as

exogenous. When we accept the ‘first principles’, replacing the general equilibrium macrofoundation with the principle of effective demand is no easy matter to explain. In order to make it clear, let us refer to Chick’s sequential picture. She argues that in the *General Theory* this picture, hence the key role of effective demand, is justified by the fact that, for Keynes, in contrast with general equilibrium, production takes time. It is arguable that a ‘pure theorist’ would regard this as a wrong conclusion. The point is that this fact alone is not enough to justify the dismissal of the standard general equilibrium model and the passage to an intra-period sequence, such as Keynes’s. That production takes time may also be easily accommodated within the standard paradigm, provided there are futures markets for all commodities and contingencies, as in the Arrow-Debreu model.

A similar conclusion would seem to hold for another way of justifying the passage from general equilibrium to Keynes’s effective demand theory, namely that emphasized by Davidson. According to him, it is solely the fact that money possesses special institutional characteristics, such as its zero elasticities of production and substitution, that accounts for this passage, and hence for the possibility of underemployment equilibrium. He argues, for example, that this would be true even in a perfectly competitive system. It would appear that, from the standpoint of ‘pure theory’, this claim cannot be accepted either. The point is that if such a system prevails and agents stick to the standard rationality axioms, it is difficult to see why the circumstance that money has special properties should create problems for standard theory. According to the latter, in fact, even if money exists, it is neutral in the long-period equilibrium context as fully rational agents have no reason to exercise a demand for it. Indeed, as underlined by Keynes and Davidson, holding money is simply ‘irrational’ in this context. It is true that Davidson argues that in Keynesian theory agents engaged in activities such as holding money and investment are actually ‘irrational’ from Shackle’s viewpoint. However, in my view, placing the emphasis on agents’ irrationality is not a promising starting point for the construction of a true alternative paradigm to standard theory and for a view of holding money as a normal or equilibrium phenomenon. The point is that irrationality, just like market imperfections, represents only an ‘empirical’ deviation from the benchmark proposed by Classical theory in the first stage of the ideal-type methodology (the logic of choice).

### *Bounded rationality: alternative macro theories*

It can be argued that the reference to the bounded rationality view made by post-Walrasians and Hicks is also insufficient to venture a substantial departure from ‘pure theory’. Three remarks are in order here. First, the bounded rationality view is part of the overall effort made by theorists in recent years to place macroeconomics on adequate microfoundations. Like



many New Keynesians, Simon still regards the business cycle, for example, as being due to price rigidities, and aims to justify these rigidities in terms of rational behaviour. As I have already observed, this view is not a real alternative to the Classical macro theory since it still implies acceptance of the sequence of markets suggested by this theory.

Second, Simon's view may be regarded as not being a real alternative to the standard rationality axiom either. As Hahn and Hollis, for example, note, Simon's view does not imply so much that agents violate the standard postulates as that they behave 'only over a subset of alternatives and of their environment' (Hahn and Hollis 1979a:10). Third, the bounded rationality view opens the way to a kind of indeterminacy. According to Simon, the relevant subset for the agent's decisions is determined by the agent's 'aspiration level', a level which, in turn, has social and psychological determinants. It is only when outcomes fall below aspiration levels that the agent will institute a search of his environment or preferences. As Hahn and Hollis stress, this view 'is descriptively plausible but has not so far proved theoretically useful, since the aspiration levels and the search activities are ill-defined' (*ibid.*: 11).

In my view, this indeterminacy carries over into the post-Walrasian research programme. As Colander acknowledges, the post-Walrasian perspective is indeed too complex. It seeks to combine the macrofoundations idea (that is, the suggestion of the relevant institutional constraints on individual behaviour) with a 'bottom-up' or microfoundations view whereby individual rationality still plays a central role in the analysis, so that to account for adjustment processes, for example, it is necessary to rely on a separate theory of individual behaviour either in the shape of a 'modified' representative agent or in that of adaptive artificial agents in computer simulation. It is doubtful whether this perspective will actually allow post-Walrasians to construct macro models alternative to the standard ones. Doubts are justified by one major consideration.

It is worth starting from the 'pure theory' project to see why post-Walrasians do not seem to improve on it. As I have already pointed out, one of the reasons why the project to generalize standard theory and make it consistent with fluctuations is bound to fail is that it has only one macrofoundation, the auctioneer, which works solely in the full employment context. In this context, the auctioneer does its job well and actually enables the construction of a successful macro model. It is both consistent with the (correct) view that macroeconomics is the unintended outcome of the behaviour of individuals (as it imposes coordination on the system; for this reason it is a 'top-down' macrofoundation) and grants correspondence between the optimal behaviour of individuals and that of the economy as a whole. However, standard theory has no equivalent macrofoundation for underemployment states of the economy. So it is bound to account for fluctuations only in terms of deviations from the standard axiom of

rationality (that is, it is bound to blame at least some individuals in line with the ‘conspiracy’ view), rather than in terms of unintended outcomes of the behaviour of individuals. Thus it can be argued that the generalization fails because the same ‘first principles’ cannot support both optimal and suboptimal states. If this view is correct, the reason why post-Walrasian theory does not improve upon this picture is that, while dropping the auctioneer, it fails to identify an alternative ‘top-down’ macrofoundation which could allow generalization. Indeed, as it favours a ‘bottom-up’ perspective, it expressly rules out this type of macrofoundation. It still tries to explain maladjustments directly in terms of individual behaviour, albeit in terms of ‘weak’ or bounded rationality as opposed to deviations from the standard postulates.

### Critiques from Keynes’s standpoint

#### *The ‘right’ macrofoundation issue*

Although there is no doubt that the economists considered in this chapter have greatly contributed to creating a view of Keynes from a new perspective since the fall of the Neoclassical Synthesis—managing even to keep interest alive for the *General Theory*—it is important, nonetheless, to seek to establish to what extent their research programmes are convincing from Keynes’s standpoint. In my view, these programmes tend to fall short of the mark because they actually play down or neglect some significant aspects of Keynes’s contribution, especially those concerning the methodological background of the *General Theory*.

The key issue revolves around the basic problem faced by all those who attempt to establish alternative macroeconomic research programmes: namely, how do we arrive at the ‘right’ macrofoundation approach? It can be argued that, due to their Marshallian reference point, both post-Keynesians and post-Walrasians rightly stress the autonomy of Keynes from general equilibrium theory, and thus agree in rejecting the auctioneer as the macrofoundation of individual behaviour. This is a first, crucial step. The second is to try to single out what alternative macrofoundation is chosen by Keynes and/or is more promising for the development of a ‘Keynesian’ research programme. It is here that post-Keynesians and post-Walrasian differ from one another and, I suggest, also from Keynes.

#### *On the ‘institutional’ assumptions underlying Keynes’s analysis*

An important point to note is that these two approaches fail to account for Keynes’s departure from general equilibrium theory in a convincing manner. As I have already observed, post-Keynesian economists such as Chick and

Davidson regard either the fact that production takes time or the special properties of money as the key justifications for this departure. It can be argued that, while these are obviously important features of the economy and, as such, are certainly considered by Keynes, they do not seem to play this strategic role by themselves. In particular, they would not appear to justify the reference to the principle of effective demand as an alternative macrofoundation. As I have already argued, the facts that production takes time and money has special properties are also consistent with the complete Arrow-Debreu model, which implies the existence of all future and contingent markets. In this case, for example, one can readily admit that there is no uncertainty concerning the future as all production can be sold in advance and nobody feels the need to hold money. Thus, from the logical point of view, if uncertainty, money and the time-consuming nature of production have to become relevant, as indeed they are in a real-world economy, some of these markets must be missing.

This important point is also stressed by general equilibrium theorists, including the younger Hicks and Hahn. I have already noted, however, that it is the basis too for understanding Keynes's departure from general equilibrium theory. While, for Hicks and Hahn, that markets must be missing to make sense of money and expectations is a conclusion that is reached only after dealing with the logic of choice, for Keynes it is an assumption which has important implications for agents' behaviour. The crucial point to stress is that the lack of markets leads Keynes to carry out a revision of the standard concept of rationality. While post-Keynesians often assume, explicitly or implicitly, that it remains essentially unaffected in the passage from Walras to Keynes (or that the latter drops only a specific axiom, such as that of gross substitution), it can be argued instead that the basic results of the *General Theory* can be justified only on the grounds of a revised theory of rationality. In particular, it is because the lack of markets compels agents to behave in a certain way—that is, to rely on conventions and to coordinate their efforts with those of others—that new aggregate data such as those underlying the principle of effective demand and liquidity preference come to play such a vital role in Keynes's theory.

I now try to show that by stressing the role of these data it is possible to highlight a few key differences between Keynes and the research programmes considered in this chapter.

### *A broader view of rationality*

The first point to note is that once Keynes's aggregate psychological data are suitably taken into account, many of the dichotomies—such as rationality versus irrationality, equilibrium versus history or time and economics versus science—that are emphasized by Davidson and Hicks, for example, actually disappear. As for the first dichotomy, I have already noted that at the root

of Keynes's analysis lies the need to overcome the narrow concept of rationality which underlies Classical theory. Indeed, the definition of a broader view of rationality is, for him, the equivalent of non-Euclidean geometry for Einstein. This view has a few important implications for Keynes's modelling strategies. They include the rejection of atomism, the emphasis on the need for individuals to follow conventions as premisses for their decisions and thus the shift from a separate account of individual behaviour to aggregates as the relevant theoretical units.

It must be noted that reference to conventions as premisses for individual decision-making involves greater flexibility in the accepted criteria of rational behaviour. It is rational, for example, to follow custom or habits in deciding consumption patterns, or for speculators to follow popular models of the economy in order to decide whether to hold cash or bonds, just as it is rational for firms to try and maximize profits. On these grounds, it thus appears that Shackle's or Davidson's view that the demand for money (or investment activity) is irrational because it exists in conditions of uncertainty in which standard calculations are ruled out, neglects the important point that, for Keynes, in forming expectations in these conditions, individuals actually take into account other variables, such as the world-3 popular models, besides those considered in the standard model, such as current prices or probability distributions. Whenever probability distributions cannot be formed, it does not follow that individuals simply rely on irrational action criteria, resorting to their animal spirits or merely subjective rules of thumb to get by. For them, the popular models which guide their decisions are as much an 'objective' reference point as other market parameters because they are intersubjectively established. The only difference is that they express a different type of objectivity: while current prices are world-1 objects, popular models are world-3 objects.

It might be argued, however, that while emphasis on agents' reference to conventions applies to the speculative demand for money in which a conventional concept like the normal rate of interest is clearly defined, it does not apply to the demand for money for precautionary motives exercised when people simply distrust the future for unspecified reasons and prefer to 'wait' rather than commit themselves to the purchase of specific goods. It can also be argued, however, that in this case too conventions act as a benchmark for individual decisions so that the latter do not necessarily turn out to be irrational. The point is that, as noted by Keynes, people demand liquidity when other conventions break down. They do so, for example, when they are no longer confident in standard conventions—for example, that the future is like the past—which suffice in normal times to cope with uncertainty. However, in making their assessment, they are not alone (at the macroeconomic level, what matters is the behaviour of a sufficiently large number of people), but still rely on a form of convention, such as accepting to follow popular models. It may be suggested, for example, that they follow

a model which describes the situation of the economy in very negative terms. In other words, demanding money is an extreme form of conventional behaviour. Instead of being an irrational activity, it simply entails one type of convention replacing another as the relevant reference point for individuals.

### *Equilibrium and history*

Another dichotomy which disappears when Keynes's aggregate psychological data are considered is that between equilibrium and history or time. To clarify this point, it is sufficient to note that Keynes's theory is actually rooted in historical time. Instead of seeking an impossible transition from the logic of choice to dynamic theory, on account of his implicit assumption that future markets are missing, he actually deals with a real-world economy from the outset. As I have already suggested, this assumption allows him to depart from the ideal full-blown general equilibrium model and to construct a model in which uncertainty, expectations and money matter.

It can be argued that this model actually reconciles equilibrium with history and time, contrary to the view held by many—Hicks and Shackle included—that Keynes's formal model is static since it focuses on equilibrium at a point of time, and thus almost 'betrays' his true dynamic conception of the economy based on the emphasis on expectations. Keynes achieves this reconciliation by relying on his aggregate psychological data. These turn out to be historically contingent elements which summarize the complex interaction among individuals, their ways of following conventions and forming expectations. Although it is true that expectations and conventions are precarious and subject to sudden change, as emphasized by Shackle, it is also true that they can be taken as given at a moment of time in the form of these aggregate data, and hence the analysis can be rigorous and determinate.

Similar remarks might be applied to the dichotomy between economics and science, which is also emphasized by Davidson and Hicks. It is now possible to argue that the dichotomy also disappears in Keynes, although this appears to be the case only if the comparison between the two subjects is not limited to the issue of prediction as in the two authors mentioned. There is no doubt that, from this standpoint, economics can never achieve the precision of physics, and hence cannot be considered a science. It is possible to draw a different conclusion if simple conceptual links between economics and physics are considered—something which I have tried to do in this book by stressing the analogies between Keynes and Einstein. Indeed, once we make the effort to observe the deep-reaching changes that have occurred in the most advanced sciences since the beginning of this century, we see that non-orthodox economists are (fortunately) not alone in trying to account, for example, for the essential role of time and uncertainty in theoretical constructs.

*Macroeconomics as the unintended outcome of individual behaviour*

Another key result which can be achieved by properly considering Keynes's aggregate psychological data, besides dispensing with the above dichotomies, is to place macroeconomics in its right perspective as dealing with the unintended outcomes of individual behaviour. As I have already emphasized, to be in line with this perspective, macroeconomics needs to rely on a 'top-down' macrofoundation which grants coordination among individual agents, such as the auctioneer in the Classical model. In my view, the aggregate data represent Keynes's own version of this kind of macrofoundation. They too impose coordination on the economy and appear as the involuntary result of individual behaviour. However, they also lead Keynes to make a crucial departure from the Classical model. The point is that, unlike the auctioneer, they imply a divorce between the behaviour of the system as a whole and individual rationality. Indeed, while the auctioneer grants the correspondence between the optimal behaviour of individuals and that of the economy as a whole (at full employment) so that the analysis can be based entirely on the laws of individual rationality, Keynes's data imply instead that these laws are not valid for understanding the behaviour of the system. This view has several important implications.

