Multinational Enterprises from the Netherlands

Edited by

Roger van Hoesel
and Rajneesh Narula

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ROUTLEDGE

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Since the days of the Dutch East Indies Trade Company, the economy of the Netherlands has been heavily dependent on the overseas activities of its firms. Despite the end of the colonial era, the Netherlands continues to be a significant player in the world economy. This is not just restricted to trading activities but is increasingly conducted through foreign direct investment by its multinational enterprises (MNEs) and, more recently, through strategic alliances. Indeed, the Netherlands is home to some of the world's largest multinationals including Philips, Unilever and Royal Dutch/Shell.

Despite the long history of international economic activity and the dominant role of Dutch MNEs in the world economy, there has been relatively little academic research in this area. *Multinational Enterprises from the Netherlands* contains a foreword by Professor van Nieuwkerk, Deputy Director of the Netherlands Central Bank and features contributions from an international selection of experts. The book explores issues such as:

- what historical antecedents underlie the character of Dutch MNE activity;
- how and why the technological specialisation of the Dutch economy and its firms has evolved to its current state;
- the changing FDI activity of Dutch MNEs;
- the strategic aspects of Dutch MNE activity in terms of location and R&D as well as the growing use of alliances and mergers and acquisitions;
- the implications for Dutch MNEs of globalisation and economic integration.

Comprehensive in its coverage, this book will be of great interest to students and researchers in international business.

Roger van Hoesel works at Buck Consultants International in Nijmegen, the Netherlands, and is author of *New Multinational Enterprises from Korea and Taiwan: Beyond Export-led Growth* (Routledge, forthcoming). **Rajneesh Narula** is Senior Research Fellow at the University of Oslo and at the Maastricht Economic Research Institute on Innovation and Technology (MERIT). He is author of *Multinational Investment and Economic Structure* (Routledge, 1995).

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Foreword

The Netherlands is among the largest international direct investors in the world, in both absolute and relative terms. This has to do with several specifically Dutch factors, which include national traits (such as thrift and diligence), the openness of the Dutch economy, the absence of important raw materials, and the limited size of the home market. More recently, direct investment has also been boosted by the far-reaching liberalisation and deregulation of the markets, on the one hand, and unprecedented technological developments, on the other. In particular, the development of information technology, coupled with that of telecommunications, has presented numerous sectors in the global economy with major opportunities for expansion and growth.

The development of international direct investment may be considered a healthy and important phenomenon for the Netherlands, in both micro-and macro economic terms. Important because in a country such as the Netherlands with an open economy, there are but few players who have *nothing* to do with cross-border activities. Healthy because direct investment constitutes a healthy form of export, involving the transfer of both capital and know-how.

In the macro-context it is worth noting that the Netherlands has had major surpluses on the current account of its balance of payments for several decades now. As, by definition, these surpluses constitute investment abroad, one could argue that such exports of capital are better off as direct investment than when they take the form of passive savings and portfolio investments such as bank deposits and bonds. After all, direct investment entails real and vital links with the home economy. One could say that it is a sort of extension of one's economy across the border. Obviously the Netherlands with its relatively small home market stands to gain substantially from such a situation. Here it should be pointed out that over the years the Netherlands has been able to capitalise materially on its strong currency and low interest rates. The financial 'fuel' has been not just relatively cheap, but relatively durable as well, because the assets to be taken over were usually denominated in weaker currencies.

However, in an open economy such as that of the Netherlands, while great quantities of capital flow out, they do flow in as well. In other words, Dutch capital and know-how fill up gaps in foreign markets, while foreign capital finds its way to niches in the Netherlands. There are many fascinating and fruitful examples of this phenomenon. Empirical studies show the economic activity of foreign enterprises in the Netherlands to constitute a relatively large share of the Dutch economy, offering major opportunities for the future.

These favourable developments are underscored by the outcomes of surveys held among Dutch direct investors abroad, which show that their activities are, on balance, highly beneficial to the Dutch economy. A majority of the respondents (55 per cent) point out that the exports of Dutch parent companies *expand* because of their international investment activities. Apparently, such investment boosts demand for products from the country from which the company hails. In other words, direct investment and exports should be regarded not so much as substitutes, but increasingly as *complementary* activities.[1]

In spite of the Netherlands' long and rich tradition in outward (as well as inward) direct investment, and in spite of its prominent position among the top direct investors world-wide, relatively little *academic* research has been done so far to study this highly important phenomenon.

In my opinion, the present book remedies that lacuna. It begins by analysing the phenomenon of Dutch multinationals, laying bare interesting historical developments and the sectoral and geographical structure. It then discusses the technological aspects of the activities undertaken by these enterprises, linking them to various characteristics of the Dutch economy. It subsequently looks into the strategic results of the Netherlands' international investment activities, in terms of location (country), sector, and type of cross-border undertaking. The concluding part of this study deals with the consequences of all these international activities of the Dutch economic sector.

We have before us a truly satisfactory and complete overview. I wish the authors a fruitful continuation of their interesting work in this important field of international economic and financial integration.

Professor Dr Marius van Nieuwkerk
Deputy Director
De Nederlandsche Bank

Notes

1 See van Nieuwkerk and Sparling, *The Netherlands international direct investment position,* 1985, Amsterdam: De Nederlandsche Bank; and N.W.Mensink and W.F.C.Verschoor, *Globalisering van de Nederlandse industrie,* a survey held by the Nationale Investeringsbank, to be found *in Economisch Statistische Berichten* (16 April 1997).

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1 Outward investment from the Netherlands

Introduction and overview[1]

Roger van Hoesel and Rajneesh Narula

Introduction

Since the days of the Dutch East India company the economy of the Netherlands has been heavily dependent on the overseas activities of its firms. Despite the end of the colonial era, the Netherlands has continued to be a significant player in the world economy, unlike similar historically dominant trading nations such as Portugal and Spain. Business overseas is not just restricted to trading activities but is also carried out through foreign direct investment (FDI) by its multinational enterprises (MNEs) and, more recently, through strategic alliances and networks. Indeed, the Netherlands is home to some of the world's largest multinationals. As will be illustrated in this chapter, even on an absolute basis, the Netherlands is the sixth largest outward investor in the world. Despite the long history of international economic activity and the dominant role of Dutch MNEs in the world economy, relatively little academic research has been undertaken towards systematically evaluating these phenomena.[2] This volume attempts to fill this gap.

In this introductory chapter, we will illustrate the rather unique position the Netherlands has as a home country of outward investment and touch upon some of the insights into this phenomenon as presented in the other chapters of the volume. To this end, first some characteristics of the Dutch economy will be compared with those of other major outward investors. Subsequently, the overall position of the Netherlands as an outward investor in comparison with other countries will be discussed. Next, the regional and sectoral shifts in FDI that have taken place over time will be examined. In the final section, a profile of the most important Dutch MNEs will be drawn.

Structure of the Dutch economy: some characteristics

Although many characteristics of the Netherlands will be analysed in more detail in other chapters of this book, in this section we will briefly address a number of features of the Dutch economy which have shaped the outward investment pattern of the country. In Table 1.1, some basic indicators of the

Table 1.1 Some basic indicators

	Netherlands	*Belgium*	*France*	*Germany*	*Italy*	*UK*	*Switzerland*	*Canada*	*US*	*Japan*
Population	15,457	10,137	58,141	81,662	57,283	58,613	7,081	29,606	263,057	125,250
GDP (US$ bn; PPPs)	305.6	210.8	1,159.3	1,673.8	1,114.7	1,041.9	175.7	622.6	6,954.8	2,736.8
GDP per capita (PPPs)	19,782	21,031	19,939	20,497	19,465	17,776	24,809	21,031	26,438	21,795
Sectoral GDP										
Primary %	4.0	1.9	0.5	1.3	3.4	2.2	3.4	3.0	1.9	2.3
Secondary %	31.8	23.8	33.6	41.1	37	34.4	37.4	36.5	28.8	40.6
Tertiary %	64.1	74.2	65.8	57.7	59.6	63.4	59.3	60.6	69.3	57.1
Sectoral labour										
Agriculture %	4.0	2.6	5.1	3.3	7.7	2.1	4.0	4.1	2.9	5.8
Industry %	23.0	27.7	27.8	37.6	32.1	27.7	28.8	22.6	24.0	34.0
Services %	73.0	69.7	67.3	59.1	60.2	70.2	67.3	73.3	73.1	60.2
Export (fob)	197,087	170,230	286,762	523,000	233,868	242,692	81,499	192,502	584,742	441,512
Export/GDP	49.8	63.2	18.7	21.7	21.5	22.0	26.6	34.4	8.4	8.6
Import (cif)	177,912	155,449	267,059	463,472	206,246	265,696	80,193	164,443	743,445	335,392
Import/GDP	45.0	29.4	17.4	19.2	19.0	24.1	26.2	29.4	10.7	6.6

Source: OECD Economic Surveys, various issues.

Netherlands and a number of other major outward investors are depicted. From the table, some interesting observations can be made. First of all, the figures illustrate that—in comparison with most other home countries of MNEs—the Netherlands is a small country, both in terms of its population and the size of its economy. In fact, only Switzerland is smaller. As can be derived from Table 1.1, in terms of welfare level the Netherlands is not exceptional among developed countries; only Switzerland and the US show considerably higher per capita GDPs (measured in terms of purchasing power parity).

Regarding the sectoral composition of the economies, we note that in the case of the Netherlands the primary sector (especially agriculture and natural gas) contributes somewhat more to the country's GDP than in the other countries. Furthermore, the services sector generates a relatively large number of jobs (some 73 per cent) as compared with most of the other countries listed.

Most striking, however, is the extraordinary importance of international trade activities for the Dutch economy. Although it is quite common for smaller economies to depend more heavily on overseas business activities than their larger counterparts, the ratios of exports as well as imports to GDP are extremely high—also in comparison with Switzerland. Part of the explanation is the special function the Netherlands has as a major distribution centre for continental Europe. Although many Dutch companies do indeed have their most important markets abroad, a substantial share of the trade figures do not reflect the production of final goods in the Netherlands but 'merely' reflects the re-export and transit of goods produced elsewhere (OECD 1996). However, this observation does not diminish the strong outward orientation of the country.

Table 1.2 renders a view on the relative economic performance of the Dutch economy over time. In the table, the Netherlands is compared with Northwest European countries (which, broadly speaking, share similar economic characteristics), the European Union (EU), and the OECD as a whole. In terms of real GDP per capita the table shows that for the whole period (1960–94), the growth for the Netherlands was somewhat lower than that in other Northwest European countries and considerably lower than in the EU and the OECD. Given the lower welfare base from which the more recent (South European) EU and OECD member states commenced, the latter is no surprise. Especially during the period 1960–87 the performance of the Dutch economy was relatively poor. In more recent years, the economy performed much better and even surpassed the performance of countries mentioned in the other categories in the table. In 1994, the per capita GDP level in the Netherlands was only four percentage points lower than in the other Northwest European economies implying a substantial improvement from the previous period. Given the relatively high growth figures that are being realised at present, the position of the Netherlands is expected to equal or even surpass that of quite a number of other economies in the region. The welfare level *vis-à-vis* the EU and the OECD as a whole was considerably higher.

Table 1.2 Productivity in business sectors

	Period	*Netherlands*	*NW Europe*[a]	*EU*	*OECD*
		(Annual compound growth rates)			
Real GDP per capita	1960–73	3.57	3.63	4.25	3.94
	1973–87	1.21	1.83	1.81	1.84
	1987–94	1.83	1.13	1.52	1.32
	1960–94	2.24	2.37	2.67	2.53
GDP per hour worked	1960–73	5.25	4.89	5.59	4.84
	1973–87	2.60	2.41	2.51	2.31
	1987–94	1.49	2.05	2.31	2.13
	1960–94	3.37	3.25	3.64	3.23
		(As percentage of the Netherlands)			
GDP per capita	1960–73	100	100	79	86
	1973–87	100	100	86	90
	1987–94	100	109	93	98
	1960–94	100	104	91	94
GDP per hour worked	1960–73	100	91	74	86
	1973–87	100	87	77	82
	1987–94	100	85	77	79
	1960–94	100	88	81	82

Source: OECD Economic Surveys 1995–6, for the Netherlands.

Note

a: Austria, Belgium, Denmark, France, Germany, the Netherlands, Norway, Sweden, Switzerland and the United Kingdom.

In terms of the growth of labour productivity, the picture looks different. Table 1.2 reveals that until 1987, the growth of labour productivity in the Netherlands was quite high; since then, it has considerably dropped behind that of other Northwest European countries, the EU as well as the OECD. Notwithstanding this relatively low growth since the late 1980s, labour productivity is still at a very high level and clearly exceeds productivity in other economies.

Van Essen and Verspagen discuss the technology characteristics of the Dutch economy in Chapter 3. The authors show that total R&D efforts in the Netherlands have been relatively modest as compared to other leading countries but are rather similar to those of other small countries such as Sweden, Finland, Switzerland, and Denmark. It turns out that, whereas the public R&D efforts are well developed, business R&D in the Netherlands is carried out at a relatively small scale and low intensity. According to van Essen and Verspagen, this—*inter alia*—can be attributed to the very specific structure of Dutch business, with much of Dutch R&D activities being concentrated in five large MNEs. As Cantwell and Janne show in Chapter 4, Dutch MNEs carry out a relatively large share of their R&D activities abroad. Given the limited size of the Dutch economy, only a limited range of technological sectors are covered in enough detail. The transplantation of R&D activities to other countries is thus not fully compensated by the activities of foreign companies in the Netherlands. Another explanation for the limited business R&D activities in the Netherlands proposed by van Essen and Verspagen is the relatively large role of small business in the Dutch economy. The authors also argue that the sectoral structure (with a large share in the services sector) of the Netherlands also partly explains the modest R&D performance.

Cantwell and Janne in Chapter 4 examine the internationalisation of R&D activities of Dutch MNEs in comparison with their leading European competitors. Although the gap has closed somewhat since the 1980s, they show that the largest Dutch industrial MNEs are still among the most internationalised in terms of their research activities. The authors argue that the large MNEs have successfully combined the resources available to several geographically dispersed units. Interestingly, firms tend not only to build on fields of strengths they had already established at home, but also broaden their technological capabilities over time by taking advantage of local sources of expertise and innovation in each site. Cantwell and Janne illustrate that mergers and acquisitions have played an important role in this respect.

In view of its importance to the Dutch economy, a final remark in this concise introduction to the Dutch economy concerns the destination and composition of exports. In Table 1.3 the geographical destination of Dutch exports is listed, whereas the share of the various product groups over time is shown in Table 1.4. Table 1.3 clearly illustrates that Europe has remained by far the most important destination of Dutch exports. Although the share of the EU and EFTA has gone down somewhat, in 1994 still a great majority of Dutch products remained on the European continent. The table also illustrates that the importance of the USA as an export destination has remained rather low during the last two decades and is even more modest than Dutch exports to Asia. Finally, we observe that in recent years the geographical destination of Dutch exports has become somewhat more diversified although an important part of the new target markets is located in Eastern Europe.

What are these exports composed of? Table 1.4 shows that a large majority of Dutch exports consist of manufactures. The most important product groups are metal manufactures (including electronics), chemicals, and food, beverages and tobacco. Interesting to note in this respect is that, although some fluctuations did take place, *grosso modo* the relative importance of the goods exported from the Netherlands has not changed much during the last two decades. This also implies that the relative knowledge extensive industries—such as food, beverages and tobacco and textiles—have continued to play an important role for the Dutch economy.[3]

Table 1.3 Geographical destination of Dutch exports (%)

Country/Region	1975	1980	1985	1990	1994
EU	71.3	72.2	74.0	72.0	70.7
EFTA	6.4	6.9	5.8	5.7	2.3
USA	2.8	2.5	5.2	3.6	3.7
Africa	4.0	4.0	3.0	2.0	1.6
Asia	5.9	6.6	6.2	5.0	6.0
Other countries	9.6	7.8	5.8	11.7	15.7
	100	100	100	100	100

Source: UN International Trade Statistics.

Table 1.4 Product composition of Dutch exports (percentage share of product group)

Product group	*1975*	*1980*	*1985*	*1990*	*1994*
1 Agriculture	9.5	7.7	7.2	8.3	8.5
2 Mining/quarrying	6.1	8.8	9.0	3.4	3.0
3 Manufacturing	84.4	83.5	83.3	88.3	88.5
31 Food, beverages and tobacco	15.8	14.9	15.3	15.6	16.4
32 Textiles	6.1	4.7	4.3	4.4	4.2
33 Wood and products	0.3	0.4	0.3	0.5	0.6
34 Paper and products	2.2	2.2	2.3	3.1	2.9
35 Chemicals	28.1	30.9	33.4	24.5	22.7
36 Nonmetal products	1.0	0.9	0.8	1.1	1.0
37 Basic metals	5.3	5.5	4.2	4.2	3.8
38 Metal manufacturing	24.8	22.3	22.0	30.2	31.8
39 Other manufacturing	0.9	1.8	0.5	4.7	5.1
	100	100	100	100	100

Source: UN International Trade Statistics.

The Netherlands as an outward investor: a comparison

In Chapter 2, de Goey describes how, since the seventeenth century, Dutch companies built up a world-wide presence. Important pioneers were the Dutch East India company (VOC) and the Dutch West Indies company (WIC) which in the seventeenth and eighteenth century created trading settlements in a large number of countries. These trading activities generated enormous wealth, making the Netherlands one of the most prosperous countries in the world. When opportunities to invest at home became saturated in the second half of the eighteenth century, the capital flowing abroad really gained momentum. As de Goey points out, this capital was utilised for a wide variety of purposes, ranging from the provision of loans to the US government to support their independence war, to the exploitation of plantations in Surinam. After a serious recession in the first half of the nineteenth century, the Netherlands re-emerged as one of the leading capital exporters in the world, and has remained a net capital exporter ever since.

Although cross-country capital exports have been registered for centuries, foreign *direct* (as opposed to portfolio) investment only assumed substantial proportions in the twentieth century. From the 1960s onwards, the size of global FDI grew substantially, but especially in the decades that followed, the overseas presence through direct investment increased dramatically. Whereas from the 1970s improved transportation facilities, innovations in communication systems and growing protectionism motivated companies to invest abroad (Belderbos 1989), since the 1980s globalisation tendencies and the emergence of new home bases of MNEs accelerated the overseas presence of companies at an unprecedented pace. In this section, the outward investment position of the Netherlands will be compared with that of other home countries. In Table 1.5, a number of indicators are listed from which some interesting observations can be drawn.

First of all, the table underlines the enormous growth of overseas presence of companies through FDI in the world during the last two decades. Global outstanding investment stock went up from US$ 280 billion in 1975 to US$ 2,238 billion in 1944—an almost tenfold increase. Notwithstanding the emergence of important new outward investors, the Netherlands has to a large extent been able to maintain its relative position. Its share in global FDI stock went down by only one percentage point from 7.1 per cent in 1975 to 6.1 per cent two decades later. The peak of Dutch presence was recorded in 1980, when 8.2 per cent of outstanding FDI stock in the world originated in the Netherlands—making the country the fourth largest investor in the world. At present, the Netherlands still occupies the sixth largest position. The drop on the outward investor ladder can be largely ascribed to the emergence of Japan as a major investor and—to a lesser extent—the increased overseas investment activities by Germany, France and Italy. The substantial decrease of the share of the US in global FDI stock has been particularly remarkable (from 44.3 per cent in 1975 to 25.7 per cent in 1994). This illustrates an erosion of the technological, managerial, and commercial superiority the US possessed in many industries *vis-à-vis* other parts of the world (Dunning 1993). In recent years, the relative importance of Switzerland has fallen considerably, while that of Japan has grown.[4]

If we take the size of the countries into account, the position of the Netherlands is even more remarkable. Just behind Switzerland, the Netherlands *on a per capita basis* has invested most capital abroad (i.e. US$ 9,494 at the end of 1994), which is much more than the other countries listed in the table. The outward direct investment stock (FDI stock/GDP ratio for the Netherlands is even the highest by far, suggesting that no other country undertakes such a large part of its economic activities outside its own borders. A last indicator mentioned in Table 1.5 is the FDI

Table 1.5 Investment position of the Netherlands in comparison with other countries

Country and FDI indicator	*1975*	*1980*	*1985*	*1990*	*1994*
Netherlands					
FDI stock (US$ mn)	19,922	42,116	47,772	109,124	146,035
Share global FDI stock %	7.10	8.20	7.00	6.50	6.10
FDI stock per capita (US$ 1,000)	1.46	2.98	3.30	7.30	9.49
FDIstock/GDP	0.245	0.245	0.382	0.391	0.437
FDIstock/EXP	0.570	0.570	0.700	0.828	0.942
France					
FDI stock (US$ mn)	10,608	23,604	37,077	110,126	183,406
Share global FDI stock %	3.80	4.60	5.50	6.60	7.70
FDI stock per capita (US$ 1,000)	0.20	0.44	0.67	1.95	3.16
FDI stock/GDP	0.032	0.036	0.073	0.092	0.138
FDI stockEXP	0.206	0.213	0.381	0.509	0.779
Germany					
FDI stock (US$ mn)	14,354	43,127	59,909	151,581	205,608
Share global FDI stock %	5.10	8.40	8.80	9.10	8.60
FDI stock per capita (US$ 1,000)	0.23	0.70	0.98	2.40	2.53
FDI stock/GDP	0.034	0.053	0.096	0.102	0.112
FDI stock/EXP	0.159	0.225	0.327	0.370	0.487
Italy					
FDI stock (US$ mn)	3,299	7,319	16,301	56,102	83,462
Share global FDI stock %	1.20	1.40	2.40	3.40	3.50
FDI stock per capita (US$ 1,000)	0.06	0.13	0.29	0.97	1.46
FDI stock/GDP	0.019	0.016	0.045	0.051	0.082
FDI stock/EXP	0.095	0.094	0.206	0.329	0.440
UK					
FDI stock (US$ mn)	37,002	80,434	100,313	230,825	281,170
Share global FDI stock %	13.20	15.60	14.80	13.80	11.80
FDI stock per capita (US$ 1,000)	0.66	1.43	1.77	4.02	4.82
FDI stock/GDP	0.162	0.150	0.223	0.241	0.276
FDI stock/EXP	0.846	0.703	0.991	1.243	1.370
Switzerland					
FDI stock (US$ mn)	22,443	21,491	21,350	65,731	95,328
Share global FDI stock %	8.00	4.20	3.10	3.90	4.00
FDI stock per capita (US$ 1,000)	3.50	3.40	3.30	9.67	13.63

Table 1.5 continued

Country and FDI indicator	*1975*	*1980*	*1985*	*1990*	*1994*
Switzerland *continued*					
FDI stock/GDP	0.414	0.211	0.230	0.292	0.370
FDI stock/EXP	1.733	0.729	0.783	1.030	1.353
Canada					
FDI stock (US$ mn)	10,356	22,572	40,947	78,853	105,606
Share global FDI stock %	3.70	4.40	6.00	4.70	4.40
FDI stock per capita (US$ 1,000)	0.46	0.94	1.63	2.96	3.61
FDI stock/GDP	0.065	0.086	0.118	0.138	0.194
FDI stock/EXP	0.321	0.358	0.476	0.619	0.639
US					
FDI stock (US$ mn)	124,050	220,178	251,034	435,219	610,061
Share global FDI stock %	44.30	42.80	36.90	26.10	25.70
FDI stock per capita (US$ 1,000)	0.58	0.97	1.05	1.73	2.34
FDI stock/GDP	0.082	0.081	0.064	0.081	0.092
FDI stock/EXP	1.169	1.034	1.223	1.105	1.190
Japan					
FDI stock (US$ mn)	15,941	19,610	43,970	201,440	277,733
Share global FDI stock %	5.70	3.80	6.50	12.10	11.70
FDI stock per capita (US$ 1,000)	0.14	0.17	0.36	1.63	2.22
FDI stock/GDP	0.032	0.019	0.033	0.069	0.061
FDI stock/EXP	0.286	0.151	0.250	0.701	0.701
Global FDI stock	280,136	514,224	679,393	1,667,579	2,378,025

Sources: IMF International Financial Statistics; IRM Directory; UNCTAD (1995); OECD Economic Survey (various issues).

stock to export (FDI stock/EXP) ratio. Although FDI and export certainly cannot be considered (perfect) substitutes (cf. Narula 1996), the ratio does provide an indication of the relative importance of these modes of international business. Interestingly, the position of the Netherlands in this respect is much less extraordinary. In 1994, for instance, the UK, Switzerland and the US all showed higher FDI stock/EXP ratios. Although, this can partly be explained by the prominent position exporting takes in the Dutch economy, as we have noted already, part of these trading activities reflects the re-export and transit of goods that are not produced in the Netherlands. If we take this phenomenon into account, the FDI stock/EXP ratio for the Netherlands probably would go up considerably.

Geographical and sectoral trends

In this section, the trends in overseas investment originating in the Netherlands are examined more carefully. First, the geographical destination of Dutch FDI is examined. Subsequently, the sectors in which companies invested are analysed. In Tables 1.6 and 1.7 the geographical and sectoral breakdown of FDI stock respectively are listed for a number of years.[5]

Geographical trends

Unfortunately, until very recently only a small number of host countries of Dutch MNEs were specified in the statistics published by the Dutch Central Bank ('De Nederlandsche Bank'). Nonetheless, a picture can be drawn of the importance of the various regions where Dutch companies are active through FDI as well as the trends which have occurred during the last two decades. First, Table 1.6 illustrates that a great majority of Dutch FDI has gone to the European Union and the United States. In fact, the relative importance of the EU and US taken together has even increased, from 64.6 per cent in 1973 to 73.9 per cent in 1995. Between 1973 and 1995 the stock of Dutch FDI in the European Union went up about six times from some fl 22 billion to more than fl 139 billion. The share of the EU as a destination for Dutch MNE activity has declined somewhat in this period, but still accounts for almost half of all outstanding investments (i.e. 49.2 per cent at the end of 1995). The present share is substantially higher than ten years ago when 'only' 32.8 per cent had gone to other EU member states. This temporary dip in popularity of the home region coincided with an increased interest in investing in the US. The EU 1992 Treaty again boosted investment in the EU resulting in a higher share in total Dutch FDI. New market potentials and the need to restructure existing production operations in Europe resulted in a strong upswing of FDI.

The table further shows substantial fluctuations in the relative importance of EU members as host countries for FDI from the Netherlands. The share of Belgium and Luxembourg, for instance, went up from 7.1 per cent of total global Dutch FDI stock in 1973 to 13.3 per cent in 1995 whereas the relative importance of Germany went down from 18.8 per cent to 7.8 per cent in the same period. Another important host country is the United Kingdom, whose share varied considerably during the last two decades. An important determinant in the case of Dutch FDI in the UK concerns the activities of several Anglo-Dutch conglomerates such as Shell, Unilever, and Reed-Elsevier. Next to the EU countries, Switzerland has emerged as an important target country in Europe having absorbed 6.7 per cent of outstanding Dutch FDI at the end of 1995. Although Central and Eastern Europe in recent years have attracted the attention of Dutch MNEs, their relative importance as a host region is still relatively modest accounting for a scant 1.0 per cent of total outstanding FDI.

Table 1.6 Geographical division of Dutch FDI stock in the world (millions of guilders and percentage share in total)

Region/country	*1973*	*%*	*1975*	*%*	*1980*	*%*	*1985*	*%*	*1990*	*%*	*1995*	*%*
EU[1]	22,335	50.6	28,006	52.3	42,965	47.9	43,493	32.8	83,719	45.7	139,078	49.2
Austria											2,363	0.8
Belgium–Luxembourg	3,132	7.1	4,139	7.7	6,345	7.1	10,060	7.6	21,382	11.7	37,675	13.3
Denmark	345	0.8	551	1.0	813	0.9	626	0.5	1,348	0.7	3,206	1.1
Germany	8,324	18.8	8,807	16.4	9,806	10.9	12,422	9.4	17,479	9.5	22,115	7.8
Finland										0.0	510	0.2
France	2,815	6.4	3,570	6.7	6,169	6.9	7,188	5.4	14,188	7.7	18,568	6.6
Ireland	120	0.3	120	0.2	508	0.6	805	0.6	1,046	0.6	5,047	1.8
Italy	803	1.8	720	1.3	1,322	1.5	1,797	1.4	2,705	1.5	3,861	1.4
Spain							2,513	1.9	5,632	3.1	9,044	3.2
Sweden											3,337	1.2
United Kingdom	6,796	15.4	10,099	18.9	18,002	20.1	7,620	5.7	18,846	10.3	31,182	11.0
Other EU							462	0.3	1,093	0.6	2,170	0.8
Other Europe							9,704	7.3	15,885	8.7	23,907	8.5
Switzerland	1,025	2.3	1,568	2.9	4,216	4.7	7,619	5.7	12,847	7.0	18,964	6.7
Central and Eastern Europe							5	0.0	23	0.0	2,729	1.0
USA	6,200	14.0	7,126	13.3	16,864	18.8	54,343	41.0	53,666	29.3	69,759	24.7
Latin America and the Caribbean	5,278	11.9	6,079	11.3	10,145	11.3	10,180	7.7	12,020	6.6	18,232	6.5
Netherlands Antilles[2]	2,575	5.8	3,804	7.1	6,399	7.1	6,557	4.9	7,547	4.1	8,420	3.0
Africa	201	0.5	601	1.1	843	0.9	2,249	1.7	1,839	1.0	3,244	1.1
Japan							1,270	1.0	1,677	0.9	2,351	0.8
Other countries	9,134	20.7	10,181	19.0	14,652	16.3	11,292	8.5	14,316	7.8	26,058	9.2
Southeast Asia[3]	1,738	3.9	1,923	3.6	3,991	4.5	3,971	3.0	5,439	3.0	13,971	4.9
Total	44,173	100.0	53,561	100.0	89,685	100.0	132,531	100.0	183,122	100.0	282,630	100.0

Source: De Nederlandsche Bank.

Notes
1 Only countries that were an EU member in the respective years are included.
2 Including Aruba.
3 Including all developing countries within Asia.

Outside Europe, the US has always been by far the most important target region.[6] In the period concerned, FDI stock in the US went up from fl 6.2 billion to fl 69.8 billion implying a more than tenfold increase. Narula and Hogenbirk explore the trends in Dutch investment in the US at length in Chapter 8. The authors show, *inter alia,* that at one point in time in the 1980s, Dutch MNEs accounted for no less than one-quarter of all FDI stock in the US. It appears that such factors as the large homogeneous market, advanced technological environment, political stability, and societal and economic freedom have been important pull factors that stimulated Dutch companies to invest in the US (van Nieuwkerk and Sparling 1985). The increasing saturation of the traditional European markets combined with the relatively imperfect functioning of these markets in the 1980s led to a pull away from Europe towards the US. As Narula and Hogenbirk point out, the competitiveness of Dutch firms in that period was superior to that of their European rivals. Since then, however, the share in US manufacturing has gone down, suggesting a decline in competitive strengths *vis-à-vis* other countries. In addition, the further unification of the EU in 1992 and the emergence of new major investors such as Japan, has led to an increased emphasis on investments in European countries. Moreover, the changing structure of the Dutch economy in favour of the services sector and at the expense of the manufacturing sector has caused a drop in manufacturing FDI. Nevertheless, at the end of 1995, the US had still attracted about one-quarter of outstanding Dutch FDI.

In Chapter 9, Belderbos discusses the activities of Dutch MNEs in Japan. Analysing aggregate as well as micro-level data, the author argues that the operations of Dutch companies in Japan reflect regulatory and economic conditions that have affected inward FDI in Japan at large. Until very recently, locational disadvantages and a range of entry barriers kept inward investment growing at a very low rate. What remains striking, however, is the near absence of many of the most internationalised Dutch MNEs in Japan, which have otherwise been very active in Europe and the US. It is also worth noting that Dutch subsidiaries in Japan export more from Japan than they import. Philips, for instance, uses its Japanese manufacturing base to establish and improve linkages with the strong local supply base and locally available R&D infrastructure.