In the first place, it means that the post-Walrasians' 'bottom up' perspective is quite inconsistent with Keynes. An important reason for the contrast is that this approach neglects that the basic aim of macroeconomics is to provide relatively simple and manageable models of the economy. For this purpose, it needs in particular to focus only on the interaction among a few key markets. While this result is granted by 'top-down' macrofoundations, such as Keynes's aggregate data, which impose coordination among agents on individual markets, it is lost in the 'bottom-up' perspective. This seeks to perform the 'impossible' task of accounting for interaction among both individuals and markets at once and in all states of the economy, thus ultimately falling into the trap of 'complexity'.

Second, another implication of Keynes's view of the role of individual rationality is that it is rather misleading to call for macrofoundations, while at the same time seeking also to provide the microfoundations for aggregates or price rigidities. On these grounds, it is possible to see the distance between Keynes and some of the research programmes discussed in this chapter.

*Critique of the bounded rationality view*

It is not difficult to note the contrast between Keynes and the bounded rationality theory, especially when the latter is used to account for price rigidities. As I have argued, the view that price rigidities are somehow responsible for Keynes's unemployment, as held, for example, by Hicks,

neglects his view of the working of the price mechanism. This manages to combine price flexibility and non-market clearing, which cannot be connected thinking along standard methodological lines. More precisely, Keynes's crucial insight that flexible relative prices do not play a direct equilibrating role cannot be grasped if we think in terms of market forms. In this case, we have either perfect competition and flexible prices (i.e. the direct forces postulate) or imperfect competition and price rigidity. It is important to note that this conclusion does not change even if we refer, like Hicks, to the bounded rationality view, instead of relying on the standard tools of imperfect competition.

Despite its realism, it can also be argued that Simon's approach is essentially foreign to Keynes's research programme. The fact is that it still implies that individual rationality plays a crucial explanatory role and accounts for macroeconomic results. I have already shown that, like many New Keynesians, Simon still regards the business cycle as being due to price rigidities and aims to justify them in terms of rational behaviour. Keynes's view instead is that such rigidities, be they exogenous or endogenous, rational or irrational, are simply irrelevant in accounting for unemployment. His focus on the unintended consequences of individual decisions leads him to rule out the 'conspiracy' view that unemployment is due to somebody's rational choices or even mistakes such as money illusion. He agrees with Simon that agents face internal limits in carrying out their calculations. However, these limits push them to adopt forms of conventional behaviour, which give rise to aggregate psychological data such as those that govern effective demand. It is because these data take 'wrong' values that (involuntary) unemployment ultimately comes about.

On these grounds, it should be easy to understand the differences between the research programmes that the two authors propose. In particular, while Simon stresses the need to carry out a descriptive analysis concerning how decisions are made in the real world, for Keynes this is only a preliminary step which should not be carried too far. Strictly speaking, for him as for Popper, investigating the ultimate determinants of individual decision-making processes would imply accepting psychologism, which is at loggerheads with the view of macroeconomics as an autonomous discipline with respect to the basic data of technology and preferences. The attempt to explain the latter either in psychological or sociological terms would not by itself strengthen this view. According to Keynes, the only way to support the autonomy view is to introduce to macroeconomic theory further data which do not appear in the general equilibrium model, such as the aggregate psychological data which constitute both the involuntary products of agents' actual decisions and the macrofoundations of these decisions. In other words, while dealing with actual behaviour like Simon, Keynes shifts the focus of his analysis from the investigation of mental or psychological foundations

of individual decisions to that of the objective (in the world-3 sense) determinants of these decisions.

### *A critique of Marshallian microfoundations*

On the grounds of Keynes's macrofoundations view, it is also possible to call into question the Marshallian perspective adopted by many post-Keynesians. An important point to note in this respect is that Keynes's refusal to rely on the principles of individual rationality in his theory is clear also when he refers to standard rules of behaviour, such as maximization. The point is that in the *General Theory* these rules too must be interpreted in the light of the basic conventions which individuals accept as their guide in making decisions. This is why maximization must be intended as applying only in aggregate terms and why, as Leijonhufvud (1974) stresses, Keynes, like Marshall, refers to maximization as indicating *ex-post* behaviour and market equilibria, rather than individual *ex-ante* behaviour as in standard theory. This means that regarding both Keynes and Marshall as relying on the modern notion of a representative firm, as many post-Keynesians do, is quite misleading.

As I have argued in the previous chapters, both authors subscribe to a statistical conception of aggregates and do not regard them as simple expressions of the laws of individual firms' behaviour, as is the case in the modern axiomatic theory of market forms. Indeed, both Marshall and Keynes are foreign to modern notions of perfect and imperfect competition. It seems quite plausible, therefore, to draw the conclusion that much of the discussion on the need to place Keynes's aggregates (especially his aggregate demand and supply framework) on Marshallian microfoundations is spoilt by a wrong interpretation of Marshall, not just of Keynes.

### *A critique of the institutionalist and evolutionary perspectives*

In the final analysis, Keynes's macrofoundations perspective differs, at least to some extent, from the institutionalist or evolutionary perspectives proposed by authors like Hicks, Clower and Howitt. As stressed in the previous chapters, Keynes's break with the laws of individual rationality implies that no separate theory of individual behaviour is needed in macroeconomics. This does not mean that individuals become irrelevant, but that they should be dealt with on the grounds of a 'systemic' perspective. One instance of this perspective is clearly proposed by Clower and Howitt (1996) in their paper on money. There is no doubt that their view that progress in monetary theory does not involve better theories of how individuals make decisions but focus on their 'external' aspects of behaviour within a certain institutional framework captures an important feature of



Keynes's macrofoundation strategy. The only objection that can be raised against this programme, which is similar to the one accepted by post-Keynesians such as Hicks and Davidson, is that it risks providing a purely objectivistic account, in the world-1 sense, of actual institutions and practices. By stressing the role of his conventional data, Keynes's systemic perspective instead implies reference to world-3 objects.

This does not mean that institutionalist or evolutionary accounts are irrelevant. There is no doubt that these accounts represent an important step towards the construction of an alternative macroeconomic theory. Keynes in his book provides instances of this type of analysis; in particular, he too focuses on 'types' of agent which are defined on the grounds of given institutional characteristics. It is sufficient to refer to his description of the link between the rise of the modern financial markets and the evolution of the 'entrepreneur' from the period when enterprises were mainly owned by their founders to modern capitalism, where the separation between ownership and management prevails (Keynes 1936:150); a description which resembles Hicks's analysis of the passage from flex-price to fix-price markets. However, the fact remains that, for Keynes, this evolutionary account is not sufficient. It is simply an important first step, a premiss for investigating the world-3 objects that govern agents' expectations.<sup>16</sup>

### Concluding remarks

In this chapter, I have analysed the Marshallian approaches to microfoundations. They too can be criticized from opposite standpoints. Post-Keynesian views in particular may be called into question from the 'pure theory' standpoint because they are built on departures from the standard paradigm which do not seem to be justified in terms of 'first principles'. It seems wrong, for example, to hold that the general equilibrium model is to be dismissed because it cannot account for the fact that production 'takes time' or the simple existence of money. On the other hand, post-Keynesians and post-Walrasians are not always in tune with Keynes. While rightly stressing that the *General Theory* is autonomous from general equilibrium theory and can be understood through Marshallian lenses, they neglect some of Keynes's methodological features, such as the fact that his theory relies on a revision of the standard postulates of rationality. This leads them to insist on themes such as the search for microfoundations (although of a more realistic kind) of Keynes's aggregates and the justification of price and wage rigidity, while simultaneously suggesting the need to develop a macrofoundations perspective.

# CONCLUSION

## The two basic paradigms of macroeconomics

At least three major conclusions can be drawn from the analysis made in this book. The first is that there are only two basic paradigms in macroeconomics: namely, Classical and Keynesian theory. Both rest on a precise set of postulates which perform two main tasks. The first is to allow the construction of simplified and manageable models of the whole economy; that is to say, models which are especially capable of focusing on the interrelations among a few key markets, neglecting those among individuals. The second task is to support the view that macroeconomics is the study of the unintended outcomes of individual choices. The postulates underlying the two paradigms do this by specifying appropriate macrofoundations.

Beginning with the Classical approach, this comes in two different versions: ‘pure theory’, as defined in Hicks’s *Value and Capital* (1946), and ‘pragmatic’ macroeconomics, based to a large extent on the work of American Keynesians. The first relies on the full application of three general equilibrium canons:

- the axioms of individual rationality;
- the constructive method;
- the direct forces paradigm.

There are two main points to note. First, the research programme involved by these postulates amounts to a major effort to analyse important phenomena such as money and expectations in terms of ‘first principles’ in order to widen the scope of standard theory—i.e. to make it consistent with business cycles as well as stationary states. Second, the main simplifications implied by these postulates concern the use of the representative agent device and the price mechanism. Due to the fiction of the auctioneer, which imposes a ‘top-down’ coordination among agents, the price mechanism is assumed to work smoothly to grant equilibrium in all markets. Equilibrium itself is a postulate. It should be noted that the macrofoundations dealt with in ‘pure

theory' to allow the study of the unintended outcomes of individual choices are of the world-1 type. They consist of institutional features such as the auctioneer and the system of payments which underlies the transactions motive analysed by the Quantity theory of money. Moreover, in this category there are also 'objective data', such as market structures and statistical parameters, which ultimately determine agents' expectations.

As for 'pragmatic' macroeconomics, it is clear that it differs from 'pure theory', not because it accepts different principles, but simply because it fails to apply them to a full extent, either for subjective or objective reasons. It is clear, for example, that the sheer difficulty involved in implementing the original Hicksian research programme of 'pure theory' has led the American Keynesians to adopt the traditional notion of long-run equilibrium as a benchmark of economics which impairs the consideration of money and expectations within the general equilibrium model.

Let me now focus on Keynes's theory. This too is based on three postulates:

- the rejection of atomism;
- the 'theory of principle' approach;
- the indirect forces paradigm.

A preliminary remark to make about the implications of these postulates is that they involve a radical change in methodology. They support the view that Keynes's macroeconomics is autonomous from general equilibrium theory. In contrast with the latter, he introduces aggregate psychological data which are both the product of agents' interaction under uncertainty and the macrofoundations of individual behaviour. These new data allow him to consider money and expectations as an integral part of the analysis and to account for involuntary unemployment.

Another remark to be made concerns the simplifying assumptions underlying Keynes's theory. These too have to do with the way agents' coordination is achieved and the working of the price mechanism. As for the former, Keynes also assumes a form of extra-market or 'top-down' coordination among agents. Instead of relying on the auctioneer, however, he assumes that agents tend to follow the same conventions. In particular, that they subscribe to the same popular models of the economy which underlie the formation of the relevant aggregate psychological data. It should be clear that this perspective does not rule out individual rationality altogether. However, it does rule out the exclusive explanatory role this plays in the Classical model, where all phenomena must be reduced to it. This means that, according to Keynes, the analysis of individual behaviour must be conducted on the grounds of a systemic perspective from the outset, rather than in terms of separate representative agent models in a partial equilibrium setting, as in standard microeconomics.

## CONCLUSION

As for the price mechanism, Keynes assumes that prices are flexible but do not necessarily clear the markets. This is due to the fact that they affect demand and supply on the relevant markets only indirectly. Their influence is mediated by the aggregate data. Typical, in this regard, is the case of a change in the money wages that affects labour demand only through the level of aggregate demand. It should be noted that, in contrast with ‘pure theory’, the macrofoundations introduced by Keynes in order to study the unintended outcomes of individual choices are mainly of the world-3 type. They consist of features such as the popular models of the economy which influence agents’ expectations.

On the grounds of the analysis carried out in this book, it can be argued that these two basic paradigms of macroeconomics have never been successfully challenged by any other approach. For example, it is not easy to build a new ‘Keynesian’ macroeconomics simply by dropping the direct forces postulate of ‘pure theory’, while retaining its ‘first principles’, as attempted in particular by authors like Stiglitz and Hahn. The point is that the view that prices are rigid and account for phenomena such as unemployment is not an autonomous postulate. This view can actually be reduced to one of the two basic paradigms: namely, to ‘pure theory’. In order to see this point, it is sufficient to note, for example, that it is only in ‘pure theory’ that real wage rigidity constitutes a problem for the economy because in this theory the nominal wage is deflated by a fixed price level determined in accordance with the Quantity theory. In Keynes’s theory the Quantity theory no longer holds, the price level being a malleable variable that changes in relation to the level of activity (as determined by aggregate demand and supply) so that the real wage is flexible even if the nominal wage is sticky. Moreover, dropping the direct forces paradigm implies relinquishing the simplifying devices needed to build macroeconomic theories. It is more than a mere coincidence that the alternative New Keynesian theories have not yet provided any unifying macroeconomic framework capable of competing in terms of generality with ‘pure theory’.

On the other hand, the attempt made by some post-Keynesians, such as Chick and Davidson, to account for key features of Keynes’s theory—for example, his sequential intra-period representation of the economy based on the principle of effective demand—without recognizing that this theory implies a substantial revision of the standard postulates of rationality is not convincing either. It is arguable that this approach exposes post-Keynesian theory to two types of risk, one of which is to appear as an *ad hoc* theory, incapable of justifying its departures from standard theory. Suffice it to consider, for example, that these post-Keynesians seek to justify the peculiarity of Keynes’s approach by placing the emphasis on factors—that production takes time, that money possesses special properties and so on—which do not seem capable by themselves (i.e. without linking them to the revision of the ‘first principles’) of breaking with general equilibrium theory.

The other risk is—not unlike other approaches—to fall into the trap of calling for microfoundations of Keynes’s aggregates and price rigidities, while simultaneously suggesting that Keynes advocates the macrofoundations of microeconomics. This view, which is also put forward by a group of post-Walrasians, is at loggerheads with the *General Theory*. If correctly interpreted, the latter already provides an adequate framework to account for both systemic behaviour and that of individuals, one which does not need to be integrated or supplemented with any kind of microfoundations or separate theories of individual behaviour, even if these are based on heterodox features, such as the assumptions of imperfect competition or bounded rationality. Indeed, in this book, I have tried to show that the research programmes based on these assumptions are actually foreign to Keynes’s macro perspective. Suffice it to note that, while the latter focuses on unintended outcomes of individual behaviour, these programmes all imply, in one way or another, acceptance of the ‘conspiracy’ view or the vicious circle of atomist explanation, according to which negative macroeconomic phenomena, such as unemployment, must in the end be due to somebody’s mistakes or voluntary choices.