With regard to the developing (non-OECD) countries, Table 1.6 shows that the picture has changed considerably over time. Important variations can be observed between the various developing regions. Although its share has dropped (from 11.9 per cent in 1973 to 6.5 per cent in 1995), Latin America and the Caribbean is the most important host region for Dutch MNEs outside the OECD area. However, at the same time we note that almost half of these investments have flown to the Netherlands Antilles where shell companies are primarily set up to make use of favourable tax regulations. If FDI in the Netherlands Antilles is excluded, developing Asia is the most important non-OECD host region. The share of Dutch FDI stock that has gone to Asian countries has gone up from 3.9 per cent in 1973 to 4.9 per cent in 1995. The figures for 1994 suggest that within this region Hong Kong is by far the most important target of Dutch MNEs, accounting for 3.6 per cent of total FDI stock.[7] The interest in Hong Kong stems not only from attractive locational advantages of the city state itself. Quite a number of companies also use Hong Kong as a base to conduct business in the People's Republic of China (see Harrold and Lall 1993). Other relatively important destinations in Asia are Singapore (1.0 per cent in 1994) and Taiwan (0.6 per cent in 1994). This brings us to our next observation, namely that outside the OECD area, Dutch MNEs have primarily focused on higher income developing countries. As was also observed by van Nieuwkerk and Sparling (1985), this preference for the more advanced host economies appears to have been in place for a longer time. In view of this preference, it is no surprise that the share of Dutch FDI going to Africa is only very small and that the actual amount invested in the continent since 1985 has even fallen.[8]

Sectoral trends

In Table 1.7, a sectoral breakdown of Dutch FDI stock for a number of years is given. Some remarkable trends emerge from the table. The most striking change during the period 1973–95 is the tremendously increased importance of FDI in the tertiary sector. Its share in total Dutch FDI stock went up from 13.2 per cent in 1973 to 49.0 per cent in 1995. This coincided with a decreasing share for the industrial sector which went down from 86.5 to 50.9 per cent. Yet, the total amount invested in industrial activities grew in this period from fl 38.2 billion to fl 143.9 billion.

Within the industrial sector, chemicals, coal and petroleum are the most important targets. Their relative importance has dropped considerably over the years, however. Whereas (taking these industries together) at the end of 1973 no less than 47.4 per cent of total Dutch overseas investment originated in this sector, this share had gone down 26.5 per cent at the end of 1994. Another important source of outward FDI is food, beverages and tobacco from which 9.6 per cent of outstanding FDI at the end of 1995 had originated. Furthermore, as is shown in Table 1.7, metal products (including electronics) has contributed considerably to Dutch overseas production activities. However, the shares of these sectors have also gone down substantially during the last two decades. As will be illustrated in the next section, the sectors just mentioned are precisely those in which the five largest industrial Dutch MNEs (Shell; Akzo-Nobel; DSM: chemicals and oil; Unilever: food and beverages; and Philips: electronics) are active.[9]

As we noted earlier, Dutch FDI in the services sector has witnessed astonishing growth. Although no fundamental differences exist between services and production-related MNEs regarding the way in which they decide to establish local subsidiaries abroad, Stibora and de Vaal in Chapter 5 point

Table 1.7 Sectoral division of Dutch outward FDI stock (millions of guilders and percentage share of total)

Sector	*1973*	%	*1975*	%	*1980*	%	*1985*	%	*1990*	%	*1995*	%
Primary	127	0.3	137	0.3	439	0.5	125	0.1	193	0.1	176	0.1
Agriculture Mining and quarrying Oil	*127	0.3	137	0.3	439	0.5	125	0.1	193	0.1	176	0.1
Secondary	38,215	86.5	45,577	85.1	72,203	80.5	87,925	66.3	103,948	56.8	143,938	50.9
Food, beverages and tobacco Textiles, leather and clothing Paper, printing and publishing	*5,863	13.3	6,063	11.3	7,103	7.9	11,128	8.4	16,326	8.9	27,127	9.6
Chemical products[1]	20,914	47.3	24,918	46.5	45,794	51.1	56,486	42.6	59,753	32.6	74,796	26.5
Coal and petroleum products												
Non-metallic products												
Metal products[2] Mechanical equipment Electric and electronic equipment Motor vehicles Other transport equipment	*10,634	24.1	13,544	25.3	17,394	19.4	18,447	13.9	21,855	11.9	28,444	10.1
Other manufacturing	804	1.8	1,052	2.0	1,912	2.1	1,864	1.4	6,014	3.3	13,571	4.8

Table 1..7 continued

Tertiary	5,831	13.2	7,847	14.7	17,043	19.0	44,481	33.6	78,981	43.1	138,515	49.0
Construction	495	1.1	837	1.6	1,189	1.3	1,068	0.8	594	0.3	1,986	0.7
Wholesale and retail trade	2,365	5.4	2,890	5.4	6,549	7.3	5,489	4.1	12,786	7.0	29,587	10.5
Transport and storage[3]	1,312	3.0	1,658	3.1	1,491	1.7	1,591	1.2	2,701	1.5	4,743	1.7
Finance, insurance and business serv.[4] Communication Other services[5]	*1,659	3.8	2,462	4.6	7,814	8.7	36,333	27.4	62,900	34.3	102,199	36.2
Total	44,173	100	53,561	100	89,685	100	132,531	100	183,122	100	282,629	100

Source: De Nederlandsche Bank.

Notes
* Details suppressed for reasons of confidentiality
1 Up to 1992, including mining and quarrying, oil and chemicals.
2 Up to 1992, including metal and electrical engineering.
3 Up to 1992, including transport, storage and communication.
4 Up to 1992, including other services. As from 1993, including real estate activities.
5 Including electricity, gas, water, hotels, restaurants and other services.

out that a major distinction is that primary and secondary goods can in principle always be sold through exports. In the case of services activities there is often no choice: their output has to be sold abroad through a physical presence. As was pointed out earlier the service sector plays a very important role in the Dutch economy—even when compared to other economically advanced countries. Their dominance is not confined to the domestic economy, however. Internationally, too, the services sector has become very substantial. Stibora and de Vaal illustrate that the Netherlands has acquired a relative comparative advantage in almost all subsectors of the services sector. In the non-services sector, on the other hand, such a strong position is observed in far fewer subsectors. In view of the fact that this pattern deviates considerably from most other OECD countries, the authors conclude that the Netherlands over time has increasingly specialised in services, especially in banking and insurance. FDI stock in the services sector went up from fl 5.8 billion at the end of 1973 to fl 138.5 billion in 1995, implying an increase of more than 20 times! Table 1.7 illustrates that finance, insurance and business services (36.2 per cent of total Dutch FDI stock) and wholesale and retail trade (10.5 per cent) are by far the most important sources.

General trends in Dutch MNE activity

It is not surprising, given the significance of trade and outward FDI activity to the Dutch economy, that the Netherlands is home to a large number of MNEs. Table 1.8 gives the latest available data on outward FDI stock by country and sector for 1995. This illustrates well the extent of the activities of Dutch firms overseas, in terms of both scale and scope. In this section, we examine the firm-level changes and developments that underlie the macro data. In addition to their sheer size in terms of dominance of outward FDI stocks, Dutch MNEs are also generally considered as competitive on a global scale, not just in terms of price and quality, but are also among the most technology-intensive in their respective sectors. These facts are axiomatic, and are considered a general feature of small open economies (see for example, Freeman and Lundvall (eds) 1988, Dunning and Narula 1996 and the discussion by van Tulder in Chapter 10 of this book). This body of literature has illustrated that small open economies tend to be more internationalised, with a relatively large share of the value-added activity being conducted with the explicit purpose of serving overseas markets. Furthermore, firms from these countries tend to be competitive in a few niche sectors, as small countries tend to have limited resources and prefer to engage in activities in a few targeted sectors, rather than spreading these resources thinly across several industries.

Nonetheless, Dutch MNEs (along with those from Switzerland), while displaying these general traits, are also something of an outlier, demonstrating a pre-eminence among small open economies. The Netherlands behaves as a

Table 1.8 Dutch outward FDI stock by country and sector, 1995 (millions of guilders)

Country	*Agriculture and Fishery*	*Industry*					*Services*					*Construction*	*Total*
		Minerals, oils and chemicals	*Metals and electronics*	*Food, beverages and tobacco*	*Other*	*Total*	*Trade*	*Transportation*	*Banking and insurance*	*Other*	*Total*		
European Union	160	26,070	11,950	11,237	9,843	59,099	16,717	2,077	24,292	35,405	78,491	1,328	139,078
Austria	1	400	889	328	323	1,939	12	11	86	314	423	0	2,363
Belgium and Luxembourg	11	5,951	2,785	2,297	6,597	17,629	3,992	468	7,113	7,866	19,440	596	37,675
Denmark	11	1,142	191	153	3	1,490	203	8	445	1,062	1,717	–11	3,026
Germany	107	3,970	2,070	1,729	586	8,355	3,235	545	5,193	4,432	13,406	248	22,115
Finland	0	302	59	52	0	413	55	0	0	37	92	4	510
France	19	1,871	2,249	2,341	792	7,252	1,930	348	3,517	5,499	11,294	3	18,568
Ireland	0	464	206	519	159	1,347	857	9	903	1,913	3,682	18	5,047
Italy	–3	1,135	350	1,078	0	2,563	792	37	60	411	1,300	2	3,861
Spain	3	1,781	287	1,138	–34	3,173	1,321	12	903	3,629	5,865	3	9,044
Sweden	0	1,581	316	170	–329	1,739	272	296	283	747	1,598	0	3,337
UK	10	7,284	2,442	650	1,650	12,025	3,768	339	5,437	9,137	18,682	465	31,182
Other	2	188	107	782	97	1,174	280	3	351	358	993	1	2,170
Other Europe	1	3,192	2,817	6,125	1,130	13,264	2,298	455	1,935	5,860	10,548	93	23,907
Switzerland	0	2,858	2,425	4,761	1,097	11,141	1,702	344	1,362	4,398	7,807	17	18,964
Eastern Europe[1]	1	215	187	882	23	1,308	505	36	537	341	1,419	0	2,729
United States	9	27,136	7,446	2,934	1,474	38,990	2,892	1,316	15,490	10,882	30,580	180	69,759
Latin America	7	4,757	1,333	4,255	549	10,894	3,857	413	2,140	714	7,125	207	18,232
Netherlands Antilles and Aruba	5	871	161	2,259	550	3,842	2,496	376	1,354	148	4,374	199	8,420
Africa	0	2,125	227	183	66	2,601	152	115	33	255	556	87	3,244
Japan	0	1,021	758	261	35	2,074	78	–66	239	26	277	0	2,351
Other	0	10,497	3,914	2,132	474	17,017	3,592	432	3,839	1,088	8,951	90	26,058
South-east Asia[2]	0	3,975	3,277	1,640	288	9,179	2,834	394	1,164	376	4,768	24	13,971
Total outward FDI stock of Dutch investors	176	74,796	28,444	27,127	13,571	143,939	29,587	4,743	47,969	54,230	136,528	1,986	282,630

Source: De Nederlandsche Bank.

Notes
1 Eastern Europe consists of Albania, the Czech Republic, Bulgaria, Hungary, Poland, Rumania, Slovakia, the Soviet Union and former Yugoslavia.
2 South East Asia consists of China, Hong Kong, Indonesia, Malaysia, the Philippines, Singapore, South Korea, Taiwan and Thailand.

'large' small country, not only in terms of the scale, but also in terms of the industrial scope of the activities of its firms. Dutch firms form two distinct types. First, there are those in a large number of sectors behaving in a 'small country' way, where production is atomistic: a large number of small and medium size firms, primarily focused on supplying large firms locally or exporting to foreign owned establishments overseas, and that tend to be in a few very focused industrial sectors. The second group are the large conglomerates with interests in several—often disparate—sectors, the names of whom are familiar to everyone, and tend to be market leaders in the industries in which they operate, not just in the Netherlands but on a worldwide basis. The first group is unspectacular—every country, small or large, has such firms. The second group, on the other hand, is unusual by any standards. Table 1.9 lists a number of Fortune 500 firms in 1995 by parentage, for some of the smaller industrialised economies world-wide. With the exception of Swiss MNEs, Dutch firms are significantly larger, and are engaged in a wider range of industries than firms from other countries. The ten largest companies accounted for an unwieldy 78 per cent of total market capitalisation in the Netherlands at the end of 1993. Of these ten, three firms: Royal Dutch/Shell, Unilever and the ING group, accounted for over 50 per cent.[10]

As several of the chapters in this book illustrate, the activities of Dutch firms have undergone considerable change since the early 1980s. Although these changes have affected firms from different sectors to varying extents, there are nonetheless some interesting general trends that can be said to be near-universal. First, there has been a rationalisation of activities in order to cope with the establishment of the single market within the European Union. This is both a defensive and an offensive strategy, because similar rationalisation has been occurring across most European countries, as firms prepare for more cross-border competition whereas activities hitherto were more or less confined within national boundaries. Firms from countries with small home country markets such as the Netherlands have tended not to have the economies of scale to compete with firms from the larger European countries, particularly so in the financial services sectors, such as banking and insurance. Dutch MNEs, in a pattern that seems to have duplicated itself across most European firms, have engaged in a rationalisation of their European operations partly in an attempt to conform to (and to take advantage of) the gradual implementation of the directives leading to the single market in the 1980s, particularly in manufacturing. Similar adjustment did not occur in the banking and services sector till the 1990s, however, as the agreement on a single currency was not begun in earnest until early in this decade. Second, there has been a liberalisation of markets on a global scale as sectors such as insurance, real estate, retailing, and utilities have seen a reduction in restrictions on FDI, particularly as a result of the completion of the Uruguay Round. Third, these two factors have led to a liberalisation of the domestic market in the Netherlands, that has seen

Table 1.9 Profile of large MNEs from some small industrialised countries

			Fortune list 1995 revenues (US$ million)		*Largest firm of given nationality in Fortune list*		
Country	*Number of firms in list*	*Number of industries represented*	*Average*	*Standard deviation*	*Name*	*Revenues (US$ million)*	*Fortune rank*
Netherlands	11	9	30,753	27,659	Royal Dutch Shell*	109,833	10
Belgium	6	6	13,143	4,841	Fortis**	22,695	135
Australia	4	4	11,331	2,411	Broken Hill	13,745	284
Finland	2	2	9,578	616	Neste	10,014	439
Norway	2	2	13,113	756	Statoil	13,648	287
Sweden	3	3	18,067	5,278	Volvo	24,021	123
Switzerland	16	9	21,571	13,591	Metroholdings	56,459	28
Canada	6	5	11,070	3,447	BCE	17,939	191
Largest purely Dutch MNE					Philips	40,148	53
Largest purely Belgian MNE					Belhaize' de lion'	12,681	319

Source: Extracted from Fortune list, 1995.

Notes
* Dutch/British ownership.
** Belgian/Dutch ownership.

the growing presence of foreign firms, which have been chipping away at a previously relatively captive market. Fourth, the slowing down of economic growth in most of the industrialised countries has meant that firms have increasingly had to seek new markets outside their traditional markets. In the case of Dutch MNEs, this has meant reducing the emphasis on Western Europe and seeking or expanding their presence elsewhere—particularly in Asia, but also in Latin America and Eastern Europe. Fifth, in the manufacturing sector, the reduction in trade barriers and the continuing high cost of production in Europe has led to a rationalisation and relocation of production to low-wage regions, which, not coincidentally are also fast growing markets for some of these products. The next section examines some of the changes that have occurred among specific MNEs in several of the more important sectors.

A profile of Dutch MNEs

Manufacturing sector

The international activities of Dutch manufacturing MNEs are very much dominated by four large firms—Unilever, Royal Dutch Shell, Philips, and Akzo-Nobel. As Table 1.10 shows, these four firms dominate most economic statistics, together accounting for almost 50 per cent of the sales of the 100 largest firms in the Netherlands. Indeed, according to UNCTAD (1996), Unilever, Shell, and Philips are the ninth, tenth, and twenty-seventh most internationalised MNEs in the world, and in absolute terms, Unilever and Philips have the two largest number of overseas employees of any firm in the world, together employing about half a million people overseas.

The cases of Shell and Unilever, both Anglo-Dutch conglomerates, provide a very rosy picture of the state of MNEs from the Netherlands. Shell has consistently been the most profitable, or one of the most profitable companies in the world for several years—a position attributable to its ability to spread its risk and ride through slowdowns and recessions in different parts of the world by being geographically diversified.[11] Shell manages operations in 120 countries. It has also been trimming its operations—in particular this has meant a reduction in its US activities, where it has been gradually reducing its involvement (see Chapter 8), while making relatively risky (but potentially hugely profitable) investments in the former Soviet republics. However, Shell has also trimmed itself in terms of its industrial diversity, focusing on a few core businesses, having sold or reduced its holdings in coal and chemicals, with an eye on exiting other non-petroleum mining operations.[12] *Unilever,* along with arch-rivals Nestlé and Procter and Gamble, is increasingly locked in a competition to dominate the global food and personal-care products industries. All three of these large MNEs have been engaging in numerous takeovers, acquisitions and disposals to achieve rationalised global positions, particularly given the relatively low margins in this industry. As an example, in the first half of 1996, Unilever made 24 acquisitions and 15 disposals at a net cost of almost fl 3 billion.[13] Chapter 7 discusses trends in Dutch MNE mergers and acquisitions in some detail.

The continuing struggle of *Philips* to adapt to the realities of increased global competition and the volatility of the consumer electronics market, has continued to dominate forecasts for the Dutch manufacturing sector. The economic well-being of Philips tends to dominate the landscape of Dutch outward FDI in manufacturing, and indeed the Dutch manufacturing sector, directly employing over 260,000 people world-wide in 1995 and 44,000 in the Netherlands alone. In addition to refocusing their activities to a few core sectors, they have cut costs to achieve the price competitiveness that US and Japanese firms have achieved through similar attempts at refocusing conducted through the early 1990s. The sale of its controlling stake in Germany's Grundig, and large lay-offs (particularly in the Netherlands), as well as the decision to re-align their R&D towards more short-term and applied research are just three ways in which Philips has tried to do this. It has also relocated production to low-wage countries such as China where Philips had nine joint ventures as of late 1996. At the same time, it has sought to enter new markets, by developing expertise in flat-screen technology, a sector that has hitherto been dominated by Japanese firms. In particular, Philips has established the only flat-screen manufacturing facility in Europe that is not Japanese controlled, and has even been acquiring flat-panel manufacturing capacity in Japan (Chapter 9). In addition, the merger of the telephone manufacturing operations of Philips and Lucent technologies is expected to make it more competitive in the mobile communications sector, since the joint venture will have revenues of US$ 2.5 billion and access to the technological expertise of both companies.[14] These restructuring woes do not extend to *Polygram,* which, although a subsidiary of Philips, has remained largely independent in its operations, and continues to be one of the largest and most successful entertainment groups, having gradually expanded its presence from music to television and films.

The case of *Akzo-Nobel* is another very good example of restructuring to face the challenges of the new economic realities. Akzo (itself a product of the merger between Algemene Kunstzijde Unie [AKU] and Koninklijke Zout Organon [KZO] in 1969) successfully acquired Nobel industries of Sweden in 1994, to become the world's largest producer of paints and industrial coatings with revenues of fl 22 billion (Table 1.10) and had 70,000 employees in 1996. At the same time it is actively restructuring itself by dismantling its five-division structure and replacing it with 34 business units clustered in four groups based on their technical and commercial synergies.[15] It has also cut costs by deliberately reducing its R&D expenditure to 20 per cent less than its needs, forcing managers to seek external sources for technology.[16] Furthermore, Akzo-Nobel has sought to focus its industrial distribution by undertaking either to sell its non-core holdings, or to partner with other firms.

Table 1.10 Some of the most significant Dutch MNEs, by industrial sector

Company	*Industry*	*Dutch ranking*[5] *by 1995 revenues*[#]	*1996 Revenues (mn guilders)*	*Rank in Fortune list 1989*	*1995*
Manufacturing MNEs					
Royal Dutch Shell[2]	Petroleum and refining	1	215,753	4	10
Unilever[2]	Food and personal products	2	87,795	18	38
Philips	Electronic and electrical equipment	3	69,195	29	53
Akzo Nobel[3]	Chemicals	8	22,438	142	300
KNP BT	Paper and packaging	12	13,637		
Heineken	Beverages	15	12,189	403	
DSM	Chemicals	16	10,263	266	
Reed-Elsevier[2,4]	Printing and publishing	19	8,901	460	
Polygram	Music and entertainment	20	9,488		
Hoogovens	Steel	21	7,933	307	
Stork	Machinery and engineering services	30	4,916		
Wolters Kluwer	Printing and publishing	28	4,315		
Van Leer	Packaging	32	4,179		
Océ-van der Grinten	Photocopiers and printers	39	4,174		
CSM	Food products	40	3,026		
Gist Brocades	Biotechnology/food additives	47	2,020		
Tulip	Computers	94	532[6]		
Baan	Software	109	348[6]		
Non-financial services MNEs					
Ahold	Retail	6	36,538		185
SHV	Retail	7	29,963		230

Table 1.10 continued

KPN	Telecommunications	10	20,505	345
Vendex International	Retail	14	12,145	
KLM	Air transport	17	10,358	
Nedlloyd	Sea transport	22	6,831	
Pakhoed	Storage/transportation	45	3,594	
Randstad	Employment	26	5,953	
Heidemij (Arcadis)	Environmental engineering	71	1,066	
Van Ommeron	Storage/transportation	72	880[6]	
Financial services MNEs				
ING	Insurance/banking	4	47,551	72
Fortis[1]	Insurance/banking	5	40,774	135
Aegon	Insurance/banking	9	24,487	307
ABN-AMRO	Banking	11	19,091	105
Rabobank	Banking	18	9,647	297

Sources: Revenues based on estimates from *Het Financieel Dagblad*: de omzetcijfers van 1996; *Jaarboek van Nederlandse ondernemingen 1995/96*, Uitgeverij Tutein Nolthenius, 9th edition, and annual reports. Fortune rankings from *Fortune*, 5 August 1995, and 30 July 1990.

Dutch rankings based on *Jaarboek van Nederlandse ondernemingen 1995/96*, Uitgeverij Tutein Nolthenius, 9th edition. Adjusted for SHV (legally domiciled in the Netherlands Antilles, position 7) and Rabobank (not listed on the stock exchange, at position 18). This has moved all other companies down one or two positions.

Notes

1 Fortis is of joint Belgian and Netherlands nationality. Revenues for 1996 exclude MeesPierson.
2 Reed-Elsevier, Shell and Unilever are of joint British and Dutch ownership.
3 1989 Fortune ranking for Akzo Nobel for Akzo only.
4 1989 Fortune ranking for Reed-Elsevier for Reed only.
5 Dutch ranking list includes foreign-owned affiliates in the Netherlands.
6 1995 figures.

The printing and publishing sector has also gone through a revitalisation, in this case marked by a series of mergers. Elsevier merged with the UK publishing giant Reed in 1992 to create yet another Anglo-Dutch conglomerate with sales of fl 9 billion and 25,800 employees in 1996. This marriage has been followed by a series of divestitures (e.g., the sale of IPC, the UK-based newspapers and magazines division of Reed), and acquisitions (e.g., OAG publications, Lexis-Nexis, MDL information systems). More importantly, in 1997 Reed-Elsevier acquired *Wolters Kluwer,* its Dutch rival, itself the thirty-sixth largest firm in the Netherlands (Table 1.10).[17] Prior to its own merger with Reed-Elsevier in 1997, Wolters Kluwer had acquired CCH inc., the US tax and legal publisher for US$ 1.9 billion in 1995.

This is not to say that Dutch outward FDI activity is mature, and primarily dominated by large MNEs who are engaged in their traditional sectors. Although the Dutch presence in information technologies has been somewhat subdued with the exit of Philips as an OEM manufacturer, it is still heavily involved in the production of components, peripherals, and accessories. Companies such as *Tulip* have continued to operate profitably in this market, and companies such as *Baan* have been making some headway in the software sector.

Elsewhere, there are several smaller manufacturing sector firms which have proved highly successful by focusing on niche sectors. Firms such as photocopier manufacturer *Océ—Van der Grinten,* which has also been repositioning itself to focus on the engineering market and very high volume copiers, has been successful in competing with its much larger US and Japanese competitors. In 1996, it purchased Siemens' printer-making business. Despite its relatively small size compared to Xerox and Fuji, (with sales of fl 4.1 billion and 17,000 employees in 1996, it is less than a tenth the size of Xerox), Océ has the fourth largest R&D budget among Dutch firms, after DSM, Philips and Shell, and has R&D establishments in the Netherlands, Germany, France, and the US. It has also been expanding outside its traditional markets, with the acquisition of sales organisations such as Messerli of Switzerland in 1997, and has been strengthening its distribution in other European countries. Europe accounted for 63 per cent of its sales in 1996 and its presence in the US market has also been growing, with sales in the US increasing from 23 per cent of its total world-wide sales in 1995 to 31 per cent in 1996, with the absolute volume of sales having doubled over that period to fl 1.3 billion.

Another of the great unsung Dutch manufacturing sector success stories has undoubtedly been *Stork,* which had net sales of almost fl 5 billion in 1996. Its operations are divided into two core areas: industrial systems and components, and industrial services. Within these, its operations are divided into several strategic business units: textiles and paper printing; food processing and packaging; industrial components (which absorbed Fokker Aviation after its parent's bankruptcy in 1996);[18] technical services; and engineering and contracting.

Financial MNEs

The financial sector has perhaps adapted the most, and grown the fastest in terms of internationalisation in response to these changes. It has done so with a determination and drive that may easily be mistaken for a crusade—forging alliances, mergers and acquisitions at a breathtaking pace. Indeed, Dutch banks were not small by any means; the four largest were ranked 47, 51, 53, and 60 in the Fortune 500 listing of banks in 1989. These same banks are still present in the 1996 Fortune list (Table 1.10), but have evolved greatly through mergers, acquisitions and new investments. Take the instance of *ABN-AMRO,* which was formed from a merger of the two largest Dutch banks, Algemene Bank Nederland and Amsterdam-Rotterdam Bank. These two banks had combined assets of US$ 185 billion in 1989, and by 1995 ABN-AMRO had almost doubled its assets to US$ 340 billion.

The other large entity is the *ING group* which became prominent after its highly publicised rescue of Barings in 1995. It was created from the merger of NMB Postbank (ranked 60 in the Fortune bank rankings of 1989) and Nationale Nederlanden (the largest Dutch insurance company at the time). The collaboration has been very fruitful, since the new bank has had access to investment funds from the cash-rich insurance company to develop international banking operations, and at the same time has been able to expand its international activities in the insurance sector. ING group had assets of US$ 247 billion in 1995 and revenues of US$ 33 billion. In 1996, it operated a bank network of over 86 banks in at least 50 countries. ING and ABN-AMRO have tended to compete directly, both having similar expansion plans. Both have the ambition to be a dominant force in the emerging markets of Asia and Central and Eastern Europe, and both are listed on the New York Stock Exchange. This is a relatively uncommon event among European banks. As of August 1997, no German bank was listed and among British banks, only Barclays.[19]

There are, nonetheless, considerable differences emerging, in part due to their different backgrounds. First, ING has been largely frustrated in its attempts to develop the US market.[20] This is partly because of the Glass-Steagall Act, which limits the ability of banks to sell insurance and vice versa.[21] ABN-AMRO, on the other hand, does not rely on synergies between the two sectors and has invested considerable resources (before and after the merger) in developing its US market. Depending on the source of statistics, ABN-AMRO is either the largest (in terms of local assets) or the second largest foreign bank (in terms of revenues) in the US. It has achieved this position through a series of acquisitions since 1979 (see Figure 1.1).

Rabobank, although less well-known and considerably smaller than the other two Dutch banking MNEs, is also a Fortune 500 company. It has had more modest ambitions,[22] planning to be a 'global niche player', concentrating on providing service world-wide in its four core specialist areas: food and agriculture, healthcare, financial institutions and international corporates. It

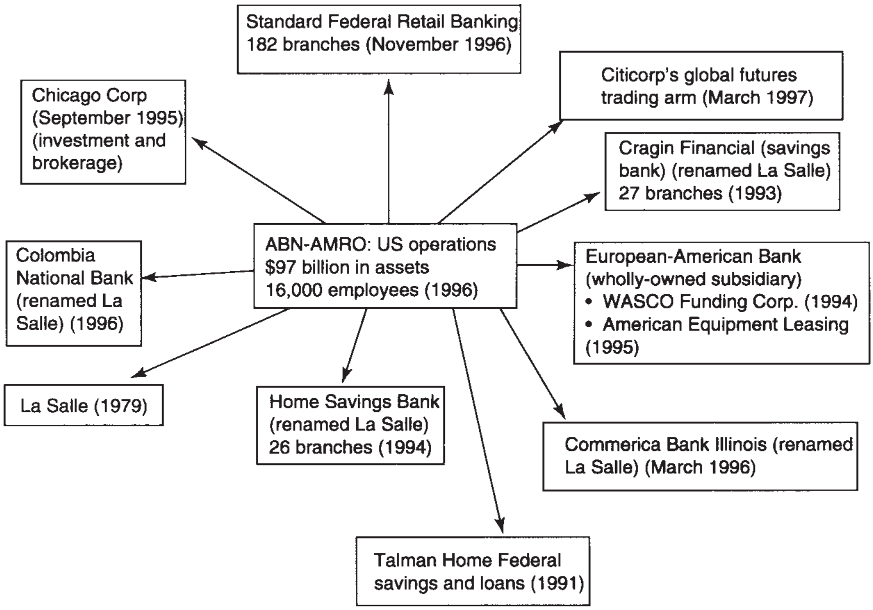

Figure 1.1 Selected acquisitions of ABN-AMRO's US operations

has a very much subdued global ambition, given its origins as a cooperative bank and, consequently, more limited access to capital for international expansion. Indeed, it did not have any overseas offices until the early 1980s. Nonetheless, the Rabobank too has begun to make its presence felt. It has done so through joint ventures while at the same time focusing on these niches. It has a major presence in the Australian agricultural lending market, for instance, having acquired the Primary Industries Bank (PIBA) in 1995.[23] It is also active in North and South America in these sectors.

Other Dutch insurance companies have also begun to improve their international presence. *Aegon,* for instance, has entered the US market, with the acquisition of US insurance company Providian for US$ 3.5 billion, making it larger than Nationale Nederlanden (one of ING's parents) in terms of assets. *Fortis* is another insurance firm with banking ambitions and is listed on both the Belgian and Dutch stock markets (a result of its origins: Fortis is a 1990 merger between Groupe AG of Belgium and Fortis AMEV of the Netherlands). Fortis owns the fifth largest Dutch bank, VSB, which is heavily involved in the Dutch mortgage market, the fourth largest in Europe. Indeed, it is speculated that VSB would like to enter the mortgage markets of more European countries when regulations allow it.[24] The purchase of MeesPierson from ABN-AMRO in 1996[25] (another product of the merger of the investment banking branches of ABN (Mees & Hope) and AMRO (Pierson, Heldring and Pierson),[26] demonstrates the objective of expanding their banking operations. MeesPierson, whose operations are larger than those of Fortis' existing banking operations, is primarily focused in investment banking.

Non-financial service MNEs

Although the Financial MNEs such as ING and ABN-AMRO have received the most publicity, Dutch MNEs in the non-financial services sector have the fastest growing international operations. Excluding the case of *KPN* (Koninklijke Post en Telecom), the telecommunications utility that privatised in 1989, there would seem to be four sectors in which Dutch service firms are established: employment services; transportation and distribution services; retail and trading; and environmental services. KPN has sought to prepare itself for the deregulation of the Dutch telecommunications markets by shedding jobs and establishing a series of joint ventures and acquisitions to position itself for subsequent privatisations and deregulations throughout the world. In particular, its small home market base has meant that it has sought to overcome such limitations by allying itself with other similarly-challenged firms. KPN has established Unisource, in cooperation with Swedish Telia AB, Swiss Telecom PTT and Telefónica de Espana SA. Unisource has a strategic alliance with AT&T to establish joint services and standards. Telia and KPN have established a consortium with Ireland's Telecom Ierann, while KPN and Swiss Telecom have jointly acquired a 27 per cent interest in Czech Republic's SPT Telecom. KPN also has an equity share in PT Telekomsel of Indonesia and is helping establish GSM services throughout the Indonesian archipelago. It also acquired TNT, the Australian courier company for fl 2.25 billion in 1996, adding another 48,000 employees to its payroll.