### The failure of ‘pure theory’

The second major conclusion reached in this book is that ‘pure theory’ has failed as a research programme. My analysis of the debate in macroeconomics from Hicks to Hahn leads me to regard the Classical macro model as an internally consistent but limited model. The point is that Hicks’s early hope of generalizing the standard model by incorporating into it money and expectations can only be regarded today as being unfulfilled. The difficulty in making the transition from the pure logic of choice (or real-exchange economy) to the theory of a full-blown monetary economy, which was rightly perceived by Keynes, has been generally underestimated by orthodox theorists. As stressed by Hahn, there is simply no theory of expectations based on elementary or ‘first principles’. Moreover, the microfoundations of money based on the theory of externality have not yet been provided.

That there are intrinsic limits to the possibility of implementing the ‘pure theory’ project is shown by the fact that all ‘modern’ attempts to introduce money within the general equilibrium theory, from Patinkin to Hahn, actually turn out to be self-defeating. The point is that they imply a view of the working of the price mechanism which violates one of the key postulates of general equilibrium theory: namely, the direct forces paradigm stressing the smooth working of this mechanism. On the one hand, this violation is implicit in Patinkin’s approach, due to its pragmatic nature. The point where it arises is when he places the real-balance effect at the centre of the stage. This effect actually implies that relative prices alone do not equilibrate the goods market so that this further adjusting mechanism is needed. On the other hand, the

violation is explicitly advocated by Hahn who argues that to insert money into general equilibrium analysis one needs to rely on the theory of externality which implies dropping the assumption of perfect competition. The problem with Hahn's solution is that, as he admits, at present there is no general equilibrium theory built on the grounds of the alternative assumption of imperfect competition.

On these grounds, we are thus led to regard the standard Classical model based on the notion of long-run equilibrium and the simple Quantity theory of money, a model not unlike those built by Modigliani and Klein, as the only valid expression of the orthodox paradigm in the field of macroeconomics. It is not difficult to see, for example, that the Quantity theory in its Fisherian version is the only one which is consistent with the direct forces postulate. If relative prices are assumed to work smoothly, it is clear that all money can do in the model is fix the price level. It cannot interfere with individual choices because, by relying on the auctioneer, the theory assumes that the latter are effectively coordinated by relative prices.

It should be clear that our claim about the limited scope of the Classical macro model has one important implication for business cycle theory. Due to the incapability of this model to accommodate money and expectations, it is impossible to regard Classical theory as applying outside full employment states. This does not mean of course that unemployment and other non-stationary phenomena cannot be interpreted through Classical lenses. However, they can only be regarded as disequilibrium phenomena due to institutional arrangements or agents' irrationality. In particular, by sticking to the Classical axioms it is not possible to provide a successful or convincing account of fluctuations of prices and employment as equilibrium phenomena. It is sufficient to note, for example, that the aggregate demand and supply apparatus, through which this generalization beyond the steady state is achieved by New Classicals, is strictly illegitimate on the grounds of 'pure theory'. On the one hand, the inconsistency of the real-balance effect with the direct forces paradigm implies that Classical theory cannot really justify the use of the aggregate demand function inversely related to the price level. On the other hand, as stressed by Leontief and Schumpeter, Old and New Classical theory could not even deal with aggregate demand and supply as if they were the demand and supply for an individual good because these curves are interdependent as implied by Say's Law. It is sufficient to note that both rely on the same set of data of general equilibrium theory. That the treatment of aggregate demand and supply as independent functions is an impossible task within 'pure theory' is also clearly shown by the difficulty of deriving an upward-sloping aggregate supply curve met by the New Classicals. This result can only be obtained by introducing new assumptions, such as that workers suffer from a sophisticated form of money illusion, which are clearly *ad hoc* and inconsistent with other parts of the basic paradigm.

### The generality of Keynes's paradigm

The third major conclusion of this book is that Keynes's approach turns out to be more general than 'pure theory', as well as more internally consistent than many, even friendly, critics are actually ready to concede. This conclusion follows from two basic results of the analysis of this book:

- the demonstration of the failure of the Neoclassical Synthesis and the microfoundations approaches to generalize 'pure theory';
- the existence of significant links between Keynes and Einstein at the methodological level.

As for the first point, it should be clear why the impossibility to accommodate money and expectations in general equilibrium also implies the failure of the Neoclassical Synthesis's project to show that Keynes's theory is but a particular case of Classical theory. The demonstration of the crucial role that money and expectations play in macroeconomic theory is Keynes's unique contribution, the reason why he is regarded as the major economist of this century.

As for the second point, the feeling that Keynes cannot be reduced to general equilibrium theory has fortunately been kept alive, especially by many post-Keynesians like Chick and Davidson. However, it is only by identifying his real epistemological background that it is possible to make a crucial further step—i.e. to recognize the greater generality of his contribution with respect to Classical theory. To make this step the analogy between Keynes and Einstein is of invaluable utility. This analogy is too great to be purely accidental; a similar logic seems to be at work behind their theories. Even if the analogy needs to be made with caution—i.e. as a metaphor as opposed to a substantive analogy—it is helpful to look at Keynes in the right perspective. It is sufficient to note a few points.

First, it is only if Keynes's achievement is comparable to Einstein's in physics that his claim to have written a truly 'general' theory can actually be justified. Second, it is only by regarding Keynes as an anti-reductionist like Einstein that his analysis appears to be coherent. For example, once his aggregates are considered as being similar to Einstein's fields and his approach as being a kind of 'theory of principle' in line with relativity theory, the macrofoundations perspective really starts to make sense. Money and expectations can be seen from the outset as systemic elements which shape the whole theoretical framework, rather than features to be added at a second stage. On the contrary, the microfoundations view immediately appears to be completely foreign to Keynes's research programme insofar as it reflects an attempt to apply the constructive method typical of the Newtonian paradigm.

## CONCLUSION

As I have already stressed, the Keynes/Einstein analogy should not be taken too far. Nevertheless, economists are not completely unfamiliar with parallels between economics and physics, which are, indeed, deeply rooted in the history of economic theory—and the Neoclassical Synthesis is certainly not foreign to them. It is sufficient to recall Samuelson's emphasis on the link between Walras and Newton. Unlike other Keynesians, I do not criticize the Neoclassical Synthesis for considering physics as being the benchmark for economics. On the contrary, its true mistake is that it regards Newton as the only possible source of inspiration for modern economics, as if all economics can do is to stay forever linked to a noble, but old-fashioned and limited nineteenth-century paradigm.



# NOTES

## INTRODUCTION

- 1 On the link between Keynes and the British Classics see Schumpeter (1954:472) and Robinson (1962:71).
- 2 As Boland puts it:

The theory of explanation that most economists take for granted is the one promoted by Adam Smith. It is one that can be traced back to a common belief that the famous eighteenth-century physicist Isaac Newton was undoubtedly successful in explaining the mechanics of the Solar System. Newton's explanation was that the Solar System is in a mechanical equilibrium, one that is completely and rationally determined. Accordingly, if we know all the facts, then given the laws of mechanics, we could determine all the particular aspects of the state of equilibrium (position, velocity, etc.) by means of ordinary rational argument. The philosophical impact of his alleged success was that it led economists to believe that all economic phenomena could be explained relative to a given state of equilibrium (a balance of forces) by explaining each variable's role in the maintenance of the equilibrium.

(Boland 1986:17)

On the link between political economy and classical physics, e.g. Deane (1978:7); Dobb (1973:38–9); Gordon (1989:133); Hodgson (1993:56); Mini (1974:11). On the link between general equilibrium and classical physics, e.g. Blaug (1980: 57); Bramhall (1986:50); Carabelli (1991:118); Dow (1985:12–5; 1990:146); Hodgson (1993:23); Mirowski (1984:363, 1989:163–72); Popper (1961:64); Rosenberg (1983:427–8); Samuelson (1963a).

It is important to note, however, that these two economic theories differ in their relationship with the mechanistic model. In particular, while it is relatively easy to regard general equilibrium as (a) relying on atomism in that it establishes the analogy between the particles of classical physics and the individual maximizing agents; (b) following the constructive method because it attempts to explain all phenomena, including money and expectations, in terms of maximizing behaviour; (c) placing the emphasis on direct forces in that it regards universal properties of human nature like self-interest as the counterpart of the gravitational attraction force, in the political economy approach instead these features cannot be detected in the same clear manner. This is due to the fact that it adopts a much broader view of the scope of economic theory with respect to the Walrasian model; in particular, economic theory is seen as a part of a more general theory of society. Thus, for example, while it is quite clear that political economy follows the constructive method (e.g. the attempt to account for all basic economic phenomena on the grounds of the labour theory of value), its reference

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to atomism or simple forces is obfuscated by the interplay between the different dimensions of human behaviour. It is sufficient to go back to Adam Smith, who stressed both economic motives of individual behaviour like self-interest and social motives like benevolence or sympathy.

3 As Dow puts it:

The nature of Keynes's epistemology is difficult to discuss in traditional terms, which by and large are the only ones available... It is already becoming apparent that semantic difficulties are creating controversy among those who fundamentally agree on Keynes's epistemological position.

(Dow 1991:163)

4 According to Mini: 'Keynes effected within economics a major revolution paralleling the denigration of logical reasoning by nineteenth-century philosophers' (1974:267). Similarly, Boland (1992:43) argues that Keynes's rejection of mechanics entails the espousal of subjective psychology in line with 'Romantic' views.

5 However, Dow (1991:150) and Carabelli (1988) also recognize that Keynes does not employ a rigid organic/atomic split and should be seen as following a 'middle way'.

6 As described by Caroline Merchant, 'organismic theory emphasized interdependence among the parts of the human body, subordination of individual to communal purposes in family, community, and state, and vital life permeating the cosmos to the loveliest stone' (1980, quoted in Bramhall 1986:46).

7 While agreeing with Kant that the laws of nature are our invention, Popper stresses that Kant's theory collapsed 'once it was realized that Newtonian dynamics was not a priori valid but a marvellous hypothesis—a conjecture' (Popper 1979:92).

8 Popper too admits that modern economic theory has a Newtonian status (see 1961: 64; Bramhall 1986:52–3 and McCloskey 1986.) A possible third explanation for the neglect of Einstein by economists is the lack of correspondence between the formal tools used in relativity theory and those used in economics. In the latter there is no room for anything like the non-Euclidean geometry which underlies the former.

9 As Bramhall puts it:

As in the seventeenth century, concepts that originate in physics and philosophy of science are today becoming the foundation of striking new ways to view the human condition. Economic, social, and intellectual forces have once again combined to produce a new view of the world out of the lives and thoughts of giants; Einstein, Heisenberg, Bohr, Von Neumann, and Whitehead are among the best known.

(Bramhall 1986:53)

10 The Keynes/Einstein link is also emphasized by Bramhall (1986). In general, it can be argued that even when some links between economics and the evolution of modern physics are made, the possible analogy between Keynes and quantum physics is stressed instead (e.g. Chick 1990).

11 A similar view is held by Sir William Beveridge, an early critic of the *General Theory*: 'Mr. Keynes aims at making a revolution in economics, comparable to that made by Einstein in physics. Unlike Einstein he neither starts from facts nor returns to them for verification' (quoted in Thomas 1997:151–2). As we shall see in Chapter 3, it is possible to hold a more positive view of the link between Keynes and Einstein.

12 The view that a parallel exists between Keynesian theory and non-Euclidean geometry is put forward by Rosenberg, for example: 'Keynesian theory represents as much of a conceptual revolution as non-Euclidean geometry did' (1983:440).

- 13 Keynes believes that the methods of physics are inappropriate for economics. For example, in his critique of Robbins, he stresses that economics is a moral science rather than, as Robbins would have it, a natural science. For Keynes, economics ‘deals with motives, expectations, psychological uncertainties. One has to be constantly on guard against treating the material as constant and homogeneous’ (Keynes 1973b:300). It must be pointed out, however, that Keynes has in mind a rather old-fashioned view of the natural sciences. Some of the critiques he makes are not valid for Einstein’s relativity theory or quantum physics. Moreover, granted that economics must not slavishly imitate the method of physics, we must be careful to avoid overreacting. As noted by Boland:

Economics and most of the natural sciences have many things in common. Logic, mathematics and statistics are the same regardless of where they are used. And many of the apparent differences turn out, upon close examination, to be merely terminological, reflecting only differences in professional jargon.

(Boland 1982:107)

- 14 On the explanatory role of analogy in science, see Black (1962); Hesse (1966); Hodgson (1993:19). In contrast with this view, Samuelson (1970:8) argues that the analogy plays only a rhetorical role. However, I am aware that limits exist to the explanatory role of metaphors. As pointed out by Mirowski: ‘the trick to metaphorical evaluation is an ability to sense when one finally ventured beyond the pale, so that the coherence of the metaphor is strained to the point of dismemberment’ (1989:314).
- 15 The analogy between Einstein’s theory and social sciences is not an absolute novelty. A similar type of analogy has been established between Einstein’s theory and the Gestalt theory in psychology.
- 16 As pointed out by Hodgson (1993:108), for example, the Neoclassical Synthesis is to be criticized for transforming Keynes’s revolution into mathematical formalism emulating the banishment of biology by physics.

### 1 HICKS’S VALUE AND CAPITAL

- 1 For simplicity’s sake, hereinafter I omit the explicit reference to Infeld.
- 2 Einstein points out that this model assumes that: ‘By knowing the position and velocity of a particle at one single instant, by knowing the acting forces, the whole future path of a particle could be foreseen’ (Einstein and Infeld 1938:152).
- 3 That it is not illegitimate to establish analogies between the concepts of classical physics and general equilibrium theory is confirmed by the writings of leading Neoclassical economists such as Pareto, Fisher and Walras (e.g. Fisher 1926:85–6; Ingrao-Israel 1987:237–8; Walras 1909). As Rosenberg puts it:

Economists have been steadily elaborating a theory whose form is identical to that of the great theoretical breakthroughs in science since the sixteenth century... The strategy is that of viewing the behaviour economists seek to explain as reflecting forces which always move towards stable equilibria that maximize or minimize some theoretically crucial variable. In the case of microeconomics, this crucial variable is utility...and the equilibrium is given by a level of prices in all markets that maximize this variable. This strategy is most impressively exemplified in Newtonian mechanics and in the Darwinian theory of natural selection. It is no surprise that a strategy which serves so

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well in these two signal accomplishments of science should have as strong a grip in other domains to which it seems applicable... I call this strategy the extremal strategy, because it is especially apparent in Newtonian mechanics when that theory is expressed in so-called 'extremal' principles, according to which a system's behaviour always minimizes or maximizes variables reflecting the mechanically possible states of the system.

(Rosenberg 1983:427–8)

Strictly speaking, to regard Neoclassical theory as 'Euclidean' or 'Newtonian' is surely an oversimplification. As pointed out by Mirowski (1984, 1989) this theory is inspired also (or predominantly in his view) by other physical theories developed in the nineteenth century, such as those of energetics and Mach. However, it can be argued: (a) that the Newtonian features are predominant at the conceptual level which we focus upon here, while Mirowski places the emphasis on the formal tools actually used in the analysis; (b) until Einstein, classical physics was still the dominant paradigm.

- 4 The special role played by *Value and Capital* in economic theory has not gone unnoticed in current literature. Hahn, for example, commented that 'there can be few books which have had as much influence on the course of economic theory not only in the years which immediately followed its publication but to this day' (1994:17).
- 5 On Robbins's firm defence of the deductive method, see e.g. Caldwell (1982:104–5); Dow (1985:52–3), Gordon (1989:204). On Hayek's atomism, see Lawson (1997: 147–9).
- 6 The reason why this is true for both large bodies and their minimal parts is that the atomist view rests on the extrapolation of the properties of macroscopic bodies to those of microscopic bodies. As Newton puts it:

The extension, hardness, impenetrability, mobility and vis inertiae of the whole, result from the extension, hardness, impenetrability, mobility and vis inertiae of the parts and thence we conclude the least particles of all bodies to be also all extended and hard, and impenetrable, and moveable, and endow'd with their proper vis inertiae. And this is the foundation of all philosophy.

(Newton 1968, II:203–4)

- 7 See Allen and Hicks (1934); Deane (1978:159–60); Wong (1978: Chapter 3). On Pareto and Robbins' influence on Hicks, see Davis (1994a:180); Mirowski (1989: 362).
- 8 Hicks's book seems to be influenced by two important factors. The first is the conventionalist conception of scientific research held by epistemologists and scientists, such as Poincaré, Duhem and Eddington. According to the latter, axioms are no longer to be regarded as necessary or self-evident, like the old hypotheses of Euclidean geometry, but as hypotheses that may be changed and even chosen at liberty (although not arbitrarily) to guide the deductive organization of science, the choice being made on the grounds of criteria such as convenience, simplicity or generality (e.g. Popper 1980:109). This view leads one to hold a notion of truth different from the old versions of the mechanistic model: what matters in establishing the truth of a theory is not its correspondence to reality as in the latter, but only the internal consistency of its language. The second factor influencing Hicks's work is Mach's conception. Mach's most noteworthy views are: (a) that all phenomena are relative, in contrast with the old 'absolute' concepts of space and time underlying the Newtonian model; (b) that the positivist concept of substance is to be rejected and replaced by more emphasis on the concept of function; (c) that the analysis must focus on interdependence between phenomena instead of causal links.

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- 9 As Rosenberg puts it: ‘economics has not substantially changed, either in its form or in its degree of confirmation, since Walras’ (1983:427). It must be noted that *Value and Capital* is not totally successful as an axiomatization of the general equilibrium model (e.g. Hahn, 1994; Ingrao and Israel 1987:28–9; Leijonhufvud 1985:26–33; Morgenstern 1941; Weintraub 1979:57–9). Nonetheless, Hicks has the merit of founding an analytical style which was later to find its apex in Debreu (1959) (e.g. Ingrao and Israel 1987:228–30; Lawson 1989b:73). For a survey of Hicks’s book see also Hamouda (1993:95–102); Mahloudji (1985:179–82).
- 10 Hicks’s idea of pure or precise language has its philosophical counterpart in the early works of Russell and Wittgenstein. In their view the true task of philosophy is to search for an ideal language in order to eliminate metaphysics. This requires a continuous work of clarification and a rigorous check on the meaning of the words of ordinary language (e.g. Ayer 1982: Chapters II, IV; Coates 1990).
- 11 Hicks shares Hayek’s critique of aggregates:

None of these magnitudes *as such* ever exerts an influence on the decisions of individuals; yet it is on the assumption of a knowledge of the decisions of individuals that the main propositions of non-monetary economic theory are based. It is to this ‘individualistic’ method that we owe whatever understanding of economic phenomena we possess.

(Hayek 1931:4; quoted by Hodgson 1993:260)

- 12 In particular, this method ‘consists of analysing a phenomenon by resolving it into its simple components and then reassembling them by some kind of aggregation’ (Gordon 1989:72). This method is sometimes called ‘resolutive-compositive’ or ‘Paduan’, since it was first employed by Galileo (e.g. Campbell 1981:72), or ‘synthetic’ in that the whole is built up from known properties of the elements and implies a pyramidal structure of explanation (e.g. Hayek 1967; Hodgson 1988: 67; Lawson 1997:145–9).
- 13 These methodological principles of Hicks’s ‘pure theory’ are not unlike those accepted by many Social Contract theorists of the seventeenth century. As pointed out for instance by Mini:

Bossuet, Blackstone, and Locke also contributed ‘models’ of society all based on a primitive state of nature from which pertinent ‘derivations’ were made. The Cartesian method is unmistakable in all of them: they begin by drawing from their own mind, a priori, the ‘innate’ qualities of primitive man. From this axiom eventually followed certain characteristics of modern society (those that they wished to emphasize, e.g. its brutality or its intrinsic order). To go from the axiomatic innate qualities to the conclusion (order, civility, or wars), fictions had to be created—contracts, fears, thunderbolts, which triggered the natural response of the innate qualities.

(Mini 1974:32–3)

- 14 This means that, for Weber, it is irrelevant to discuss questions of verification or falsification of ideal types (e.g. Rossi 1971:294, 299; Veca 1981). On Weber’s ideal types, see Cavalli (1981); Campbell (1981:175–8); Coates (1990:189); Gordon (1989:469–74).
- 15 Hicks makes a distinction between three different sources of intertemporal disequilibrium: the first is due to the inconsistency of price expectations; the second to inconsistency of plans; the third arises out of a failure to predict changes in wants or resources (1946:133–4). He notes that in the Futures Economy the first two causes of disequilibrium would be absent, while the third would not be removed.

- 16 Popper stresses that according to the concept of methodological determinism held, for example, by Marx:

The scientific treatment of society, and scientific historical prediction, are possible only insofar as society is determined by its past. But this implies that science can deal only with the kingdom of necessity. If it were possible for men ever to become perfectly free, then historical prophecy, and with it, social science, would come to an end. 'Free' spiritual activity as such, if it existed, would lie beyond the reach of science, which must always ask for causes, for determinants. It can therefore deal with our mental life only insofar as our thoughts and ideas are caused or determined or necessitated by the 'kingdom of necessity', by the material, and especially by the economic conditions of our life, by our metabolism.

(Popper 1966, II:139)

- 17 While the British Classical economists were utilitarians and held an individualistic or Benthamite conception of human nature (people will act according to self-interest), they did not provide explicit models of how men act as individual households or producers. They simply stated empirical rules about the equalization of profits—i.e. not derived from maximization and the principle of substitution as in modern Neoclassical theory (e.g. Gordon 1989:265; Schumpeter 1954:588).

## 2 KEYNES'S ANTI-ATOMISM

- 1 It must be stressed that, although a formal analogy between fields in physics and other concepts of social sciences is not new (e.g. the Gestalt theory in psychology), the particular analogy I suggest—i.e. between fields and aggregate concepts—is new and surely controversial. An alternative interpretation has been proposed, for example, by Mirowski (1989), who argues that the correct analogy is between the field and the concept of utility or the individual mind. It is fair to say that the field concept has no unique counterpart in economics.
- 2 As pointed out by Einstein, 'the recognition of the new concepts grew steadily, until substance was overshadowed by the field' (Einstein and Infeld 1938:58). Schlick stresses that the field denies the concept of substance as it does not allow for anything which is permanent in itself, but considers the effects of each part of the matter on other parts (see Geymonat 1975, VI:494).
- 3 According to Einstein, Mach was as 'good at mechanics as he was wretched at philosophy. This short-sighted view of science led him to reject the existence of atoms. It is possible that Mach's opinion would be different if he were alive today' (quoted in Pais 1982:283).
- 4 The field is defined as follows:

In military parlance, the field of action is a space that an army would move to defend, were it to be entered by the enemy. In physics, a field is a configuration of potentials in space, the potential of a point being defined as the amount of work required to bring a test body to that point from an infinite distance away. The archetypal image of a field is still the curves assumed by iron filings strewn on a sheet of paper placed above a magnet, revealing the lines of force that were previously invisible.

(Mirowski 1989:29)

- 5 A different interpretation of this process of dematerialization is suggested by Mirowski. In line with his view that the individual's utility function underlying Neoclassical theory

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- is a field of possibilities, he regards dematerialization linked to the use of the field model as a shift from physical commodities to the utility field. In my view, instead, dematerialization is not really achieved by Neoclassical theory in view of its continuous reference to the individual and a real exchange economy.
- 6 The link between Einstein, Mach and Keynes allows us to stress that, in contrast with Mini (1974:254), Keynes's phenomenological view has nothing to do with irrational moves.
  - 7 This is one of the reasons why we believe that Einstein's relativity theory provides a better analogy or metaphor for Keynes than thermodynamics or energetics. As Mirowski pointed out: 'Classical thermodynamics adopts a phenomenological stance in explaining the macroscopic behavior of systems without appeal to supposed underlying causes at the micro level' (Mirowski 1989:390).
  - 8 For a similar view of Keynes seeking to overcome the dualism of Euclidean/Cartesian thought, see Dow (1985, 1990).
  - 9 The close link between political economy and the use of aggregates is stressed, for example, by Dobb (1940); Schumpeter (1954); Pasinetti (1974).
  - 10 As Marshall admits, in the static analysis of perfect competition there is no reason why an individual firm producing at decreasing costs should not become monopolist.
  - 11 In other words, by using the representative firm, Marshall need not assume that the equilibrium of total industry output requires that all firms be in equilibrium (see Frisch 1950:496; Maxwell 1929:634; Newman 1960:590). In the steady state it is enough to assume that only the representative firm is of constant size.
  - 12 As observed by Frisch (1950:513), the representative firm is a miniature representation of the market as a whole and can be used to describe the reaction of the supply side in the process of long-period adaptation more in brief.
  - 13 Indeed, as many authors have argued, for Marshall 'normal' competition does not necessarily mean perfectly competitive. For instance, he sometimes speaks about a downward-sloping demand curve in the context of a firm's particular market, which implies product differentiation and price-making behaviour (e.g. Schumpeter 1954:975; Whitaker 1989:173; Wolfe 1954:341). However, it would also be wrong to regard him as one of the forerunners of imperfect competition. It is, arguably, more correct to posit that this author holds a broad view of competition in which some features of the two above notions coexist. On the one hand, it is certainly true that, as Hollander (1961) noticed, he does not subscribe to a view of perfect competition characterized by a rigid, atomistic price-taking behaviour. Instead, he regards competition as *openness of the market* and refers to an economy with a large number of competitors, some of which may be also price-making firms. On the other hand, it has to be stressed that, given the link between the representative firm, the concept of industry and the market supply curve, Marshall also implicitly refers to a homogeneous commodity, a typical assumption of the modern notion of perfect competition.
  - 14 On this issue see, for example, Brown-Collier and Bausor (1988:20–1); Carabelli (1988:168); Dow (1991:152); Smith (1986:259). On this point, my interpretation again differs from Mirowski's. The latter talks about dematerialization (or denaturalization) of value in that money differs from gold commodities or finance takes over manufacturing (see Mirowski 1989:134–5).
  - 15 Schumpeter stresses that this link is a matter of convenience:

The link...is not a logical necessity but is nevertheless close: it is possible... to introduce money on the ground floor of general economic analysis without adopting the aggregative view. But monetary aggregates are homogeneous, whereas most nonmonetary ones are but meaningless heaps of hopelessly

disparate things; and if we wish to work with a small number of variables, we can hardly help resorting to monetary ones.

(Schumpeter 1954:278)

However, as we shall see in the following, there are good reasons to believe that, contrary to Schumpeter's view, for Keynes the choice to work with aggregates expressed in monetary terms is not a matter of convenience but of principle.

- 16 Unlike most quantum physicists, Einstein believes in the possibility of a model of reality; in a theory that represents things in themselves, not simply the probability of their occurrence (e.g. Abbagnano 1974, III:727–8; Geymonat 1975, VI:497–8). In a letter to Max Born, he points out: 'You believe in the God who plays dice and I in complete law and order in a world which objectively exists, and which I, in a wildly speculative way, am trying to capture' (Einstein 1971:149). Einstein's search for general laws shows that, despite his great deviation from classical physics, he retains one aspect of the latter: namely, the belief in rigid causality. According to the classical concept of material reality, to describe nature it is necessary to explain single events by laws.
- 17 This change is linked to the crucial shift from the Euclidean to non-Euclidean geometry, which occurs in the nineteenth century and underlies the formulation of Einstein's theory. While Euclidean geometry is three-dimensional and its entities can be visualized, non-Euclidean geometry allows abstract spaces with a number of dimensions greater than three, and its entities cannot be visualized; it thus separates concepts of matter from any intuitive reference (see Abbagnano 1974, III:722; Mirowski 1989:186–7).
- 18 As stressed by O'Donnell (1989:79, 142), for this reason Keynes's epistemology can be regarded as rationalist.
- 19 On the interpretation of Keynes as a realist, see for example, Lawson (1989a:248, 1990:14–25, 1997:247).
- 20 This is true for Hicks as for Walras. Despite the fact that Hicks's axiomatic approach drops the realist pretensions of early general equilibrium theory, it retains the basic atomist structure which underlies the old ideal of visualization of the working of the economy.
- 21 These features of Keynes's theory seem to be in line with Popper's epistemology. Moreover, it seems correct to argue that Keynes, like Popper, does not believe in necessary laws but holds a fallibilist view of knowledge. On the links between Keynes and Popper, see Pheby (1985).
- 22 Similarly, he notes that:

The expression for a force acting between the wire through which a current flows and a magnetic pole is very complicated. In the case of two solenoids, we should have to investigate the forces with which two currents act upon each other. But if we do this, with the help of the field, we immediately notice the character of all those actions at the moment when the similarity between the field of a solenoid and that of a bar magnet is seen.