The retail sector is best exemplified by the case of *Ahold,* which, like *SHV*[27] (itself the owner of Makro) has expanded outside its home market (where it is the market leader, with a market share of 25 per cent[28] since the 1990s). In fact, by 1996 it owned the fifth largest chain of US retail stores. Its sales in this market were US$ 12.4 billion in 1995. It has expanded primarily through acquisitions—its stated goal is to expand its US presence even further through this means, targeting companies with sales between US$ 1 and 2 billion over the next few years.[29] Its expansion plans are not limited to the North American market—with expansions also taking place in Spain, Portugal, Poland and the Czech Republic as well as in South America. It is also developing its Asian presence in Thailand, Malaysia and China, reportedly opening stores in China at the rate of one per week in the early 1990s.

Not all retail firms have shown such an aggressive approach to internationalisation. *Vendex International,* one of the largest retailers in the Benelux region with sales of US$ 12 billion in 1996—its subsidiaries dominate the high street retailers from fashion and groceries to electronics and sports goods—has limited its overseas expansion to Germany and France. Indeed, Vendex's

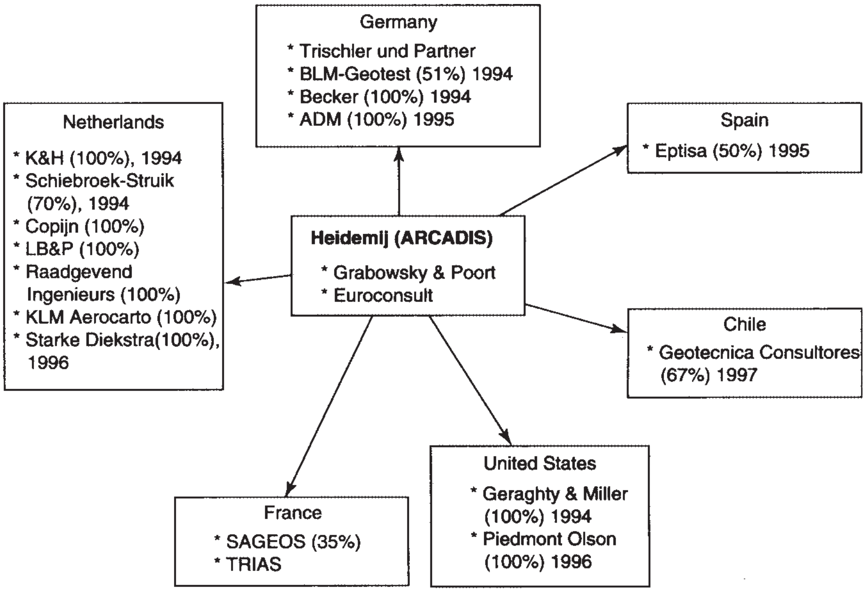

Figure 1.2 International operations of Heidemij (Arcadis)

employment services division (Vedior) has been much more aggressive internationally, and is in fact to be separately listed from Vendex's retail operations from 1997.[30]

The pioneer in the international employment services sector is *Randstad*. Randstad is the twenty-fourth largest firm in the Netherlands in terms of sales, with over 320 offices in the Netherlands. It is also engaged in several other related service sectors including security, education, and R&D. More than a third of its net revenues of fl 6 billion in 1996 derived from its international operations, and this share is expected to grow, given its low penetration in other markets, particularly with the growing popularity of 'flexible' work among EU countries.

In the transportation and distribution sector, *Pakhoed* has been expanding its position through acquisitions and joint ventures and is now the second largest distribution firm in Europe, and the world leader in chemical distribution, with its 1995 acquisition of Lambert Riviere of France and Univar, the largest North American distributor in that sector. Pakhoed has clear plans to continue its expansion drive, particularly in Asia. Its main Dutch competitor *Van Ommeren,* has similar plans, and also intends to improve its position on the shipping side. *Nedlloyd,* the transportation conglomerate, is also in the process of rationalising, with the sale of its oil and gas drilling subsidiary, Neddrill, to Noble Drilling Corp.[31] In 1996, Nedlloyd agreed to merge its container operations with those of its main European rival, P&O of the UK, to create one of the largest container shipping companies in the world.[32] This is partly in response to low margins and low returns on capital in the container shipping industry, with firms trying to cut costs and raise volumes.[33] It is expected that further mergers are likely.

Companies such as *Heidemij* (renamed *Arcadis* in 1997) have developed a dominant position in the engineering services sector, but with a particular focus on environment-related engineering services. Heidemij was originally organised as a public service association, the Vereniging Nederlandsche Heidemaatschappij, as early as 1888, but was restructured and established as a limited company in 1982. Since adopting its current operating structure in 1993 it has sold its non-core businesses in software and computing facilities and real estate agencies. At the same time it has aggressively expanded its operations, in both the Netherlands and Europe, with 51 per cent of its sales coming from outside the Netherlands and handling projects in over 80 countries. In addition, it has also undertaken a series of acquisitions to strengthen its world-wide position (see Figure 1.2).

Notes

1 We would like to thank Annelies Hogenbirk and Astrid Kusters of the University of Maastricht for their research assistance in preparing this chapter. We would also like to thank Prof. Dr van Nieuwkerk of De Nederlandsche Bank for providing us with some of the data used here.
2 The most notable exception is a study carried out by van Nieuwkerk and Sparling (1985) more than a decade ago.
3 We would like to emphasise, however, that one has to be cautious in labelling industries as 'knowledge (or R&D) intensive or extensive'. Not only can important variations exist within these (broad) sectors, but also important technological advances have been observed in traditionally non-R&D intensive sectors.
4 An important weakness of the stock figures usually published (which are also used here) is that they are valued at their historical costs instead of present values. As a result, 'older' investments are seriously undervalued if compared with more recent projects. This also implies that the total stock value of countries that registered early FDI in reality reflect a more extensive overseas presence than that of more recent outward investors. However, data restrictions prevent re-evaluation of FDI to adjust for this. See Cantwell and Bellak (1994) for further discussion on this issue, and an attempt at re-evaluation.
5 1973 is the first year for which these data were published.
6 In Chapter 2, de Goey shows that Dutch investors have historically been very active in the US.
7 For 1995, such detailed figures were not yet available.
8 In the 1980s oil exploitation had resulted in Dutch investments of some importance.
9 According to van Nieuwkerk and Sparling (1985), nearly three-quarters of the Dutch investment position abroad is accounted for by the ten largest MNEs.
10 *Euromoney,* pp. 348–352, September 1994.
11 *Fortune,* pp. 71–75, 5 August 1996.

12 *Forbes,* pp. 92–94, 9 November 1992.
13 *Financial Times,* p. 10, 10 August 1996.
14 *Financial Times,* p. 29, 18 June 1997.
15 *Chemical Week,* pp. 26–32, 27 October 1993.
16 *Chemical Week,* pp. 33–34, 21 December 1994.
17 At the time of writing (December 1997), this acquisition was being scrutinised by the European commission for possible potential violation of EU competition rules, since the combined firm would have a monopoly position in several fields such as consumer magazine publishing and freight-exchange databases (*International Herald Tribune,* p. 11, 13–14 December 1997).
18 Fokker Aviation is the holding company which controls the profitable divisions of N.V.Koninklijke Vliegtuigenfabriek Fokker, which had previously been acquired by Daimler Benz.
19 *Financial Times,* p. 39, 21 May 1997.
20 *Euromoney,* pp. 65–68, November 1996.
21 *Financial World,* p. 87, 18 February 1997.
22 Euromoney, p. 68, November 1996.
23 *Business Review Weekly,* p. 60, 22 January 1996.
24 *Euroweek,* (Structured Finance Supplement) p. 50, June 1997.
25 *Financial Times,* p. 13, 31 December 1996.
26 *The Banker,* p. 24, April 1996.
27 As noted in Table 1.10, SHV is legally domiciled in the Netherlands Antilles.
28 *Financial Times,* p. 30, 3 April 1996.
29 *Progressive Grocer,* pp. 75–79, January 1994.
30 *Financial Times,* p. 20, 24 January 1997.
31 *Wall Street Journal,* p. B4, 29 April 1996 (eastern edition).
32 *Traffic World,* p. 11, 16 September 1996.
33 *Financial Times,* p. 313, April 1997.

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2 Dutch overseas investments in the very long run (c. 1600–1990)

Ferry de Goey

Introduction

In the last ten years, especially, there has been a marked development in research into Multinational Enterprises (MNEs) or Transnational Corporations (TNCs) under the stimulus of the investigations already carried out by others, J.H.Dunning in particular.[1] Nevertheless, as yet there is no real consensus on the definition of a 'multinational', and even less on the theory to be utilised. Aliber's view (1993:190) is that the plethora of theories about multinationals derives from the lack of agreement on the question of the phenomena such a theory is supposed to explain.

As a rule research into multinationals is limited to the twentieth century, and scholars only very occasionally look further back in time.[2] One reason for this temporal limitation is connected with the definitions employed. Definitions of multinationals use the concept of 'control' and to that end make a distinction between Foreign Direct Investments (FDI) and portfolio investments.[3] The available figures barely permit us to distinguish between FDI and portfolio investments, or to discover the degree of control during the seventeenth, eighteenth and nineteenth centuries.[4] However, the quality of the data from the recent period leaves much to be desired too. An investigation dating from 1990 into the trustworthiness of the figures concluded that there was a discrepancy between the outgoing and incoming FDI, which needed to be compared against each other on a world-wide level—a discrepancy of at least 34 billion US dollars or 15 per cent of the total.[5] Furthermore, by far the greatest proportion of investigations into multinationals have referred to industries, while research into multinationals in the service sector has only very recently got into its stride.[6] This emphasis on industry means that the period from 1850 on, in particular, is usually chosen for study. A final reason for the overwhelming interest in the recent past is found in the implicit belief among authors that multinationals are a modern phenomenon. The supposition is that multinational enterprises are created only when a certain level of economic development has been attained, a supposition that rests on a basis of teleological conviction, i.e., that economic activity followed a linear development from traditional to modern. It is assumed that the West was industrialised earlier than the rest of the world, and research is thus concentrated on enterprises from this region (Wilkins 1988b, 1995; Jones and Schröter 1993). Thus it seems almost unbelievable that an Indian entrepreneur (the family firm of Tata, in the jute and cotton industries) opened a branch office in Hong Kong as early as 1859; it is nonetheless true (Riemens 1989:52).[7]

Presentation of the problem

Research indicates that, in comparison with the position in other countries, the economic life of the Netherlands is highly 'multinationalised'. How is this to be explained? My own interest lies in the geographical spread of Dutch investment abroad in the period 1600–1990. Can any particular pattern be found in the geographical distribution of Dutch investments?

Mira Wilkins (1994) has developed a model that can be of use in explaining the geographical spread of multinationals. The model contains the following five parameters: (1) market opportunities; (2) political stability; (3) familiarity with the country (some similarity in language and culture); (4) the neighbouring countries; and (5) experience gained with earlier investments by the enterprise concerned. In this model, enterprises would—all things being equal—prefer countries with better market opportunities, with a high degree of political stability locally and in neighbouring control, and also countries that were already familiar and had provided good experiences with earlier investments.[8] We would like to know the extent to which this model can explain the geographical spread of Dutch investments.

When I write of 'geographical spread' I mean the countries or regions of the world to which Dutch capital flowed out. Both direct and portfolio investments are included here in overseas/foreign investments, but wherever possible a distinction is made between the two. In my view the question remains of whether the distinction between FDI and portfolio investments has any particular relevance, since the difference between the two forms of investment is based primarily on the motives for, and the purposes served by the investment.[9] In the long term, however, motives and intended purposes can change: in this way a portfolio investment can acquire the character of an FDI and vice versa. What began as an investment may, through circumstances or mere chance, end completely unexpectedly in the acquisition of a controlling position, as some Dutch purchasers of shares in American railways discovered (Van Nieuwkerk and Sparling 1985:94–95).[10]

In this investigation I use a wide definition of 'multinational': an enterprise with establishments in more than one country. These establishments may be factories, agencies, trading posts, sales offices, farms and similar units. I shall not confine my attention to industry; the service sector will also be included in the investigation. By means of this definition I can also devote attention to such enterprises as the trading companies: the VOC (the Dutch East India company) and the WIC (the Dutch West Indies company). One can think of no reasonable argument against viewing these bodies as businesses, or even as premodern multinationals, as Chaudhuri (1981) does.

The wide world in 1600–1800

The origins of Dutch capital

The first question to be asked is: from where did the capital come from for investments abroad? The answer to this question must be sought in the history of Dutch trade in the seventeenth and eighteenth centuries, a period in which the Netherlands was an extremely prosperous nation. Sir William Temple, English Ambassador at the The Hague, commented that the Netherlands was '…the fear of some, the envy of others, and the wonder of all (its) neighbours' (Israel 1989, 1991a, 1995; Davids and Noordegraaf 1993; Davids and Lucassen 1995). The prosperity of the Republic of the Seven United Provinces (1584–1795, hereafter called 'The Republic') was based on a specialised agriculture, a modern shipbuilding sector and its related industries and the processing industries (called 'trafieken' in Dutch). These processing industries were located in the Dutch coastal towns and they dealt with both home and foreign products. Examples of such 'trafieken' are: rice husking, sugar refining, rope making and the production of vegetable oils. These industries can be regarded as forerunners of the twentieth-century Dutch processing sector (Van der Woude and De Vries 1995, 1997).[11]

Innovations in shipbuilding—the invention of the *haringbuis* (the buss) and the *trekschuit* (the canal barge or boat)—led to low transport costs, which in turn reinforced the strong position of the Netherlands in both inland and seagoing navigation. Even though the Netherlands itself had few raw materials, thanks to efficient transport the country was able to produce goods more cheaply than its neighbours. Consequently there was a keen market in Europe for goods produced in the Netherlands. Attempts by neighbouring countries to exclude imported Dutch products by means of tariff walls, and to stimulate their home industries through subsidies, usually came to nothing (Israel 1991a, Wallerstein 1982).[12]

During the seventeenth century a maritime-industrial complex developed along the coast, which included towns like Amsterdam, Leiden, Delft, Rotterdam, Dordrecht and Middelburg. Within this complex there was a close link between shipping, shipbuilding and the processing industries. Overseas trade provided the driving force behind Dutch prosperity, and also behind this maritime-industrial complex (Israel 1991a, Lindblad 1993). Individual traders and consortia of merchants controlled this trade, and as a result of the competition between the various merchant groups, the States

General sought to promote a combination of forces. Thus the trading companies came into being: the Verenigde Oost-Indische Companie (the VOC, 1602); the Companie van Nieuw-Nederland (1614); the Noordsche Companie (also 1614); the West-Indische Companie (the WIC, 1621); the Directie van de Levantsche Handel (1625); and the Sociëteit van Surinam (1682). Here we shall be concentrating attention mainly on the VOC and WIC. It is worth mentioning that the Noordsche Companie (1614–41), which hunted the whale and walrus, built a factory on Spitsbergen (the Smeerenburg, 1619) for the manufacture of fish/whale oil (the 'train oil' of the English sources) from which lamp oil and soap were made (Veluwenkamp 1995).

At first the most important trade was with the countries bordering the Baltic Sea; this was called the 'moedernegotie' (lit., the 'mother trade'). Cheap bulk goods were imported from these regions: wood, copper and iron ores, grain, furs and flax for example. From c. 1600 onwards the Netherlands began trading directly with Asia, Africa and America in order to gain access to merchandise of a more luxurious kind (Boxer 1965, Van Goor 1994). J.Israel (1991a, 1995) has called this the 'rich trade', with goods including spices, salt, sugar, gold and silver as well as all kinds of luxury goods such as porcelain, textiles and precious stones from India, silk from China and lacquered furniture.[13]

Two large-scale and substantial trading companies were created: the VOC (1602–1799) and the WIC (1621–1791). The VOC actually revealed all the characteristics of a modern enterprise: a joint management (the Heren XVII, lit., the Seventeen Gentlemen); a strategy (embodied in the Resolutions and General Missives); forms of cooperation and competition; and establishments both at home and abroad. The VOC built trading posts, factories and offices in the regions where their trading was carried out; for example, on Java (Batavia), in the Moluccan Islands, in Japan (Deshima), Ceylon, Formosa, India, South Africa (Cape of Good Hope) but also closer to home in England (London).