(Einstein and Infeld 1938:138)

- 23 On the static character of the field which implies the path-independence condition, see Mirowski (1989:294–6, 301, 348).
- 24 This organicist perspective is put forward in at least four different versions. These differ as to whether they emphasize the link between Keynes on the one hand and either Moore, Marshall, Whitehead, or the late Wittgenstein on the other. On the link Keynes-Marshall, see e.g. Rotheim (1988, 1989). On the Keynes-Whitehead link, see Winslow (1989). On the Keynes-Moore link, see Lawson (1991). On the link between Keynes and the late Wittgenstein, see Carabelli (1988).



- 25 To further illustrate the meaning of the argument, it is useful to refer to Richardson's distinction between two types of knowledge (Richardson 1959; Boland 1986:7–8) One is private knowledge of one's own circumstances such as income, tastes, technical abilities and the other is public knowledge, such as what other people will demand or supply in the market. While everyone has adequate knowledge about his private circumstances, he has no such knowledge about the public behaviour of other market participants, so he has to form expectations about public circumstances. It can be argued that, for Keynes, agents need to cooperate in order to make this task feasible.
- 26 While accepting to some extent Hobbes's theory of human nature, Smith has no anti-social view. As Campbell puts it:

Although he has no time for the idea of a state of nature as a pre-social condition, his theory of human nature is Hobbesian to the extent that he posits certain fundamental and original passions, such as hunger and the propensity to barter. Among these is an 'original' and primary desire to gain the approval...of other men. This is what renders man naturally fit for society and marks Smith's radical break with Hobbes.

(Campbell 1981:97; see also Gordon 1989:118, 123, 134; Dow 1990:153–4)

This view has its philosophical roots in Hume and the Scottish Enlightenment, and also underlies Utilitarianism, according to which the pure economic motive is linked to a broader bundle of psychological motives for man's behaviour.

- 27 A good instance of this transition is John Stuart Mill's 'economic man' postulate. According to Mill, economics starts from the premiss that men are motivated solely by the desire to acquire and consume wealth. Although economists do not believe that men are solely motivated by economic aims, focusing on the latter 'is the mode in which science must necessarily proceed' (quoted in Deane 1978:88). It must be noted, however, that the coordination issue does not disappear completely even in general equilibrium. On the one hand, it emerges in surrogate form through the device of the auctioneer which imposes coordination on the market. On the other, it becomes an object of analysis to be dealt with using the standard analytical tools of value theory, in line with the constructive method. For an instance of this practice one could refer to Arrow's consideration of 'trust' as a commodity (1974:23). It should be clear why Arrow's view is in contrast with Keynes's: for the latter, cooperation is a non-market feature of economic behaviour, the premiss for individual rationality and competition rather than something to be reduced to them.
- 28 That Keynes's view finds a precedent in Smith's is stressed by Dow (1985:100) and Davis (1994a:177). For a similar instrumentalist or functionalist interpretation of conventions and other social institutions as means to achieve ends, see Popper (1961:68).
- 29 As pointed out, for example, by Davis, for Keynes: 'individuals' recognition of conventions, standards, and rules typically acted as both a guide and express a *point of departure* for individual judgement' (Davis 1994a:104; emphasis added).
- 30 This means that, while being an anti-reductionist, Keynes cannot be regarded as a holist. Unlike holists, Keynes does not view man as totally determined by social factors (like customs or habits), which dominate him and constitute an autonomous object of analysis; he refers to some extent also to the pre-social nature of man (self-interest and psychology). In particular, while methodological holism bypasses the level of individual decision-making (e.g. Campbell 1981:139–67), Keynes does analyse the motives for individual behaviour.

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- 31 There is a clear link between Keynes and the British Classical economists on the issue of competition. As pointed out by Schumpeter, in the writings of these economists:

Firms were supposed to work under what the classics called Free Competition. With them this competition was an institutional assumption rather than the result of certain market conditions. And so firmly were they convinced that the competitive case was the obvious thing, familiar to all, that they did not bother to analyse its logical content. In fact, the concept was usually not even defined. It just meant the absence of monopoly.

(Schumpeter 1954:545–6)

It can be argued that Keynes also appears to be reasonably in line with Marshall who defines ‘normal’ competition in broad terms as openness of the market and refers to an economy with a large number of competitors.

- 32 The ‘late’ Wittgenstein’s philosophy is characterized by the emphasis on the features of ordinary language, such as the fact that words change their meaning according to the use to which they are put (language games) or that they are vague.
- 33 For a comprehensive account of Keynes’s stance on formalism, see O’Donnell (1997).
- 34 This point is emphasized by Carabelli (1992:4). She argues that Keynes’s aggregates are vague concepts since they refer to complex magnitudes. See also Fitzgibbons (1988:136).
- 35 In her book on *Economic Philosophy*, Joan Robinson recognizes Popper’s contribution on this point: ‘To be too definite is giving hostages to malcontents. Also in the scientific sphere vagueness is more accurate than precision.’ As Professor Popper points out, science can operate perfectly well with vague terms such as ‘wind’ (Robinson 1962:85). In *The Accumulation of Capital* (1956), Robinson also notes that: ‘Economic concepts such as wealth, output, income and cost are no easier to define precisely than wind. Nevertheless these concepts are useful, and economic problems can be discussed’ (quoted in Bradford and Harcourt 1997:124).
- 36 This view underlies both Einstein’s theory and quantum physics (e.g. Bramhall 1986:53).
- 37 Keynes’s emphasis on matters of policy and hence on the attempt to transform things finds a philosophical counterpart in pragmatist authors such as Peirce and Dewey. See, for example, Coates (1990:125); Dillard (1948); Gruchy (1949).

### 3 KEYNES’S *GENERAL THEORY* AS ‘THEORY OF PRINCIPLE’

- 1 A similar view is held by Hoover:

It has been argued by Patinkin (1976:142), among others, that Keynes does not have a theory of expectations formation. If what this means is that Keynes does not have a single mechanical algorithm for the generation of expectations, this is no doubt true.

(Hoover 1997:222)

- 2 Similarly, Fitzgibbons (1988:41) argues that Keynes accepted that there were two entirely different theories of economics: one at the micro level (in terms of demand and supply) and another at the macro level involving money; he did not try to reconcile the two accounts. See also Brown-Collier and Bausor (1988:228); Gerrard (1997:180–3).
- 3 O’Donnell notes, for instance, that, ‘Intuition figures prominently in Keynes’s conception of the nature of economics. A constant motif was the notion of economics as an admixture of intuition, logic and empirical knowledge’ (1989:209; also Mini 1974:244).

## 4 As Popper puts it:

The empirical basis of objective science has thus nothing 'absolute' about it. Science does not rest upon solid bedrock. The bold structure of its theories rises, as it were, above a swamp. It is like a building erected on piles. The piles are driven down from above into the swamp, but not down to any natural or 'given' base; and if we stop driving the piles deeper, it is not because we have reached firm ground. We simply stop when we are satisfied that the piles are firm enough to carry the structure, at least for the time being.

(Popper 1980:111)

On these grounds, Keynes's a priori assertions must be regarded as conjectures open to constant change and correction through interaction with experiences of the real world (see Lawson 1988:53–5).

- 5 Strictly speaking, Neoclassical theory also seems to start from empirical assumptions, such as that of agents having preferences. However, these assumptions are similar to the definition of primary qualities of bodies in the mechanistic model; that is to say, they are the very basis of absolute notions. The difference between the empirical assumptions of Keynes and those of Neoclassicists is that the former concern the system as whole.
- 6 In other words, for Simon, even if firms seek to determine the optimal level of production in real world conditions, they need to find a proxy to this solution insofar as it is difficult to calculate; the attempt to do so may go beyond human computing power. Firms thus rely on a number of simplifying assumptions such as the following: (a) a quadratic or linear cost function; (b) reference only to expected value; (c) short-term planning horizon (e.g. Simon 1958, 1976). It must be noted, however, that while sharing with Simon the rejection of the perfect rationality view and the emphasis on the shortening of agents' planning horizon, Keynes differs on the choice of the alternative modelling strategy to adopt. This point will be dealt with at greater length in Chapter 14.
- 7 In a similar vein, Howitt stresses that:

In a money-using economy, firms and households are concerned not just with their 'real' economic profits, but also with their cash flow, for no matter what happens to the value of money they can at least stay out of the bankruptcy court as long as inflow exceeds outflow. Historical cost accounting helps firms to keep track of their cash flow better than would an indexed system; and nominal, non-indexed debt contracts allow them to insulate their cash flow from unpredictable fluctuations in the price level.

(Howitt 1997:253)

## 8 As Mini puts it:

Time in economics is an independent variable, one that, when mentioned at all, is isolated from all the other variables. The movement from the short to the long run does not cause a change in what, if time were historical time, would inevitably have to change. Time in economics is not the time of real life... It is merely a link between one state and another... What happens between equilibrium states is beyond the scope of theory; clear indication that... 'weeks' and 'periods' spoken of in economics have nothing to do with historical time.

(Mini 1974:119–20)

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- 9 By underlining the essential role of time, Keynes is in line not only with Einstein but also with pragmatists like Peirce and Dewey. They too regard individuals as being exposed to real-world uncertainty, precariousness and instability and emphasize the role of time, future and expectations (see Abbagnano 1974, III:655).
- 10 For the analysis of the various fallacies involved in this transition, e.g. Carabelli (1991:112). In particular, she stresses that Neoclassical theory implies the idea of a neutral money, the possibility of passing without any change in reasoning from a real-exchange economy to a monetary economy (see also Brown-Collier and Bausor 1988).
- 11 Strictly speaking, it must be recognized that Keynes did not think that this transition was impossible. As noted by Davison, however:

According to Keynes, it is impossible to adapt the conclusions of a neoclassical model to the real world of monetary economics, unless *a pre-existing theory of a monetary economy* can be used to make the transformation, i.e. the analytical concepts which Keynes forged for his monetary theory of production can be used to translate neoclassical results to real world situations, but not *vice versa*.

(Davidson 1978:xiii; emphasis added)

- 12 Garegnani writes that 'the appropriate setting for developing effective demand is provided by the surplus approach to distribution found in the classical economists and Marx' (Garegnani 1983:72).
- 13 As pointed out by Dow (1991:152), Keynes's insistence on using nominal rather than real variables reinforces his anti-reductionist stance by highlighting the macroeconomic nature of the general price level over which individual workers have no control.
- 14 As noted, for example, by Rosenberg:

There was never and is not yet a theory which can play a role for economics like the role played for geometry by physical theory. Physics enables us to choose between alternative applied geometries, and to explain the deviations from actual observation of the ones we reject. There is no such theory to serve as an auxiliary in any choice between an applied neoclassical equilibrium theory and a Keynesian equilibrium theory.

(Rosenberg 1983:440)

- 15 For the view that Keynes sees the economy in an interpersonal as opposed to a physical perspective, e.g. Carabelli (1988:212).
- 16 Kant's solution was to stress the existence of synthetic and *a priori* valid statements, such as the concepts of arithmetic, Euclidean geometry, causality and major parts of Newton's physics. Popper notes that in this way Kant brought in his 'Copernican Revolution': '*it was the human intellect which invented, and imposed, its laws upon the sensual morass, thus creating the order of nature*' (Popper 1979:92; original emphasis). However, while agreeing with Kant that the laws of nature are our invention, he stresses that Kant's theory collapsed 'once it was realized that Newtonian dynamics was not a priori valid but a marvellous hypothesis—a conjecture' (Popper 1979:92).
- 17 It is beyond doubt, for example, that Keynes is well aware of the limitations of the use of statistical tools for predictive purposes. For a comparison between Keynes and Popper on the issue of prediction, see Pheby (1985) and Gillies (1988). They argue that the two authors are more similar than might be thought. One might note, for example, that Keynes shared Popper's view on non-complete confirmation or verification of theory by facts.

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- 18 This is in line with his rejection of the frequency probability theory on the grounds of the fact that there may be no objective basis for it (e.g. Keynes 1937a:112–14).
- 19 On the precariousness of conventions in Keynes's analysis, see Lawson (1997:183).
- 20 On these grounds, we might argue that it is not completely true, as suggested by many (e.g. Winslow 1993:108–9), that all Keynes's conventional techniques cannot be philosophically justified. It is true only as far as purely inductive practices are concerned. Keynes himself recognizes this. He claims in particular that we know that the state of affairs is not stable; that we cannot rationalize our behaviour by arguing that we have no reason to expect change or by assigning equal probability to change in either direction or that our valuation cannot be uniquely correct as there is no basis for calculating mathematical expectations. These claims are in tune with Popper's and Hume's critique of induction. However, by suggesting that people learn popular models, Keynes suggests a way out of the problem of induction which is similar to Popper's.
- 21 Thus, in contrast with Shackle and others (e.g. Boland 1982:94, 1992:43; Mini 1974:247–8), Keynes does not fully accept subjectivism; expectations are not merely subjective data despite his emphasis on animal spirits.
- 22 Strictly speaking, however, it is wrong to suggest that the macrofoundations perspective is totally absent in Neoclassical theory. It might be held, instead, that the latter rests on a *partial* macrofoundations approach. It is sufficient to note, for example, that this theory rests on a systemic device like the auctioneer or an aggregate theory like the quantity theory of money, which, however, turn out to be quite inconsistent with the rest of the theoretical framework insofar as they are not derived from optimizing principles. On these grounds, it can be argued that Keynes's emphasis on the role of aggregate psychological data allows him to develop a *full-blown* macrofoundations perspective, one which is quite consistent with the rest of his framework.
- 23 For a critique of Boland's view, see Lawson (1985a:923–4).

### 4 KEYNES'S INDIRECT FORCES PARADIGM

- 1 For a critique of the conspiracy view, see, for example, Popper (1966, II:133–4).
- 2 In line with the British Classics, Durkheim regards the normal state of society as being characterized by objective facts (independent of agents' beliefs and theories) on which empirical evidence is available (e.g. Gordon 1989:433).
- 3 In this sense, one might agree with Fitzgibbons (1988:123), according to whom Keynes does not adopt either the utilitarian or the Classical value theory, but reverts to the preclassical doctrine. The latter too rules out the notion of absolute value and the existence of any reality underlying exchange value. It regards value simply as a makeshift for practical purposes fixed by non-market forces (e.g. the Church) on the grounds of ethical considerations (the notion of 'just' value).