In the same way, the WIC created trading settlements in countries bordering the Atlantic. Initially the Compagnie van Nieuw Nederland had enjoyed the monopoly of trade with North America, but when the WIC was created this monopoly was not prolonged, and the WIC obtained sole rights in this trade. In 1626 the WIC bought the island of Manhattan for a few firearms, bullets and iron ware, valued at sixty guilders, and established a trading post there, plus a number of farms. Some authors view this as the first case of FDI in Dutch history, but this seems unfair to me, since the Noordsche Compagnie had built the train-oil factory at Smeerenburg on Spitsbergen in 1619. Bosch (1948:26) considers the WIC investments in America as modern, i.e., as direct investments.[14] Through the WIC Holland acquired trading posts and factories (including Manhattan) in North America, South America (Surinam, the Antilles, Brazil) and Africa (for instance at Elmina).[15]

Accumulation of capital by merchants

The dominant position of Holland in the realm of shipping and trade made the country '… the Carryers of the World, the middle persons in Trade, the Factors and Brokers of Europe' (William Defoe).[16] Amsterdam was the world's market for staples, and from there goods were resold to other countries. The Netherlands also played a leading part in the intra-European transportation of goods.[17] Merchants came to Amsterdam from all over Europe to trade, thus creating a great need for money changers since payments were made with all kinds of currencies and objects of precious metals. The Amsterdamse Wisselbank (money-changing bank) was established in 1609. Amsterdam developed into the principal financial centre of Europe in the seventeenth and eighteenth centuries.

Thanks to the trading companies the Netherlands had a world-wide network of trading posts, offices, colonies, plantations and manufacturing units. All this provided a very wide variety of products to be traded on the staple market in Amsterdam. A proportion of these products was destined for the transit trade, while others were first dealt with in the trafieken located along the coast. During the course of the seventeenth and eighteenth centuries the money earned in trade became concentrated in the hands of a small, extremely prosperous group of merchants in the big Dutch towns and cities, particularly Amsterdam.[18] There was no lack of opportunity for investing the wealth earned in trade in the home country in the seventeenth and first half of the eighteenth centuries (Spufford 1995). Apart from the usual investments in houses, estates, art collections and so on, money was also invested in trade, industry and land reclamation (for example the draining of the polders).[19] According to Dehning (1995:234) the merchants also invested their money in lotteries, annuities, loans to the State, trading companies at home and abroad, banks and businesses, mortgages, deposit loans or loans on land. They financed the export of goods to other countries and they also established enterprises abroad.

Dutch capital also reached foreign countries in an indirect way when Dutch merchants invested, for example, in the Bank of England (1694), the East India Company (the EIC, 1657) and the South Seas Company (1711). Dutch participation in these three bodies amounted to 6.4 per cent in 1724, increasing to 15.3 per cent in 1750 (Van der Woude and De Vries 1995:176). Dutch capital was also put into the French Compagnie d'Occident (1717) and the Mississippi Company created by John Law.

Dutch merchants' investments

Although the trading companies contributed greatly to the Dutch economy, not all trade was carried out through these bodies. The diversity of investment in the period 1600–1800 can be seen in the stories of individual merchants—the traders-cum-bankers. Here we must not forget that entrepreneurs often acted as members of groups and organised themselves into associations in foreign countries, thereby providing mutual support and exchange of experience. The association of Dutch merchants operating in France, for example—in Bordeaux, Nantes, La Rochelle—purchased wine not only for shipping to their own country; they also built factories for the production of 'vin frélaté' (lit., denatured wine).[20]

These merchants made the transition to financiers and industrialists with remarkable ease. Archibald Hope, born in Rotterdam in 1664 of British parents, traded in England and Ireland, arriving by this route in the jenever (Dutch gin) manufacturing industry. In 1720 he owned malthouses in East Anglia, the malt subsequently being distilled into jenever in the Dutch town Schiedam, and sold to customers in Europe and America. Archibald's sons developed into bankers, founding the famous firm of Hope & Co. in 1734. By 1763 the firm had some forty estate agents' offices distributed over the whole of Europe.[21] Together with Barings of London, Hope & Co. was numbered among the biggest banking houses in eighteenth-century Europe.

Typical Dutch expertise in clearing new ground, reclaiming land from the sea, constructing harbours and dredging waterways was sold abroad. Take, for example, investments in land reclamation in eastern England, where Dutch technicians used Dutch methods to drain the Fens. Similar activities were carried out in France through the Société pour the Déséchement des Marais et Lacs de France (Israel 1995, Cameron 1991b). Dutch capital was also invested in English linen bleaching, German paper making, Russian lumber mills, rope making and the manufacture of munitions. Neither did Dutch capital fight shy of new and therefore unfamiliar activities in which experience obviously played no part. Thus mining for minerals offered attractive prospects, partly because the Netherlands itself had few raw materials. Italian, Norwegian, Icelandic and Swedish mines drew Dutch capital, while the Italian quarries in Genoa, Massa and Tuscany produced marble. Joachim Irgens, an Amsterdam merchant, exploited copper mines in Norway; the Sautijn family worked sulphur mines in Iceland (Dehning 1995).

Louis de Geer, originally from Luik (Southern Netherlands, now Belgium) but naturalised by that time, gained control of a large proportion of the Swedish iron, silver and copper mines when Gustav Adolf, King of Sweden 1611–32, was unable to repay the money lent him by De Geer, who was compensated with a monopoly of the iron and copper ore trade. Together with his in-laws and his associate Elias Trip, De Geer subsequently built iron foundries in Sweden, becoming in time a large-scale manufacturer of weapons. De Geer is regarded as the founder of Swedish industry (Lindblad 1995). A similar story is that of Johan (Jean) Deutz who, together with Italian partners, functioned from 1659 as agent for the trade in mercury for the Emperor of Austro-Hungary. In exchange for loans to the Emperor, the firm of Weduwe Jean Deutz & Zoon obtained, from 1695 on, the sole rights to the trade in Austrian mercury and Hungarian copper (Davids 1995, Van der Woude and De Vries 1995).

The Dutch played a significant part in developing the Russian iron industry. The presence of the Dutch in Russia was certainly not new; since 1570 at least (and, properly speaking, since the twelfth century) there had been regular trading between the Netherlands and Russia. In Moscow, the power centre of the Romanovs, Dutch merchants built warehouses for storing their goods. The principal trade item for export to the Netherlands was grain, while the Russians in turn imported spices from the Netherlands, among other things. After St. Petersburg, the main centre for this trade was Archangel, founded in 1584 on the White Sea. Among the 22 foreign trading houses in Archangel in 1741, 11 were Dutch owned, and another five were partly Dutch. They accounted for the greatest share, by far, of the trade with Western Europe (Veluwenkamp 1995).

Western-European enterprises played a dominant role in Russian industry; approximately 60 per cent of all the large factories in Russia belonged to foreigners before 1700. In 1632 two Dutch merchants, Andrei Vinius and Peter Marselis, succeeded in obtaining (from Tsar Michael) a patent for the establishment of the first foreign-owned iron foundry in Russia (McKay 1974).[22] The patent gave them the monopoly over the production of iron in Russia, for a ten-year period. The State was not obliged to purchase the products, but the looming war with Poland—instability rather than stability—played a significant role in the granting of the patent.

The foundry was built close to Tala, on the banks of the Sine-Tulitsa river, and the sources indicate that the factory used the most modern production methods of the time. Between 1,600 and 1,900 kg. of crude iron were produced each day, where other factories were still producing no more than 600–900 kg. a day. The Vinius and Marselis enterprise produced mainly weapons. Between 1637 and 1662 the firm built still more iron foundries, eventually making Russia the largest producer of iron in eighteenth-century Europe. After 1700 however, the situation began to deteriorate because of differences of opinion within the firm. Moreover, Marselis was caught red-handed while embezzling money from the Russian state mint![23]

The growth of overseas investment after 1750

It was after 1750, especially, that Dutch investment abroad really 'took off' under the stimulus of the tremendous accumulation of capital in the preceding years, and the meagre opportunities for investment at home. Portfolio investments, particularly loans to governments, were relatively more important than direct investments, although this cannot be confirmed with absolute certainty owing to lack of the necessary figures. In normal times a great deal of money was lent to the States General of the Republic (these were the 'interest-bearing loans' or 'renten' in Dutch) for financing the war against Spain. To an increasing extent however, money was lent to European rulers, especially after 1763 when the interest on foreign loans rose from c. 5 per cent to 7 or 8 per cent (Riley 1980). England and Austria attracted a large proportion of Dutch capital, although a country such as Austria was not very reliable where repayment was concerned. In the period 1714 to 1763 an annual average of four million guilders was lent to foreign governments; between 1763 and 1779 this figure rose to an average 8.3 million guilders, and from 1780 to 1794 the average annual figure actually rose to 20 million guilders (Van der Woude and De Vries 1995).

During the American War of Independence (1775–83) some tens of millions of guilders were lent to the American government, and after 1783 Dutch investors retained their strong interest in America. By 1803 American debentures with Dutch investors amounted to over 30 million guilders. This massive financial support caused conflict between the Netherlands and England, but this did nothing to change the behaviour of Dutch entrepreneurs; market opportunities in America were too attractive (Van der Woude and De Vries 1995:180).

We can conclude from the increasing proportion of indirect investments that Dutch merchants were becoming lazier, more careful, more conservative; they opted for a relatively safe existence as rentiers rather than as risk-taking entrepreneurs. Investment in home industries came to be regarded as increasingly less attractive, and Dutch enterprises had great difficulty in finding backers. This attitude ought to have resulted in the Netherlands losing its leading role to England during the course of the eighteenth century, only regaining its links with Western Europe in the mid-nineteenth century. In my view this conclusion is too hasty although there were certainly merchants corresponding to this image. Where new opportunities presented themselves, offering expectations of high profits, then even after 1750 Dutch merchants did take advantage of them. One example is that of investment in plantations, which was an interesting proposition, and approximately 80 million guilders were invested in plantations in Suriname between 1750 and 1773. It became clear after 1773 that the plantations did not live up to the high hopes they had aroused and the investments rapidly lost their value, leading to substantial losses (Van Stipriaan 1988, 1991; Van Zanden 1993a). Perhaps it was this negative experience that partly contributed to the small extent of private investment in Suriname overall.

The extent of investment in other countries, 1600–1800

There are a great many different estimates for the total extent of Dutch investments abroad (see Table 2.1). According to Van Zanden (1993a), the capital invested abroad in 1729 was still 'negligible'; in 1770 it had increased to 200 million guilders, and by 1790 it had reached the level of approximately 650 million guilders. James Riley states that in 1763 approximately 200 million guilders had been invested abroad, some 50 per cent being in English debentures. Various other authors estimate that this figure had risen to between 500 and 650 million guilders at the end of the eighteenth century, while Buyst arrives at a sum of 700–800 million for

Table 2.1 'Guesstimates' of Dutch foreign investment, 1600–1800 (Dfl. mn)

Year	*Amount*	*Source*
Before 1700	negligible	Van Zanden
1770	200	Van der Woude/De Vries
	250	Van Zanden
	250	Riley
1780	(net.) 350	Van der Woude/De Vries
c. 1790	500–650	Riley
	650	Van Zanden
1795–1800	700–800	Buist
1800–1850	1,500	Van der Woude/De Vries
Before 1850	3,000	Klein

Sources: Buist (1974); Klein (1982); Riley (1980); Van der Woude and De Vries (1995); and Van Zanden (1993b), based on Dormans (1990).

1795. This was mainly portfolio investment, but there was also a large amount of FDI. How much FDI is not known.

Between 1600 and 1750 foreign investments were relatively modest but there was a marked increase from 1750 on. In absolute terms England was the world's biggest overseas investor in 1800, yet when we take population into account another picture emerges. In 1800 Dutch investment overseas amounted to 1.75 times the per capita GNP and may have been the highest in the world (Van der Woude and De Vries 1995:182).

The geographical spread of investment

Is there any perceptible pattern in overseas investments in the period 1600 to 1800? How useful is Wilkins' model? The very wide geographical spread of investments is striking, for both region and sector, in which the service sector dominated the field of overseas investment. No decisive role was played here by common language or culture, or political stability in neighbouring countries, or distance. As can be seen from studies by (for example) J.Abu-Lughod (1989), J.H.Bentley (1993), P.Curtin (1984), K.N.Chaudhuri (1985, 1990) and J.D.Tracy (1990), differences in language, religion or culture presented no insoluble problems. Every trading centre had an interpreter, and the Jews, Armenians and Chinese were well known as intermediaries. To be sure, where political instability appeared in particular regions, these regions could lose their attraction for merchants, but as a rule this was only a temporary phenomenon. In the case of Vinius and Marselis, as we have seen, it was precisely such political instability that provided the stimulus to start up an iron foundry in Russia; the great distance from home was relatively unimportant. It made little difference whether a trading region was 4,000 or 6,000 sea miles away. Correspondence was slow; an exchange of letters between the Netherlands and the Dutch East Indies took at least two years, but there was no way of speeding up the process.

Later on experience did, certainly, play a part in the choice of region: many investments resulted from earlier contracts, and contacts. In view of the dominance of the Baltic trade, this region probably also drew the greater proportion of direct investments. One thinks of the Scandinavian countries and Russia; because there had been intensive trade with these regions for many generations, to a certain extent it was possible to talk about a common North Sea culture (Roding and Heerma van Voss 1996).

However, it seems to me that the main factor would have been expectations of profits, certainly in the case of completely unknown areas where experience was of no use. It is clear that the problem of control had no great role to play in this trade. The really big risks could be spread by investing together with other people. Another solution was the appointment of an agent or factor; one could send a family member to the trade area or move there oneself. Where direct investments were concerned, especially the creation of an industry, the management was often assumed directly by the merchant(s) involved, who went to live in the trading centre, as in the case of Louis de Geer. The problem of control for regions in Asia and America was solved—or at all events reduced—by placing the whole region under the rule of the home country (colonisation), and by the monopoly of trade. Nonetheless, colonisation was a very gradual process occupying many decades, or even centuries in the case of Africa. Furthermore, maintaining the trading monopoly presented a good many problems: the VOC, the WIC and private traders never possessed a real monopoly (Veluwenkamp 1981).

The three regions (1800–1990)

Continuity and renewal

The second half of the eighteenth century witnessed a great increase in Dutch overseas investments, as we have seen above. This increase received a partial stimulus from the trading companies' disappointing results. The WIC was liquidated in 1791 and the same fate befell the VOC in 1799, and the possessions of the two companies were taken over by the state. The VOC actually left behind a debt of 120 million guilders. The poor results achieved in trading also had negative effects on the maritime—industrial complex upon which Dutch prosperity had been founded; shipbuilding and processing industries languished severely.

In the period 1795–1814 when the Netherlands formed part of France, a large proportion of Dutch capital was, by way of precaution, transferred to London. Eventually the Republic was converted into a kingdom in 1814 and a beginning was made on centralising and modernising the state administration.[24] Only a small part remained of the colonial empire—once so extensive—the remaining colonies being the Antilles, Surinam, and the Dutch East Indies. Amsterdam was no longer the financial centre of the world; London had taken over this role, followed by New York after 1945. In the economic sense England had outstripped the Netherlands as the leading nation, a process that had begun in the mid-eighteenth century (Spufford 1995:328). The driving force behind the English economy was industry, while the Netherlands held on as long as possible to its trading activities, and did not make the transition to the industries connected with them, as England had done. Dutch industrialists had great difficulty finding people willing to invest in their enterprises, although there was certainly no shortage of capital. Dutch investors had come to prefer overseas funds, which also promised a better return than investments in Dutch industry.

In the first decade of the nineteenth century, the Dutch economy experienced a recession. Recent investigation has shown that the crisis was less severe than historians had formerly assumed.[25] Between 1795 and 1814 a good deal of capital was eaten into—between c. 90 and 120 million guilders—while the national debt rose to astronomical heights. This caused a decrease in the export of Dutch capital. According to Cameron, in the first half of the nineteenth century the Netherlands even changed from creditor into debtor through borrowing large amounts of money in other countries. Bosch has established that there was certainly a slump in the export of Dutch capital, but he shows that it was not brought to an absolute halt. In 1828, 1831 and 1833 the Russian Tsar, aided by Hope & Co., could still take out large loans—a total of some 132 million guilders—in the Netherlands, without any trouble. Reduced activity in the Netherlands in the field of overseas investments is also linked with legal measures that hindered the export of capital. This legislation had been introduced as early as 1802 and afterwards became more stringent as a side effect of the large national debt, but in 1859 it was finally abrogated (Bosch 1948:35, 60). Whatever the facts of the case, from the mid-nineteenth century the Netherlands was once again a large exporter of capital (Cameron 1991b:12).