### 5 HICKS'S 'MR. KEYNES AND THE "CLASSICS"'

- 1 These systems rest on the following set of common assumptions: (a) the short-period in which the quantity of physical equipment is taken as given; (b) homogeneous labour; (c) neglect of depreciation; (d) money wages taken as given; (e) money supply taken as given.
- 2 Hereafter, in order to avoid confusion, I use the standard notation, abandoning the one originally adopted by Hicks. I thus use the lettering 'IS-LM' instead of the original 'IS-LL' and the following definitions of the above symbols: Y= level of income; k= proportion of resources over which people wish to keep command in monetary form, determined by the prevailing habits of business; I= investment; S= saving; i= rate of interest; M= quantity of money.
- 3 For a careful analysis of the nature, origins and development of IS-LM, see Young (1987).

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- 4 This analogy has been criticized in the literature. The view that the IS and LM curves are not independent has been put forward by Leijonhufvud (1983) among others.
- 5 In particular, reference has to be made to Wicksellian general equilibrium models, which have been at the centre of the capital theory debate (see Harcourt 1972; Rogers 1989:30–35). For an analysis of the saving-investment relation in IS-LM, e.g. Samuels (1992:45–7).
- 6 As he puts it:

The marginal efficiency of capital schedule determines the value of investment at any given rate of interest, and the multiplier tells us what level of income at any given rate of interest will be necessary to make savings equal to that value of investment.

(Hicks 1937:108)

- 7 As Pigou writes: ‘These three uses, the production of convenience and security, the production of commodities, and direct consumption are rival to one another’ (Pigou 1917:181).
- 8 That, for Keynes, an excess money supply is spent entirely on the bonds market is stressed by Hahn, who notes that in his book ‘the excess demand for money is always identically equal to the excess supply of bonds, so that there is never an attempt to substitute money for consumption goods or services’ (Hahn 1955:60). See also Tsiang (1980:504).
- 9 Other orthodox theorists do not share this view. The fundamental similarity between the loanable funds theory and the Classical ‘real’ theory is stressed, for example, by Robertson (1940) and Patinkin (1965:366–81).
- 10 As Hicks puts it:

The idea of the IS-LM diagram came to me as a result of the work I had been doing on three-way exchange, conceived in a Walrasian manner. I had already found a way of representing three-way exchange on a two-dimensional diagram.

(Hicks 1980:20)

Hicks also points out that this diagram will appear ‘in due course in Chapter 5 of *Value and Capital*’ (1980:320); see also Kregel (1982); Young (1987:98–102).

- 11 For a similar view, e.g. Fender (1981:135) and Trevithick (1992:218).
- 12 This basic contrast is admitted by Hicks himself in a recent reassessment of his work of the 1930s: ‘Of course it is true that the majority of those whom Keynes would have called “Classics” would not have accepted that money wages could have remained constant when there was a change in money demand’ (Hicks 1982:100).
- 13 As Keynes himself notes: ‘But whilst this limiting case might become practically important in the future, I know of no example of it hitherto’ (Keynes 1936:207).
- 14 According to him, this is true for two reasons: (a) the role of expectations is neglected in the traditional value theory; (b) the same principles which underlie liquidity preference apply to all lasting assets (see Shackle 1967:245; Townshend 1937:159–61).

### 6 HICKS’S ‘SUGGESTION FOR SIMPLIFYING THE THEORY OF MONEY’

- 1 On Hicks’s early monetary analysis, see also Kregel (1982), Maes (1990).
- 2 Ostroy and Starr stress the link between Walras and Hicks:

Walras (1900) not only gave us the first systematic account of general equilibrium theory, he was also conscientious in his efforts to incorporate money into it.

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Above all, he sought to incorporate money in a way that would be consistent with the rest of his scheme...money is put on a similar footing with other (capital) goods and an equation of the offer and demand for money can be derived from the utility-maximizing hypothesis. Walras's suggestion, coming as it did in an advanced theoretical treatise when marginal analysis was still a novelty, was ahead of its time. By the 1930s, Hicks (1935), who had certainly absorbed the lessons of Walras, could see the logic of Walras' approach.

(Ostroy and Starr 1990:5)

- 3 On the cash-balance approach, see, for example, the works by Schumpeter (1954: 1080–1122); Eshag (1963); Bridel (1981); Laidler (1985).
- 4 As pointed out by Patinkin, the reason why it is not possible to derive the value of money on the grounds of marginal utility is that:

The utility of a given nominal quantity of money depends on its real value, and this cannot itself be known until the price level has first been determined. Hence in speaking of the marginal utility of money, we would already be implicitly assuming what we had undertaken to explain.

(Patinkin 1965:115)

- 5 For comments on this model, see, for example, Shackle (1967:216, 222–3); Kregel (1982); Pekkarinen (1986); Maes (1990); Hamouda (1993:173–7).
- 6 This is because the 'law of large numbers' comes into play, so that 'the risk incurred by undertaking a number of separate risky investments will be less than that which would have been incurred if the same total capital had been invested altogether in one direction' (Hicks 1935:54).
- 7 Hicks regards his monetary theory of the 1930s as very similar to Keynes's: 'Keynes's Liquidity theory was so near mine, and was put over in so much more effective a way than I could hope to achieve, that it seemed pointless, at first, to emphasise differences' (1982:9).
- 8 As Ostroy puts it: 'It is not clear if what we know as Walrasian general equilibrium is compatible with a model in which money as a medium of exchange plays an essential role' (1989:187).
- 9 For a similar view, see, for example, Shackle (1967:223) and Pekkarinen (1986: 287). For a contrary view, see Maes (1990).

## 7 MODIGLIANI

- 1 In other writings, he points out for instance that by enabling the approximation of the whole economy with a small number of equations, the reduced system makes economic analysis more manageable and permits 'closer scrutiny and understanding of the interactions' (Modigliani 1968:401).
- 2 In Modigliani's view, this is 'the oldest and simplest device of developing a dynamic theory into a static apparatus' (1944:62). However, it must be noted that he relies on a notion of long-run equilibrium that, unlike the Marshallian one, does not consider the adjustment of the capital stock, and focuses only on the saving and investment flows.
- 3 It can be argued that Modigliani paves the way for the post-war development of Keynesian macroeconomics based on the neglect of the role of information and expectations formation in the explanation of macro phenomena (see Frydman and Phelps 1983a:1).
- 4 This equation derives from the inverse form of  $N=F(W/P)$ , i.e.  $W=F^{-1}(N)P$ .
- 5 For an assessment of this model, see Young (1987:121–5).

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- 6 It is true that this is not in contrast with Hicks's IS-LM. The latter too relies on money wage rigidity. However, while Hicks seeks to demonstrate that Keynes is a particular case of Classical theory in a theoretical framework based on the money wage rigidity assumption, Modigliani instead recognizes that this assumption identifies Keynes's contribution.
- 7 For a similar approach, see Robertson (1940:33).

## 8 SAMUELSON

- 1 Samuelson differs from Hicks's version of 'pure theory' because he rejects the latter's apriorist approach. In line with the canons of logical positivism and behaviourism, he places the emphasis on testing and observation as a public form of verification. For these features of logical positivism, see e.g. Davis (1994a:55). On behaviourism, see e.g. Coates (1990:182–3).
- 2 According to Boland (1982:89), this strategy is of a conventionalist kind. In the literature on methodology, Samuelson's conventionalism is traditionally opposed to Friedman's instrumentalism (e.g. Boland 1982:152). Conventionalism looks for a more universal, lasting understanding of the workings of the economy—i.e. a true theory of economics—while instrumentalism is always limited to short-run practical problems.
- 3 Samuelson stresses the reason why it is important to distinguish carefully between an equality and an identity:

The equality of the saving and investment that people are willing to continue to make holds only at the equilibrium level of income. But the definitional identity of measured saving and investment holds all the time—even when income is away from the equilibrium level.

(Samuelson 1948a:269)

- 4 Samuelson refers here to a Robertsonian expenditure lag. However, he also stresses the possibility of a production lag when, for instance, autonomous changes in consumption which are unforeseen by producers occur (1984a:259).
- 5 In this model the parameters have the following meanings: a =autonomous consumption; b= marginal propensity to consume; c=autonomous investment; d= marginal propensity to invest.
- 6 According to Samuelson, theorems are meaningful if they are—at least in principle—empirically falsifiable (e.g. Samuelson 1947:5; also Blaug 1980:99–103; Boland 1982:135–6; Caldwell 1982:189–207).
- 7 Samuelson argues that the problem of the stability of equilibrium can only be analysed in dynamic terms. He thus criticizes the static approach developed in Hicks's *Value and Capital* (see Weintraub 1979:58–9).
- 8 Samuelson borrows this notion from quantum physics (Bohr's Correspondence Principle). As noted by Mirowski (1989:378, 386), however, he makes reference to modern physics only in superficial ways. There is no substantive analogy between the two notions.
- 9 For a comment on this view, see Feiwel (1982a). As stressed by Dow (1991:162), the power of the Neoclassical Synthesis as a basis for policy action derived from the willingness of economists to act (make policy recommendations) without a complete atomistic theoretical structure. In the literature Samuelson is often regarded as the best example of the drive to build macroeconomics without strict Neoclassical foundations.
- 10 As for Robertson's expenditure lag, Keynes points out, for instance, that while the income of the previous period may be one of the influences of current expenditure: 'It has no special virtue or significance as a sole determinant... What primarily matters is



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the expectation of expenditure formed by the entrepreneur beforehand and secondarily by the gradual revisions of this expectation in the light of experience' (Keynes 1973b:181–2).

- 11 This explains why the distinction between *ex-ante* and *ex-post* variables is essentially foreign to the *General Theory* (e.g. Kregel 1976). As Keynes points out: 'I am still discussing the conditions of short-run equilibrium. Let us suppose identity of *ex-post* and *ex-ante*, my theory remains' (1973b:183).

## 9 KLEIN

- 1 In line with Samuelson, Domar made the following comment on Klein's research programme: 'Well, you have equations that seem intuitively plausible and you are going to estimate them anyway, why do you go through this whole process of trying to relate them to economic theory?' (Klein 1987:341–2).
- 2 Arrow (1951:639–40) and Koopmans (1947, 1949) were two of the strongest supporters of the constructive method among the Cowles theorists (see Hodgson 1988: 67).
- 3 Having noticed that the interest rate influences the discount rate applied to expected future earnings, Klein argues that, in real-world conditions, due to uncertainty the discount rate must be greater than the interest rate as it must also include a subjective-risk component which may 'far outweigh the interest component, making any fluctuations in the interest rate of little importance' (1966:64). As for the capital stock, in Klein's view, Keynes' own treatment of such a variable was exceedingly superficial, due to his concern for the conditions of short-run equilibrium, which led him to take the capital stock as given.
- 4 Klein argues that it is quite easy to generalize this model and still obtain the same results. In particular, if one supposes that the demand for money depends on the rate of interest and that saving and investment depend on income, equations (1) and (2) can be replaced by equations (1') and (2'). Despite these changes, the solution of the model is still one of full employment because steps 1 and 2 of the above sequence remain as before.
- 5 As for liquidity preference, he argues that it is not 'an essential element of the modern Keynesian system. It merely rounds out the theory and makes it complete' (Klein 1966:43).
- 6 As Klein writes:

[Keynes] defined involuntary unemployment as that unemployment which could be done away with by cuts in real wage rates. This definition... implies that if workers would offer their services according to real instead of money wage rates, there would be no problem of unemployment. It hardly seems possible that Keynes could say that his major contribution to economic theory was to point out a money illusion on the part of workers as a cause of unemployment.

(Klein 1966:80–1)

- 7 In order to retain the symmetry between the two functions, Klein criticizes the second generalization of the Keynesian system obtained by introducing the real stock of money in the savings function, together with income and the rate of interest (equation 2.2''). He refers to Pigou's (1943) paper where this generalization first appears. Klein firmly rejects Pigou's view. According to him, that saving varies inversely with the real stock of money is an unconfirmed hypothesis, which has almost never been discovered to hold empirically (1966:113).

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- 8 Klein argues that most empirical investigations support the view that investment is not sensitive to interest rate changes, so that 'it remains for the opponents of Keynes to show that there is high interest-elasticity in [this schedule]' (Klein 1947b:111). It is important to note that this assumption leads Klein to argue that, for Keynesian theory, monetary policy is largely ineffective in curing unemployment, so that the whole burden of recovery is shifted onto fiscal policy. He regards the belief in the effectiveness of monetary policy as being consistent with the Classical view (Klein 1947b:109).
- 9 He then adds: 'After some years of disappointment Keynesian followers argued that accurate predictions were not needed and that trial and error methods would be satisfactory. I feel that this is an extremely dangerous position. There is really no suitable alternative to the econometric approach' (Klein 1966:192).
- 10 For a critique of this view, see, e.g. Carabelli (1992:26); Gerrard (1992); Hoogduin and Snippe (1987:430).
- 11 Another related reason for Keynes's reservations is that economic data are not homogeneous over time. On the Keynes-Tinbergen debate, e.g. Brown-Collier and Bausor (1988); Carabelli (1988:179-92); Coates (1990:107); Davis (1994a:143); Lawson (1985a); O'Donnell (1989:201-2); Rima (1988); Rowley (1988).
- 12 As pointed out by Stone, for example: 'For there is no doubt that in its day Keynes' book had done probably more than any other to encourage the systematic estimation of national accounts magnitudes and the construction of econometric models' (Stone 1978:62).
- 13 He stresses repeatedly that it is essentially because the interest rate matters to investment decisions that monetary factors affect the economy: 'It seems, then, that the *rate of interest on money* plays a peculiar part in setting a limit to the level of employment, since it sets a standard to which the marginal efficiency of a capital-asset must attain if it is to be newly produced (Keynes 1936:222; original emphasis). For the emphasis on monetary policy in Keynes's theory, see Salant (1986:251-2).

### 10 AMERICAN KEYNESIANS IN THE 1950s

- 1 As pointed out, for example, by Williams:

Liquidity is now commonly accepted as a factor affecting consumption, whereas in Keynes's theory liquidity affected only investment... That expectations should be brought in to explain consumption, whereas with Keynes it affected only investment, is surely a major departure... The broad fact seems to me that we have nothing left out of this basic concept of the Keynesian theory other than that consumption is an important component of income.

(Williams 1948:115)

- 2 Modigliani and Brumberg note, for instance, that a young individual at the beginning of his earning span has a lower propensity to consume than an old individual in the retirement span.
- 3 In particular, Modigliani and Brumberg assume that the utility function is such that the proportion of the total resources that an individual plans to devote to consumption in any given year of his remaining life is determined only by his tastes and not by the size of his resources.
- 4 On the Wicksellian imprinting of Tobin's analysis, see e.g. Rogers (1989:118-24). For an assessment of this model, see also Chick (1977:91-7).
- 5 In his article, Tobin sometimes uses the term 'speculative motive' as a synonym of 'liquidity preference'. In this section, I follow this simplification.

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- 6 Tobin reaffirms this critique also in more recent contributions (e.g. Tobin 1980: 24–5).
- 7 Tobin presents two alternative rationalizations of the indifference curves. They can be derived either from restricting the subjective probability distribution to a two-parameter family (mean-variance) or from assuming the utility function to be quadratic.
- 8 Tobin writes:

By their very nature consols...contain a potential for capital gain or loss. In a pure stationary state, it could be argued, the interest rate on consols would have been the same for so long that investors would unanimously estimate [the probability of capital gain or loss] to be zero. So stationary a state is of very little interest.

(Tobin 1958:266)

- 9 While taking for granted the legitimacy of comparative statics exercises which imply assuming stability of equilibrium, Tobin stresses that sometimes there is little that can be said a priori about the effects of a change in the parameters. For instance, when analysing the overall effect of a change in the interest rate on the allocation of the investor's given amount of wealth between cash and consols, he draws the conclusion that such an effect cannot be determined unambiguously on theoretical grounds as it depends upon the relative strength of the income and substitution effects.
- 10 Keynes writes:

If the rate of interest were so governed as to maintain continuous full employment, virtue would resume her sway; —the rate of capital accumulation would depend on the weakness of the propensity to consume. Thus, once again, the tribute that classical economists pay to her is due to their concealed assumption that the rate of interest always is so governed.

(Keynes 1936:112)

- 11 That Keynes's aggregate consumption function is not built up from individual maximizing behaviour has been stressed by a number of writers (e.g. Bateman 1988: 1105; Blaug 1978:312; Chick 1983:103–4; Drakopoulos 1992).
- 12 This view about wealth underlies Keynes's twofold-margin view. The latter implies the existence of a separation between decisions concerning how much to consume and save that are affected by income flows and decisions on how to keep savings which involve the whole stock of wealth. For Keynes, only windfall changes in capital values may affect consumption because they take place in the present (1936:92–3). As stressed by Patinkin, this effect is not a *wealth* effect, but a *capital gains effect*— i.e. the effect of a *change* in the level of wealth, and not the effect of the *level* of wealth itself. The point is that Keynes does not recognize that 'the higher level of wealth will—in accordance with the wealth effect—exert a permanent upward influence on the level of consumption' (Patinkin 1976:111).
- 13 For the view that Keynes denies that consumption decisions are made on the grounds of an intertemporal perspective, e.g. Dow (1985:100); Carabelli (1988:221) and Mirowski (1989:307). As noted by Boland (1986:148), Keynes's view that many people save to leave a little room for error or for the unexpected is in contrast with Neoclassical methodology for two reasons: (a) because it implies that individuals do not operate on the boundary of their capabilities; (b) because people save not just to earn interest.
- 14 Keynes writes:

Although the private investor is seldom himself directly responsible for new investment, nevertheless the entrepreneurs, who are directly responsible, will

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find it financially advantageous, and often unavoidable, to fall in with the idea of the market, even though they themselves are better instructed.

(Keynes 1936:316)

- 15 On the significance of the uncertainty/risk distinction made by Keynes, see e.g. Chick (1983:213–15); Davidson (1978, Chapter 8); Dow (1985:161); Weisman (1984).

### 11 PATINKIN

- 1 Patinkin notes that what he presents under the caption ‘dynamic analysis’ corresponds to Walras’s and Samuelson’s interpretation of the term: namely, the analysis of stability of equilibrium, which is instead taken for granted by Hicks (see Patinkin 1965:61; Hicks 1946:336).
- 2 Where:  $F(Y, r, M/p) = C = g(Y, r, M/p) + h(Y, r, M/p) + G$ .
- 3 This point is made clear by Hicks<sup>0</sup> in *Value and Capital*: ‘There is no reason why this “natural” rate...should be the same as the true money *rate* of interest... They will be identical only if...the value of money is not expected to change at all, *and if* this expectation is absolutely certain, so that risk is absent... The assumption of constant value of money is a severe limitation on the argument, but the assumption of no risk is more than a limitation—it is a source of actual error’ (Hicks 1946: 160; original emphasis).
- 4 In line with the direct forces paradigm, Patinkin assumes that the system is stable: ‘No matter what the levels of prices and interest at which the market happens to be, there always exist forces which push at least one of the variables in the direction of the equilibrium position’ (Patinkin 1965:234). See also Weintraub (1979:65–6).
- 5 The explicit consideration of the bonds market is another important innovation of his model with respect to the other models of the Neoclassical Synthesis analysed so far.
- 6 On the contrary, as Patinkin points out, in the case of a price rise accompanied by an equiproportionate increase in the nominal money holdings, the demand for real balances remains constant and its curve is vertical, while that for nominal balances is a rectangular hyperbola as in the traditional cash-balance approach.
- 7 Patinkin writes:

All...Keynes means by the statement that the system may settle down to a position of ‘unemployment equilibrium’ is that the automatic workings of the system will *not* restore the system to a position of *full-employment equilibrium*. He does not mean ‘equilibrium’ in the usual sense of the term that nothing tends to change in the system.

(Patinkin 1965:643–4; emphasis added)

Although Patinkin admits that Keynes neglects the Pigou effect and focuses only on the Keynes effect, in his view the latter is sufficient to support his interpretation of the *General Theory* as a dynamic theory of unemployment disequilibrium (Patinkin 1965:21).

- 8 The point is that, for Keynes, even if monetary policy could definitely restore the economy to full employment, ‘there would still remain the very real possibility that it would necessitate subjecting the economy to an intolerably long period of dynamic adjustment’ (Patinkin 1965:339). Patinkin stresses that he agrees with Keynes in opposing deflation and hence the real-balance effect as a practical policy tool. He notes, for example, that a protracted price decline will leave a seriously impaired state of business confidence and create the expectation of still more rapid declines and thus lead both households and firms to postpone their purchases. (Patinkin 1965:336–7).

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- 9 Moreover, he points out that this diagram is in contrast with Keynes's views:

There is no indication that Keynes...interpreted the difference between his aggregate demand and supply prices in the way that it rapidly came to be interpreted in the literature: namely, as the difference between the aggregate quantities demanded and produced, respectively, at a given level of aggregate output, valued at a unique per unit price. Correspondingly [the difference between aggregate demand and supply prices] represents the unplanned drawing down of inventories, which now provides the motive force of the expansion in output. In this exposition, then, the 45° line is simply a geometric device that provides a convenient basis for measuring these unplanned inventory changes: it is no longer Keynes' aggregate supply function...or, for that matter, any other behaviour function.

(Patinkin 1976:92)

- 10 Patinkin criticizes Hicks for missing this point:

In his present article—just as in that of 1937—an increase in the real quantity of money is assumed to affect the workings of the economy only through its effect in shifting the LM curve rightwards; there is no recognition of its effect on the IS curve...this omission...leads to the wrong conclusion that the validity of the automatic full employment mechanism depends on the shape of the LM curve and that if this curve is horizontal...then the return to full employment cannot be assured.

(Patinkin 1959:584–5)

- 11 Patinkin writes:

Even though this point is not marked by an excess of *output*—firms are selling what they are producing—it is marked by an excess of *supply*. That is, despite the fact that firms have decreased their *actual* output to  $Y_1$  the fact remains that the *optimum* output they desire to supply at the real wage  $(w/p)_0$ ...is still  $Y_0$ . Hence at point G there is an excess of desired over actual supply... This manifests itself as an excess in the productive capacity of firms. And this idle capacity continues to induce firms to *lower their prices* in an attempt to increase their volume of sales and thereby return to the optimum designated by their commodity supply curve.

(1965:321; original emphasis)

- 12 Strictly speaking, Patinkin notes that the supply function assumes the more familiar form of an upward-sloping curve, if it is drawn within the coordinate system of Figure 11.3. For the higher the price level, the lower the real wage, the greater the input of labour, the greater, therefore, the aggregate amount of commodities supplied. Similarly, the aggregate demand function for commodities can be represented in Figure 11.3 by a negatively sloping curve.

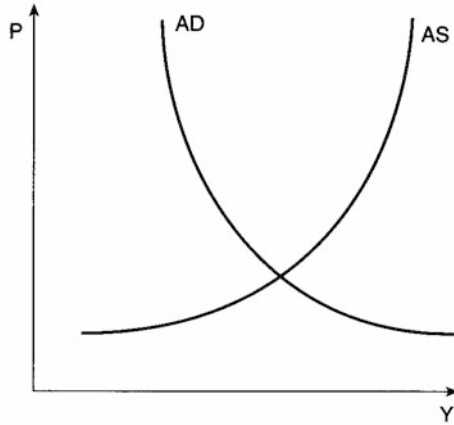


Figure 11.3 Aggregate demand and supply schedules in the price/income space

However, Patinkin fails to justify why, in the Classical model, the money wage is given in the face of an output expansion and an increase in the price level. In standard macroeconomics textbooks the Classical aggregate supply is drawn vertical also in the case described by Figure 11.3 (e.g. Dornbusch and Fischer 1995: Chapter 7). The upward-sloping aggregate supply is not a 'natural' feature of Classical analysis, as shown by the more recent microfoundations literature. See Chapter 12 below.

13 Patinkin claims that:

The simultaneous departure of  $K$  from both the demand and supply curves... expresses the involuntariness with which firms, no less than workers, must be acting during periods of unemployment...the involuntary departure of firms from their labor demand curve...is the simple counterpart of their involuntary departure from their commodity supply curve. Not being able to sell all they want, they cannot employ all they want. This is the neglected obverse side of involuntary unemployment.

(Patinkin 1965:322)

- 14 He stresses that for Keynes money wage rigidity is not an assumption of the analysis but a policy conclusion (Patinkin 1965:643).
- 15 Patinkin also stresses that this interpretation is supported by Keynes's papers published in Volume XXIX of his *Collected Writings*, including fragments of various draft chapters of the *General Theory* written in 1933, where Keynes confuses marginal and average costs. He makes 'all-or-none' statements, according to which the firms will not start up the process of production unless the money proceeds expected from the sale of the output are at least equal to the money costs which could be avoided by not starting up the process. See Patinkin (1978:586-7, 1981:606).
- 16 This conclusion may also be confirmed by looking at Pigou's article. In the latter, Pigou argues that if savings exceed investment at a rate of interest equal to zero and the level of employment starts to fall, a money wage cut leading to a reduction in the price level brings about an increase in the real stock of money and thus, through the real-balance effect, a decrease in savings until the savings-investment equality is restored (Pigou 1943:350). Two remarks can be made about this view. First, it implies that a relative

price like the interest rate fails to balance saving and investment. Because of this failure, the real-balance effect is introduced as an alternative mechanism to restore full employment. Second, the failure of the interest rate mechanism rests on two crucial assumptions made by Pigou which are not in line with Classical theory: (a) the existence of a positive rate of saving at a zero interest rate; (b) the existence of a low level of investment even at a zero interest rate. While the former assumption is in contrast with the maximization postulate as it implies that people save not for income but for custom or tradition, the latter implies instead that the investment curve may shift autonomously due, say, to pessimistic expectations.

- 17 A similar point is also made by Leontief (1936a:350), who argues that in the general equilibrium model the two functions are not independent as they rest on the same set of independent data (production functions, tastes, etc).
- 18 An important objection that can be raised against Patinkin's demand curve for money is that it is derived on the basis of a change in the price level alone, drawing on the analogy of a change in the price of an ordinary good in value theory. This analogy seems to be unwarranted. While, in value theory, reference is made to changes in relative prices of an individual commodity (all other relative prices being held constant), in his monetary theory Patinkin refers instead to changes in the price level. An important difference between the two events is that only the change in relative prices generates the substitution effect accounting for the negative slope of the demand curve. It seems quite difficult, therefore, to consider Patinkin's demand curve for money as a real demand curve. While Patinkin is aware of this, he does not draw negative conclusions about the integration of monetary and value theory. On this point, see Togati (1990: Chapter III).

## 12 NEW CLASSICAL MICROFOUNDATIONS

- 1 On the drive to build macroeconomics on strict Neoclassical foundations, e.g. Backhouse (1996: Chapter 8); Boland (1982:80); Dow (1991:162); Hodgson (1988:53); Janssen (1993).
- 2 In his view, they revolve around such issues as the different parameter estimates of the interest-elasticity of the demand for money, the velocity of adjustment of prices and quantities in the face of changes in aggregate nominal demand, the stability of crucial behavioural equations, such as those relating to the demand for money or the aggregate expenditure and the relative importance of money supply shocks or real demand and supply shocks. This shows that the contrast between Friedman and Patinkin or Tobin is tantamount to a contrast between different interpretations of the same IS-LM model (e.g. Friedman 1974; Patinkin 1974; Tobin 1974).
- 3 On the interpretation of Friedman as a Marshallian, see e.g. Rogers (1989:153–7).
- 4 On these grounds, Friedman is led, for example, to reject Keynes's theory:

I believe that Keynes's theory is the right kind of theory in its simplicity, its concentration on a few key magnitudes, its potential fruitfulness. I have been led to reject it, not on these grounds, but because I believe it has been contradicted by evidence.

(Friedman 1974:134)

- 5 Friedman refers to money illusion and trade union strength as two typical instances of *ad hoc* explanations of money wage rigidity in the Keynesian literature (1974: 143).
- 6 Friedman's actual modelling practice is not always consistent with his methodological precepts. Brunner and Meltzer stress, for example, that Friedman 'offers a theory that

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eliminated any effect of changes in relative prices, interest rates' (Brunner and Meltzer 1974:75). This is the reason why, unlike Friedman, they criticize the use of IS-LM. In the latter:

The effect of monetary policy on income depends on the slope or elasticity of the IS curve...interest rates are generally taken as measures of borrowing costs. There is no distinction between market and real rates... No mention is made of interest rates as a proxy for relative prices of assets and output... There is nothing in the model as presented capable of explaining the fact... that market interest rates generally rise during periods of economic expansion and fall during contractions.