After 1850 the Dutch economy gradually began a process of growth—a growth stemming above all from the good results achieved in the Plantation System *(Cultuurstelsel)* in the Dutch East Indies: the system of compulsory production of crops and their sale to the government. The flourishing of the economy was reflected in an increased level of overseas investment. In 1850 the wealth invested abroad amounted to approximately 600 million guilders, a figure which rose to some one billion guilders in c. 1860 (Veenendaal 1996:3). According to H.Schröter (1993:95) (who otherwise uses a very restricted definition of multinationals) a marked increase in Dutch direct overseas investments was discernible, especially after 1890. The number of cases of FDI by industry rose from nine in 1900 to forty-nine in 1914. The further course of Dutch investments in the twentieth century has been examined in detail by Gales and Sluyterman (1993), whose research shows that the Netherlands kept its place in the top ten of countries with a high proportion of FDI and portfolio investments (Gales and Sluyterman 1993).[26]

Old merchant capital seeking reliable investments overseas

Was there any change in the geographical spread of overseas Dutch investment during the nineteenth and twentieth centuries? Generally speaking, one can posit that there were no great changes in the pattern of overseas investments, although political developments made it impossible to continue investing in certain regions. As we have seen, from the sixteenth century on, Russia had been an attractive investment area for the Dutch, a situation that remained the same into the nineteenth century. In the 1830s Americans built the first Russian railway line, from St. Petersburg to Moscow, but it was financed by the Germans and the Dutch. Tradition was also continued in the iron and steel industry. It was Dutch capital that made it possible for the French to construct and manage the Grand Société des Chemins de Fer Russes (Veenendaal 1996:5–6). Thus the October Revolution in Russia (1917) and the confiscation of foreign property which followed, meant a severe loss for Dutch investors. A study carried out by the Nederlandse Bank in 1918 shows that some 1,500 million guilders (600 million US dollars) had been invested in Russia, two-thirds in shares and bonds, and one-third in direct investment, especially in the oil industry. Van Horn's recent research has fixed this sum at about one billion guilders in investments, including 100–120 million guilders in direct investments. In all 62 cases of FDI have been counted for Russia (Van Horn 1993). After 1917 Russia disappeared from view for Dutch investors, as did Eastern Europe after 1945.

As in the past, the Scandinavian countries, Austria and Britain continued to attract a large amount of Dutch capital, and after 1870 Germany also became an important region for investment. The industries connected with production of food and luxury articles profited from the unification of Germany in 1870 and the economic growth that followed upon this. The marked increase in the German population, which grew from 49 million to 66 million in the period 1890–1913, presented opportunities for the Dutch food industry (Kennedy 1989:210). The food industry presents a typical example of a processing industry in which the Netherlands had accumulated a wide knowledge, from the seventeenth century on.

A typical example can be found in W.A.Scholten, manufacturer of potato flour in Groningen. Between 1864 and 1889 this industrialist constructed factories in northern Germany, Poland, Russia and Austria. Even though not all of these investments were successful, Scholten remained active abroad and—like other entrepreneurs before him—he was not only interested in his own industry. His wider interests can be seen in his share in the exploitation of Galician oil fields, and his investments in shipping and other industries.[27] Another example is that of The Nederlandse Gist & Spiritusfabriek (yeast and alcoholic spirits factory: NG & SF, 1869), which became particularly well known for the 'social entrepreneurship' of Jacques van Marken who, at that time, was also an internationally famous entrepreneur, counting such figures as Sir William Lever among his acquaintances. Van Marken made frequent visits to the exchanges in Paris, Berlin and London. Even before the turn of the century these contacts had led to the construction of factories abroad: a yeast factory and jenever (Dutch gin) distillery in Belgium; a factory unit in Germany for producing cream; and a peanut plantation in Egypt.[28]

A last example from the food and drink sector is the margerine industry, represented by Anton Jurgens and his rival, Sam van den Bergh, who later became his partner in Margerine Unie (1927). In 1880 Jurgens already had four margerine factories in Russia. After the creation of Margerine Unie there was a policy of expansion, with holdings, takeovers and direct investments both at home and abroad. The first acquisition in another country was in Czechoslovakia: the family firm Schicht, manufacturers of soap, washing powder and greases. Less than two years later, in 1929, the merger between Margerine Unie and Lever Bros developed into the multinational Unilever, which today has establishments all over the world.

If there was a link between the foodstuffs industry and preindustrial experience, completely new industries were set up in the nineteenth century which in time gave birth to multinationals. After 1890 it was especially the chemical and electrical industries that gained in importance in the Netherlands. Among the chemical enterprises AKZO (today AKZO Nobel) is probably the best known of the Dutch multinationals. AKZO was created in 1969 from a merger between the Algemene Kunstzijde Unie (AKU) and the Koninklijke Zout Organum (KZO) which produced salt, synthetic textiles and nylon and filaments, among other things. In the 1920s the AKU entered into an alliance with Vereinigte Glanzstoff AG in Wuppertal. In 1929 this situation was reversed in a takeover of Glanzstoff.

KZO already had investments abroad (for example in Stader Saline) and had been involved in the creation of Dansk Salt in Jutland. After this merger the internationalisation of AKZO continued at a rapid rate. In 1990 AKZO was manufacturing in over thirty countries around the world. In 1987 it employed some 67,000 workers: of these, 33.4 per cent worked in the Netherlands, 46.3 per cent in other European countries, 11.1 per cent in the US and 9.2 per cent in the rest of the world. In 1987 the net turnover by region was: 37 per cent from the Netherlands; 45 per cent from the rest of Europe; 13 per cent from North America; and only 6 per cent from the rest of the world (AKZO 1987).

Philips provides us with another example. This enterprise, beginning as a modest family firm, developed into a multinational in the first decades of this century. In 1912 the firm opened an agency in Paris (La Lampe S.A.) and an enterprise had been initiated in the US (as a joint venture) even before the outbreak of World War I. The first factory to be built after the 1914–18 war was the Sociedad Español Lámparas Eléctricias 'Z' in Barcelona, Spain. Factories and sales companies followed in practically all the countries of Western Europe: for example in Poland, Belgium, Germany, Italy and Sweden, but new units were also opened in Brazil and China. The result was that, by the end of the 1920s, a third of all Philips' personnel were already at work in foreign countries (Heerding 1986, 1988; Metze 1991).

Many of Philips' activities abroad in the period up to 1945 were begun as joint ventures or as licensed enterprises, the aim being to gain first access to interesting markets. Philips' strategy was forced on the firm by the solid international cartel operating within the electric light bulb industry between the world wars, with its huge participant companies: for example, General Electric, Siemens, and A.E.G. An agreement was signed with General Electric in which that company took 20 per cent of the Philips shares in exchange for information on, and access to the North American market. In order to continue its expansion, Philips pursued a strategy of diversification and, in the 1920s, plunged into the manufacture of radio apparatus, electric shavers, and electric bicycles. After 1945 Philips' expansion abroad continued at a rapid rate: in the US for example, the company bought Magnavox (1974), Signetic (1975), The General Telephone and Electronics Company (with the trade marks Sylvanis and Philco) and, in 1983, the lighting division of Westinghouse (Metze 1991:39–40). In contrast to its progress in the US, Philips' activities in the Asian market remained at a very modest level for a long time. Theoretically it is strange that Dutch enterprises failed to profit from the close relation, of long duration, with Japan (to take one example). Since the mid-seventeenth century the Netherlands had enjoyed sole rights in the trade with Japan via its trading post at Deshima. Dutch merchants acted as what one might call a serving hatch for the spread of western knowledge in Japan; even now the Japanese still talk of 'Dutch learning', meaning knowledge about the West. Clearly, tradition alone does not make for bliss: an unlucky venture in the 1930s played a significant part in Philips' slow entry into the Japanese market. It was only in 1952 that Philips began to cooperate with the Japanese family firm of Matsushita in an attempt to gain access to the Japanese markets. Philips had a 30-per-cent interest in this joint venture—Matsushita Electronics Corporation (MEC), a successful cooperative that lasted until 1993 (Blanken 1996).

Investments in the United States

As we have seen, there was large-scale investment in North America from the last quarter of the eighteenth century.[29] After America won its independence in 1783, Dutch interest in the New World was maintained: according to Veenendaal (1996:174–175), the Dutch were—generally speaking—very sympathetic towards the young republic. In 1792 the Holland Land Company was created with the aim of investing in the most important target for capital investment that America could offer in that period: land. After 1815 this interest slackened off, and the company was liquidated in 1858. Another example is the investment in the construction of American railways. Veenendaal (1996) has researched this in depth. Here, we are concerned mainly with portfolio investments, which reached a level of 300 to 400 million US dollars by 1914. At the beginning of the twentieth century the Netherlands was the biggest per capita investor in the US. Nevertheless it was not only portfolio investments that arrived in America; in the twentieth century there was an increasing amount put into direct investments. The close economic relations with the US ensured that service industries—for example, shipping companies—opened offices in the US. Thus the Holland-Amerika Line (1872) had an agency in New York, the American port of call on the route from Rotterdam.

Other direct investments were those made by De Koninklijke/Shell which, in its battle against Standard Oil (Esso) built refineries in the US, for example in California. Philips' and AKZO's activities in the US have already been discussed. The aircraft industry was another new branch of economic activity. In January 1920 Anthony Fokker opened a sales office in the US for marketing his aircraft: the Netherlands Aircraft Manufacturing Company. He expected a great deal from the US, but for the time being there was no legislation on passenger air transport. Nevertheless, shortly after this, in December 1923, Fokker and his American partners created their own manufacturing company: the Atlantic Aircraft Company (Hasbrouck Heights). In 1925 Fokker obtained sole control and created a new holding, the Fokker Aircraft Corporation, in which he owned all the shares. This situation did not last long since the company was taken over in 1930 by an American enterprise supported by Alfred Sloan's General Motors. Fokker lost his controlling position and his footing in the US (Dierikx 1997a, 1997b; Wennekes 1993).[30]

Between 1900 and 1938, especially, direct investment in the US increased in a spectacular manner. The amount of Dutch FDI and other investments in the US rose from 8 million US dollars in 1900 to 135 million in 1914, then to 380 million in 1938 (Van Nieuwkerk and Sparling 1985:19; Gales and Sluyterman 1993:65), by which time the Netherlands occupied third place in the list of countries investing in the US, and even came first in the area of shares and bonds, ahead of Britain, France, and Canada. In the years following World War II as well, Dutch investments in the US continued to grow. In the 1970s there was even a significant increase in the importance of direct investments as compared with portfolio investments in the US. In Van Nieuwkerks' view, one could even talk of a structural development here.

Between 1973 and 1983, Dutch FDI increased from 6 billion guilders to 33.5 billion, i.e., an annual growth of 18.5 per cent.[31] The oil and chemical industries (De Koninklijke/Shell, AKZO, and DSM) were chiefly responsible for this increase. According to American figures, the total possessions of Dutch enterprises in the US in 1959 amounted to 3,345 million US dollars; in 1974 they reached 17,323 million dollars; 36,103 million in 1980, and 68,929 million in 1987. The oil industry accounted for 2,784 million dollars in 1959, rising to 9,958 by 1974 (see Chapter 8 and Lipsey 1992).

The colonies as a territory for investment

Only a small part of the great Dutch colonial empire remained after 1814 and in this area Surinam and the Antilles were not especially sought after. Most of the investment ventures in these areas—the exploitation of plantations, gold mines and similar operations—failed within a short time. One exception was the N.V.Mijnmaatschappij Curaçao, created in 1912 with support from the Hope & Co. bank, for extracting phosphates. Nonetheless even this company failed in 1979. The only other important enterprise in the area is the De Koninklijke/Shell refinery in Curaçao, built in 1915 to process oil from the wells in Venezuela. In the 1980s De Koninklijke/Shell sold off this refinery. In the same decade the Antilles attracted a strikingly large amount of Dutch capital, but most of this was placed in 'empty' partnerships, known as 'letterbox companies', wanting to profit from the lower taxes. These were not direct or portfolio investments (see Chapter 1). Where Suriname is concerned the bauxite industry, represented by Billiton, is particularly noteworthy. Billiton was set up in 1860 for the extraction of tin in the Dutch East Indies. At the end of the 1930s bauxite was discovered in Surinam and Billiton obtained a concession for the exploitation of this raw material used in the manufacture of aluminium (Kamp 1960).

Compared with Surinam and the Antilles, the Dutch East Indies were of far greater importance as a region for investment. The Nederlandse Handel-Maatschappij (NHM—the Dutch Trading Company) was created with the aim of reviving the maritime—industrial complex that had been so essential for the economic success of the Netherlands in the seventeenth and eighteenth centuries. The policy met with little success, since private initiative was stifled by the NHM regime. The company controlled the production, sale and transport of colonial goods by means of the Culture System (c. 1830 to 1870), while the business world was called in to transport the goods and process them. Only after 1870 did the business world gain a firmer footing in the Dutch East Indies, while the NHM subsequently evolved into a bank, now the ABN AMRO bank. Even before 1914 the NHM had 17 offices in the Dutch East Indies, five in the Far East, and one in Suriname.

Between 1870 and c. 1940 several hundred 'freestanding companies' were created, a phenomenon also occurring in other countries with colonies—Britain, for example (Wilkins 1988a)—with the aim of exploiting the colonies. A special feature of these enterprises was the fact that the statutory owners were established in the Netherlands, yet their economic activities were carried out in the colonies. Looking back at the freestanding companies, they were clearly more of an interlude than a structural phenomenon, yet these enterprises brought important changes to the colonies and to colonial relations. The Nederlandsch-Indische Spoorweg Maatschappij (NISM—the Dutch East Indies Railway Company) provides a good example here. The NISM had its statutory establishment in The Hague and the Board of Directors met there, yet the company ran a railway on

Java in the Dutch East Indies.[32] The line ran from Semarang to Vorstenland and was laid between 1863 and 1873, with a great many difficulties on site and the usual opposition from the government. The NISM and other railway companies laid even more railway lines in the Dutch East Indies. Private Dutch railway companies introduced a new way of working to the colonies, showing that the business world had no need of government help in completing large-scale projects. According to Van Doorn (1994), the colonial railway companies adopted a very self-aware and autonomous attitude, for example where policy on personnel was concerned, thereby bringing change into existing institutions. They were partly responsible for creating (perhaps unconsciously) the conditions for the new private initiatives in the colony.[33]

One of the enterprises to profit from this was the Koninklijke Nederlandse Maatschappij tot Exploitatie van Petroleumbronnen, created in 1890 with Dutch capital. In 1896 boring for oil on Sumatra was successful, and this was followed by the construction of a small refinery. Henri Deterding, who headed the management of De Koninklijke from 1900 on, pursued an aggressive policy of internationalisation and cooperation. In 1907 De Koninklijke/Shell came into being from a merger with the British Shell Transport and Trading Company, with 60 per cent of the shares in the hands of De Koninklijke, the remaining 40 per cent being controlled by Shell.[34] It is characteristic of the oil industry that it has had an international orientation from the beginning. The ‘majors’ competed for the biggest share of the market everywhere, including the home market. The first De Koninklijke/Shell refineries were opened in 1902 in Rotterdam, the Netherlands, and at Reisholz, near Dusseldorf in Germany. Other establishments rapidly followed in Russia, Rumania, Egypt, Persia, Venezuela, Mexico, and the US (Gabriëls 1990). After the October Revolution De Koninklijke/Shell lost its Russian oil field and installations, to Deterding’s great discontent since he had thereby also lost 390,000 guilders of his own money (Naylor 1935:101).

The increasing significance of private initiative in the Dutch East Indies, of which De Koninklijke/Shell is an example, was reflected in direct investment. Table 2.2. shows that, between 1900 and 1938, Dutch FDI in the Dutch East Indies rose from 305 million US dollars to 1,620 million. Even after independence and the creation of Indonesia in 1949, when Dutch investment was actually prohibited for a long time, and after 1959 when Dutch enterprises were nationalised, the country retained its importance as an investment target area for the Netherlands.