(Brunner and Meltzer 1974:72–3)

On these grounds, they draw the conclusion that the IS-LM model cannot accommodate the Monetarist transmission mechanism of monetary impulses based on relative price changes. The point is that these changes bring about chains of substitution and adjustment of wealth concerning the whole range of assets which affect the position of the IS and LM curves, rather than their slope, thus making the outcome of these substitution and adjustment processes rather obscure.

- 7 These commitments 'can be explained by the cost of acquiring information by employers about employees and by employees about alternative employment opportunities plus the specific human capital that makes an employees' value to a particular employer grow over time and exceed his value to other potential employers' (Friedman 1977:456).
- 8 As stressed by Boland (1982:152, 193), Lucas subscribes to conventionalism, in contrast with Friedman's instrumentalism. His objective is to increase the generality of economic analysis.
- 9 Lucas writes:

The most interesting developments in macroeconomic theory seem to be describable as the reincorporation of aggregative problems such as inflation and the business cycle within the general framework of 'microeconomic' theory. If these developments succeed, the term 'macroeconomic' will simply disappear from use and the modifier 'micro' will be superfluous. We will simply speak, as did Smith, Ricardo, Marshall and Walras, of economic theory.

(Lucas 1987:107–8)

- 10 According to this hypothesis 'each agent is assumed to have limited information and to receive information about some prices more often than other prices' (Lucas and Sargent 1979:306–7).
- 11 As Begg puts it: 'The "true" expectations is the mathematical expectation which could be derived by writing the correct structural model of the economy...forming mathematical expectations conditional on the information available at the date at which expectations are to be formed' (1982:30).
- 12 It should be clear that Lucas's reliance on the stochastic equilibrium notion does not help to solve this problem as this notion only allows for sudden shifts in the basic general equilibrium data themselves.
- 13 Tobin notes that in Lucas's model: '*Sellers* decide how much to sell with full knowledge of the market-clearing price. Buyers, however, must decide how much to purchase in the current period before they know the market prices they will have to pay' (Tobin 1980:40; original emphasis).



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### 13 KEYNESIAN MICROFOUNDATIONS I: THE WALRASIAN BENCHMARK

- 1 Barro and Grossman summarize their critique of the Neoclassical Synthesis as follows:

An unfortunate aspect of the evolution of conventional post-Keynesian macro-economics has been a chronic attempt to coax a theory of employment and inflation out of a framework of general market clearing. The result of these effects has been to leave conventional macro-economics with an embarrassingly weak choice-theoretic basis.

(Barro and Grossman 1976:1)

- 2 In his view, wrong asset demand prices are generated by phenomena such as the liquidity trap, which impair the coordination of intertemporal activities, such as saving and investment plans, on the capital markets (Leijonhufvud 1968:14). A similar critique is also made by Leijonhufvud against the IS-LM model (*ibid.*: 9).
- 3 In particular, he makes reference to the contributions on search theory contained in Phelps (1970) and to the implicit-contract theory as developed, among others, by Baily (1974) and Azariadis (1975).
- 4 According to this theory, for instance:

The seller will normally be willing to hold his resources off the market while he investigates the environment, rather than sell at a price acceptable to whatever potential buyer...he happens to be in contact with at the moment... While sellers engage in such search behaviour, unemployed resources would thus be observed.

(Leijonhufvud 1968:76–7)

In other words, sellers face the problem of deciding on their reservation price while gathering more information.

- 5 For simplicity's sake, I make no explicit reference to the co-authors of many of Stiglitz's contributions, such as Azariadis, Greenwald, Neary and Weiss.
- 6 'Cant phrases about optimizing behaviour lead nowhere without a reasonable specification of what is being maximized and what constraints are perceived' (Solow 1979: 353–4).
- 7 According to Solow, both Keynes and Klein subscribed to this rough-and-ready approach:

In a sense, macroeconomics always had micro-foundations. Whatever Keynes or Pigou...proposed on aggregative relationship, its particular form was always defended by a microeconomic story. Think of Keynes's argument for the properties he assigned to the propensity to consume... Look again at Lawrence Klein's *Keynesian Revolution*. Even purely empirical aggregative regularities, when they occurred, were always rationalized by some sort of microeconomic argument.

(Solow 1979:196)

- 8 Stiglitz emphasizes, for example, that IS-LM is a bad tool of exposition of the *General Theory*; through it earlier modes of thinking crept back (Greenwald and Stiglitz 1987:120).
- 9 Solow admits that 'to allow yourself too free a hand with the stipulation of social conventions is to permit cheap "proof" of almost anything' (1979:348–9). However, in his view this does not mean that 'there are no social conventions' (*ibid.*: 349).

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- 10 In his view there is no macroeconomic feature or institution which in principle cannot be explained in terms of the standard axioms of individual rationality. As he puts it:

Although I have no difficulty with the idea of class, I have not been able to give meaning to 'class interest' ...until these interests...have been located in the individual member. Again I am quite prepared to accept that 'the whole may differ from the sum [of its parts]', but it seems only comprehensible when one starts at the level of the individual. Then, for instance, the theory of externalities can make for comprehension.

(Hahn 1984a:2)

- 11 In such a construction, goods are distinguished by their physical attributes, their location, the date of their delivery and by the state of nature (Hahn 1981:73).
- 12 The list of microfoundations topics which are quite naturally dealt with by general equilibrium theorists is hinted at by Weintraub:

General equilibrium analysis, has...gone far beyond Walrasian typologies to a consideration of many issues, like transactions structures, information costs, speculation, imperfect adjustment, and search behaviour, which are nearer to traditional macroeconomic concerns. There should be little argument about the proposition that some sort of revived, reconstituted general equilibrium theory is the only logically possible general link between microeconomics and macroeconomics.

(Weintraub 1979:161)

- 13 Hahn is not concerned with the standard cases of externalities which can be eliminated by appropriate allocations of property rights (e.g. smoke and laundries; beekeepers and apple farmers), but with those which 'arise from the nature of the economic game and from the manner in which the players in such a game can communicate' (Hahn 1982a:318).
- 14 Hahn admits that he does not know how to give standard macroeconomics a theoretical foundation:

Whether, for instance, in discussing investment behaviour one is to think of some 'representative' investor or some particular statistical average seems unresolved. The law of large numbers is perhaps not as applicable to social as to physical phenomena. Think of expectation formation.

(Hahn 1977:193)

- 15 In Hahn's view, general equilibrium itself is a kind of holistic theory: 'There could be theories—holistic theories—in which aggregates do not behave as simply added microentities. Indeed, general equilibrium theory itself shows that the interaction of many individuals needs a special theory' (Hahn 1982a:311). He refers here to the 'invisible hand' argument according to which a social system moved by independent actions in the pursuit of different values is consistent with a final coherent state of balance and one in which the outcomes may be quite different from that intended by the agents (see Hahn 1973a:64). On these grounds, it seems that Hahn's view is not that holistic theories are to be ruled out but that general equilibrium is the only acceptable holistic theory. For an assessment of Hahn's views on methodology, see Dow (1985:67, 95–7).
- 16 This is the reason why Hahn dismisses the conception of macroeconomics as a disequilibrium theory held by the Disequilibriumists. In Hahn's view, the term

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'disequilibrium' itself leads to the wrong belief 'that any state that is not a Walrasian equilibrium is to be regarded as a disequilibrium' (Hahn 1989b:106).

- 17 Hahn stresses the difficulty of making forecasts of policy outcomes due to the possibility of multiple equilibria:

Economics will not yield or forecast accurately the effect of policy. Indeed, it will not forecast accurately. It is only servitude to a naive and out-of-date positivism which will lead to the view that this a crippling admission to make...the set of possible outcomes is a good deal larger than the set arrived at by economic theory.

(Hahn 1982b:341)

In other words, according to Hahn, many things can happen. For instance, he argues that following an increase in public expenditures, both purely Monetarist and Keynesian results may well occur. In the second place, because of this prediction failure, it is useless to build simple models pointing at one definite outcome:

But if I do not know which of these two [i.e. the Monetarist or the Keynesian] and of the many intermediate outcomes that will occur, what is the point of enshrining a guess in some highly special model in which one or the other is bound to occur? It is true that I then say something but it seems to me better to have kept quiet. The circumstance that we must always make public choices does not seem to me to lead to the conclusion that we must always cook the books.

(Hahn 1982a:310–11)

In his view, the main contribution of the economist at present 'is precisely to urge that many things can happen' (ibid.: 311).

- 18 On these grounds, Hahn is thus led to reject the view held by authors such as Hicks and Klein that the non-existence of full employment short-run equilibrium is due to rigidities such as the liquidity trap or the interest inelasticity of investment. He stresses instead that the existence of such an equilibrium is 'at risk only from discontinuous and not from oddly shaped excess demand function' (Hahn 1984b:17).
- 19 On these issues, see also Benassi *et al.* (1994); Drazen (1980); Weintraub (1979:98–102).
- 20 Hahn points out that 'a conjecture differs from expectations concerning future market environments which may, say, be generated by some stochastic process. It is concerned with responses to the actions of the agent' (1989a:98).
- 21 Similar 'negative' remarks are scattered throughout his work. In particular, he points out that 'we have no theory of expectations firmly founded on elementary principles comparable say, to our theory of consumer choice' (Hahn 1982d:3).
- 22 For a critical assessment of New Keynesian developments, see e.g. Davidson (1994: 1, 10); Kregel and Nardozzi (1996); Trevithick (1992: Chapter 8).

## 14 KEYNESIAN MICROFOUNDATIONS II: THE MARSHALLIAN BENCHMARK

- 1 My reference to Hicks is justified by the fact that in his late contributions, from *Capital and Growth* (1965) onwards, he makes a substantial revision of his analysis of the 1930s (see Coddington 1979; Solow 1985).
- 2 Other aspects of IS-LM which Hicks now finds unacceptable are the assumptions that money wages and prices are exogenously fixed and that current income enters as a parameter in the marginal efficiency for capital schedule (Hicks 1982:101).

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- 3 Similar references to the link between the two authors abound in the post-Keynesian literature (e.g. Asimakopoulou 1991; Hamouda and Harcourt 1989).
- 4 As she puts it: 'In contradiction to Clower, I wish to argue that Keynesian economics is consistent with the neoclassical theory of household behaviour (though not with the theory of general equilibrium)' (Chick 1978:7).
- 5 Chick also criticizes the atomistic specification of the standard models of the Neoclassical Synthesis, such as the extended IS-LM which also includes a production function and a labour market. This model ends up by treating the labour market as having causal priority over aggregate supply and expected demand (Chick 1983:249). A similar anti-atomist stance lurks behind Hicks's intention, expressed in his (1979) book on causality, to discuss the foundations of macroeconomics without attention to micro (Hicks 1979:1).
- 6 Shackle writes:

Economic choice does not consist in comparing the items in a list, known to be complete, of given fully specified rival and certainly attainable results. It consists in first creating, by conjecture and reasoned imagination on the basis of mere suggestion offered by visible or recorded circumstance, the things on which hope can be fixed. These things, at the time when they are available for choice, are thoughts and even figments.

(Shackle 1972:96)

- 7 As Davidson writes: 'All neoclassical theories presume that...the future path of the economy is already predetermined by the conditions exhibited at the initial instant' and that 'the future position of the economy is, in principle, already known or knowable by individuals' (Davidson 1991:33).
- 8 Davidson shares Hicks's views on this point, and quotes the following passage:

Economics is in time, in a way that the natural sciences are not. All economic data are dated; so that inductive evidence can never do more than establish a relation which appears to hold within a period to which the data refer. If a relation held...over (say) the last fifty years...we cannot even reasonably guess it will continue to hold for the next fifty years. In the sciences such guesses are reasonable; in economics they are not. Economics...is on the edge of science and on the edge of history.

(Hicks 1979a:37–8)

- 9 It is interesting to note that the interpretation of important macroeconomic phenomena such as business cycles provided by theorists such as Simon is not unlike the standard one. Due to his focus on bounded rationality and the need to account for the internal limits of agents in carrying out their calculations, Simon is led for example to emphasize limits such as money illusion (e.g. Simon 1992:3–4). In his view, both Keynes and Lucas accept this as an explanation of money wage rigidity and a cause of unemployment. The major difference between Simon and the others concerns the interpretation of money illusion. While, for Simon, it may be a form of rational behaviour, for Lucas as for Modigliani it is instead an expression of irrationality.
- 10 On the analysis of liquidity as providing flexibility, in contrast with standard optimization (choosing liquidity implies being inside the boundary), see Boland (1982: 107–110, 149).
- 11 For a comment on this view, see Boland (1986:150–2).
- 12 Davidson also suggests we pay attention to different degrees of organization of spot and forward markets for all sorts of real goods and financial markets, underlining that in real-world economies many markets are missing due to uncertainty and, for those

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that do exist, there may be significant and increasing transactions, search, and information costs (Davidson 1994:96).

- 13 Although the ideas in post-Walrasian macro have been around for a long time (e.g. Clower 1975; Leijonhufvud 1974), they have been put forward in a systematic fashion only in a recent book edited by Colander (1996c), where the label 'post-Walrasian' is proposed for the first time. It is mainly to this book, which includes essays by Clower, Colander, Howitt and Leijonhufvud, that I refer in this section.
- 14 Colander goes on to argue that:

Depending on the nature of the interdependencies assumed among individual decision makers, any aggregate outcome is possible. The resulting equilibria are sometimes called sunspot equilibria—because an equilibrium can be caused by seemingly irrelevant aspects of the economy; in other models they are called path-dependent equilibria, because the equilibria arrived at are dependent on the disequilibrium adjustment paths that led to those equilibria. But the key element of these models is that almost any result is possible, depending on where one begins.

(Colander 1996a:60)

- 15 Colander himself makes this point clear: 'Now one could argue that Walrasian perfectly competitive markets provide an appropriate macrofoundation' (1996a:61). He then justifies his rejection of this type of macrofoundation by suggesting that perfect markets are institutionally unstable as they provide incentives for the formation of monopolistic firms. Moreover, he criticizes the strong rationality assumption as well as the absence of money in Walrasian general equilibrium.
- 16 This should not be surprising. As stressed, for example, by Hodgson (1993) an evolutionary framework is not *per se* in contrast with the orthodoxy. Even Neoclassical authors like Hayek and Menger, strong advocates of methodological individualism, made contributions that go under this label.

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