The extent and spread of overseas investments

On the basis of the data presented here, we can only conclude that the Netherlands played an important role in FDI and portfolio investments in the nineteenth and twentieth centuries.[35] In 1914 the Netherlands occupied fifth place in the ranking of countries with the largest proportion of FDI,

Table 2.2 Estimated stock of accumulated private investment and FDI, 1914–83 (mn current US$)

Year	*Total private investment*	*FDI*				
		Total	*Dutch East Indies*	*USA*	*Percentage of world*	*Percentage of world (additional)*
1900	1,600	330	305	8	–	
1914	2,050	925	625	135	6	5[2]
1938	4,860	2,700	1,620	380	10	10[2]
1947	2,865	1,550	750	–	–	
1960	–	7,000	–	–	7	10.6[1]
1967	–	11,000[1]				
1973	–	15,900	–	2	8	
				232		
		15,800[2]	–	–	7.5	
1975	–	19,900[3]	–		7.1[3]	
1980	–	41,900[3]	–		7.6[3]	8[2]
1985	103,735	54,350	–	22	6 (1983)	
		43,800[3]		187	6.1[3]	
1988	–	77,500[1]	–	–	–	
1990	–	99,000[4]	–	–	–	7 (1993)[2]

Sources: Gales and Sluyterman (1993); (1) Jones and Schröter (1993); (2) Jones (1996); (3) Aliber and Click (1993); and (4) Aliber (1993).

Note – = unknown.

and it rose to third place in 1938. Between 1914 and 1939 there was a considerable increase in the share of Dutch FDI. The increase in FDI between the world wars was an international phenomenon, partly connected with the accentuation of protectionist measures. This meant that it was essential for enterprises to have establishments in countries with high import duties. During World War I, in which the Netherlands was neutral, many Dutch enterprises succeeded in reinforcing their position against foreign competitors. This resulted in an increase in direct overseas investments in the inter-war years. Fishlow's figures (1985, 1990) show that the wealth invested abroad between 1913 and 1930 increased from 1,200 million US dollars to 3,000 million (gross). According to Gales and Sluyterman (Table 2.2.) the FDI increased from 925 million US dollars to 2,700 million in 1938. As we have seen, this growth took place especially in the US and the Dutch East Indies.

The increase in the proportion of FDI after 1970 can be attributed largely to the acquisition of enterprises abroad by the ten biggest Dutch multinationals, including De Koninklijke/Shell, Unilever, Philips, AKZO, Heineken, Van Leer and Océ van der Grinten (Van Nieuwkerk 1986, 1988), which accounted for three-quarters of the FDI (Van Nieuwkerk and Sparling 1985). Here it was the processing industries that occupied the largest share. However, the importance of the industrial multinationals has decreased in recent years, their share of FDI dropping from 90 per cent in 1973 to 75 per cent in 1983 as a consequence of the decreasing significance of the industrial sector in general, and the growth of the service sector. This service sector, which includes banks, insurance companies and consultants, joined industries in their move to foreign countries to offer their services there. After 1975 especially, multinationals were created within the construction industry, banking and insurance institutions, the retail trade, and consultancies. Examples here are: Hollandse Beton, Volker-Stevin, Ballast-Nedam, the ABN AMRO bank, Ennia, Amev (Aegon), Nationale Nederlanden (ING group), Albert Heijn (Ahold), Vendex, Coopers & Lybrand, and KPMG. Out of the 138 biggest Dutch enterprises in 1980, measured by turnover, 98 were multinationals, while in the same year 39 out of the 50 biggest enterprises in the Netherlands (Dutch or foreign-owned) were multinationals. Almost half of them had a higher turnover abroad than at home. Consequently De Jong concludes that 'the top of the Dutch business world is thoroughly multinationalised' (De Jong 1985) (see also Chapter 1), and this trend has continued. A recent survey of eight Dutch multinationals shows that only some 25 per cent of their turnover is produced in the Netherlands and that, on average, 37 per cent of their personnel are employed there. Yet big differences come to light here: Philips, Unilever, AKZO and DSM create between 4 and 13 per cent of their turnover at home, while in the case of Ahold this still reaches 48 per cent (NRC Handelsblad, 9 October 1996).[36]

At first sight there has been little change in the regional distribution of Dutch investment in the nineteenth and twentieth centuries. The most important regions were—and are—Europe, the US and Japan. The part played by the developing countries fell from 20–25 per cent to roughly 12 per cent in 1980, yet the share of the three industrial regions, already large, increased still further between 1975 and 1989, from 83 per cent to 89 per cent (De Jong 1985) (see also Chapter 1).

The trade between European countries is becoming increasingly important, a movement illustrated by Van Nieuwkerk (1989) with the following figures: between 1928 and 1988 the volume of *intra*-European trade increased from 17 per cent to 22.5 per cent, and *extra*-European trade fell from 20 per cent to 15 per cent.[37] A comparison with the numerical data for the period 1973–83 reveals the shifts. It is clear that Dutch FDI has become increasingly more traditional, i.e., investments are made closer to home and in reliable situations (Dunning 1993, 1994; Webster and Dunning 1990). Dutch business is, in a sense, becoming less globalised. A similar phenomenon can be perceived in the case of the US and Japan, the US turning more to Central and South America, Japan more to Asia (De Jong and Vos 1994b:7–8).

Analysis

Incentives for Dutch multinationals

If we take the relationship between incoming and outgoing FDI and relate this to the GNP, then at the beginning of the 1990s the Netherlands was the country with the highest level of outgoing FDI: five times larger than that of the US (Aliber 1993:175). The question arises of why the Dutch business world is so internationally oriented in comparison with other countries. Research shows that a great many factors are of importance in explaining the multinational activities of enterprises, factors that vary according to enterprise, sector, region and period. For this reason it is virtually impossible to rank these factors in any order. Van Nieuwkerk and Sparling (1985) give the greatest importance to two factors: the small size of the Netherlands, and the openness of its economy. The opportunities for expansion are soon exhausted in a small market, and this provides the stimulus for creating multinationals. Furthermore, the Netherlands has an open economy: in comparison with other countries it has relatively few hindrances to the flow of capital, labour and raw materials (Van Nieuwkerk and Sparling 1985:16).

Gales and Sluyterman (1993) maintain that the Netherlands had a marked international orientation even at the beginning of the twentieth century. In explaining this phenomenon they emphasise these factors: the geographical linkage between highly industrialised states; the entrepreneurs' language skills (dependent upon the first factor); the limited size of the home market; and the restricted quantity of raw materials as well as the surplus of capital. These factors provided the stimulus for Dutch entrepreneurs to invest in raw materials in foreign countries and to create channels for marketing.

Nevertheless Schröter (1993) reaches a completely different conclusion in his work. In comparing the Netherlands with other small countries one is struck by the fact that the Netherlands internationalised late in the day; that it had relatively few multinationals, although some of these were very large; that these multinationals were active mainly in the food, 'luxury' and raw materials industries; that the largest investments were made in countries just over the Dutch border (i.e., in Germany); and that the incentives for investing there were connected more with production costs than with marketing factors, which played a comparatively small role. However, Sluyterman and Gales define multinationals in a different way from Schröter, who discounts investments in the colonies, thereby drastically reducing the extent of Dutch investments. In Sluyterman's opinion (1993) the use of such a rigid definition is open to question because business in Asia, with its completely different cultures and climates, demands much more from entrepreneurs. Sluyterman's argument strikes me as dubious since, in the existing definitions of 'multinational', no demands concerning the 'exotic character' of foreign countries have ever been made.

In De Jong's view (1985), existing theories on multinationals place too much emphasis on objective factors, and do not take sufficient account of subjective factors such as the will to expand and the readiness to take risks. He believes that the Netherlands has many multinationals; apart from such factors as the small size of the home market, there is a greater willingness to take risks. In his opinion this is, once again, connected with the learning process—Dutch traditions in trade and in establishing business units overseas. This, once again, is emphasised by the dominant position of the processing, printing and construction industries (especially those linked with water) and trade, and the weak position occupied by—for example—the machine industry and shipbuilding (De Jong 1985:146). As explanation for the relatively large number of Dutch multinationals, Daems and Van de Weyer (1993) give a special emphasis to the greater influence of shareholders, and the firmer separation between management and ownership in the Netherlands. Because of this, Dutch entrepreneurs would be more prepared to take risks than their Belgian counterparts.

Patterns in investment abroad in the short and long term: the Wilkins model

In this investigation we have examined the geographical spread of investment in the very long term. What patterns have emerged, and to what extent does the Wilkins model explain the distribution of Dutch multinationals? One could expect that, in the seventeenth and eighteenth centuries, the problems of communication and transport would have been so huge that cultural differences would have dominated, and consequently that there would have been a clear preference for investment closer to home. Yet this is clearly not the case, since investments were made both close to home and in very distant regions. This situation changed in the nineteenth and twentieth centuries. In the (very) long term the factors put forward by Wilkins seem to have gained in importance in the Dutch business world, i.e., proximity, familiarity with the culture concerned, political stability and market opportunities.

Since the seventeenth century, Dutch economic activity has become more international in character. An ever larger proportion of turnover and added value is being earned abroad. On the other hand Dutch economic activity has become less truly global in comparison with the seventeenth century. To an increasing degree Dutch investments are, both relatively and absolutely, concentrated in three regions: the internal European market; the US, and Japan (as well as in the New Industrialised countries). As we have seen, the already high proportion of these regions represented in the total FDI receipts, increased even further in the twentieth century.

It may be that modern managers attach much greater importance to 'control' than did their seventeenth-century forerunners. Learning to live with uncertainty is a matter of becoming accustomed to it (Lesger 1996). The striving for hands-on management has given importance to proximity. Perhaps the explanation should be sought in the continually improving organisation of the international movement of capital, labour and raw materials. We can also add greater rapidity in communications. In the 1990s it is no longer necessary for an entrepreneur to own his own coffee and tea plantations, or to control the production of nutmeg and mace. Nowadays the international market is well organised and regulated, and it has gained in transparency. In 1600 this was definitely not the case, and it was indeed necessary for entrepreneurs to be present in person in all parts of the world, or at least to send representatives in their place.

In the very long term the attention devoted to certain countries by Dutch investors is also not particularly exceptional. We have seen here that many of these countries have been given preference by Dutch entrepreneurs since the seventeenth century. Consequently in any explanation for the spread of Dutch investment abroad, *history* must weigh heavily as a factor. Generally speaking, this also applies to other countries. An element like 'experience' also plays a major role: successful investments in a country stimulate new investments, while failures hold them back. Entrepreneurs learn from their successes and failures.

The answer to the question of why the Netherlands invested comparatively so much more than other small countries must be that the entrepreneurial culture, as formed from the seventeenth century on, is an essential factor. As Brown and Rose (1993:1) express it: 'Easily the most important influence on [business] behaviour is shown to be "culture" …'.

Notes

1 For a survey of recent economic theories on multinationals see De Jong, N and Vos, R. (1994). I prefer to keep to the abbreviation MNE instead of TNC. In my view TNC refers to the next phase of MNE's.

2 A veritable academic war has broken out on the issue of which country had the first multinational: was it the US with Singer (1867 in Scotland) or Belgium with Cockerill (1815)? There is also a great debate over the question of which country showed the largest total of foreign investments. The chosen definition plays a decisive role in these questions. See for example the definition put forward by Schröter (1993)

3 Recently there has been a certain amount of consensus on the definition of multinationals, but opinions differ on the details Are colonial enterprises to be regarded as multinationals, or not? For Britain see Charles Jones (1987). Jones suspects his British colleagues of giving such an open interpretation of the question that Great Britain immediately becomes more modern than the US, thus deviating from the ideas of someone like Alfred D.Chandler. I shall not argue for a new definition: each definition has advantages and disadvantages. I will only point out the methodological consequences of the choice of a definition. Whoever defines motorcars as motorised vehicles with airbags, immediately excludes all cars without airbags!

4 In this contribution I am not interested, primarily, in the numbers and extent of foreign investments made by Dutch enterprises For those who do have such an interest, I would refer to Table 2.1 and Table 2.2. For the usefulness in distinguishing between FDI and portfolio investments in earlier periods, see Cotrell (1991:28). Even for the modern period the statistics sometimes show great differences. According to American statistics, the total of FDI by Dutch enterprises in the US in 1980 amounted to 41.2 billion guilders. In the Dutch statistics the corresponding figure is 16.9 billion (Van Nieuwkerk and Sparling 1985:102).

5 See OECD (1996) and De Jong and Vos (1994b:1–5). This has all the causes such as differences in definition, diverging methods among accountants, differences of classification in national statistical offices, use of different exchange rates and so on. Figures from the industrialised countries are more reliable than those from developing countries, and figures for outgoing FDI are usually more detailed than those for incoming FDI.

6 In recent years there has been much more research carried out into the internationalisation of the service sector For a recent survey of research into multinationals see Jones (1996) and United Nations (1993).

7 For Riemens (1989) criticism of Dunning's Eclectic Theory see pp. 1–10, and pp. 17–18.

8 The factors mentioned by Wilkins (1994) are, generally speaking, regarded as important However, geographers' location theories and theories on choice of location by multinationals usually mention a great many other factors as well. For example see Aliber (1993) and Aliber and Click (1993).

9 FDI is seen as the pursuit of direct influence on the management of the enterprise; portfolio as investment without the aim of direct involvement in the day-to-day running of the enterprise In the case of FDI we are dealing here with takeovers, mergers, new plant/offices and participation; where portfolio is concerned, the purchase of shares via the stock exchange.

10 Until recently, Philips had a 'controlling interest' in Siemens (Germany) and also supplied the management Now, however, it plays the part of passive investor even though the shares packet has not been altered. In the 1980s the Dutch enterprise Nedlloyd had to deal with a shareholder who, in buying new shares, demanded the right to withdraw from any participation in management, preferring instead to occupy the post of Commissioner. For Dutch investors in American railways who became managers see Veenendaal (1996:99–110).

11 At the peak in 1680 there were more then 60 shipyards in the Zaanstreek, where some 100 to 150 ships were constructed every year, with a great deal of 'economies of scale'

12 Referring to Barry Supple, Wallerstein (1982:97) mentions James I's Cockayne Project of 1614, forbidding the export of unbleached cloth from England to be printed and finished in the Netherlands. This came to nothing and in 1617 the project was abandoned.

13 Not everyone subscribes to this new view (Israel 1991).

14 See also Van Nieuwkerk and Sparling (1985:9).

15 In 1666 Manhattan was captured by England.

16 Cited in Wallerstein (1982:102).

17 According to Colbert, Minister of Finances to the French king Louis XIV, the entire trade of Europe was accomplished by 20,000 ships, three-quarters of which belonged to the Dutch (Cameron 1989, 1991b).

18 The wealthiest Amsterdammers, with the highest tax assessment, were the merchants who were active in the 'rich trade' with Asia, America and Africa Besides those mentioned in the text, other important traders were Isaac le Maire, Willem Usslincx, Daniel van der Meulen, Balthasar de Moucheron, Jasper Quingetti, Johan van der Veken and Pieter Lintgens (Tracy 1985:347).
19 Between 1540 and 1815 some 231.101 hectares of fertile land was added to this area (Van der Woude and De Vries 1995). For the merchants' 'conspicuous consumption' see Schama (1988).
20 There were Dutch merchants' associations in England, Russia, France, Spain, Italy and Turkey (Veluwenkamp 1996).
21 According to Cameron (1991b), banks were the first genuine multinational enterprises. He is thinking especially of the Italian bankers of the thirteenth and fourteenth centuries: for example, De Bardi, Peruzzi and the Medici.
22 According to Cameron (1991b:16), the first major direct foreign investment in Russia was the Great Russian Railway Company, in which Dutch capital had also been invested. See also Veenendaal (1996).
23 In 1800 Russia produced 162,000 ton of crude iron, and England 156,000 tons (McKay 1974:544).
24 This is dealt with at length in Knippenberg and de Pater (1988) and Tamse and Witte (1992).
25 For a recent survey see Van Zanden (1993a).
26 Gales and Sluyterman (1993) also give a much more detailed survey by sector and information on specific enterprises.
27 Scholten invested in NV Rotterdamsche Lloyd (Rotterdam) and in the Nederlandse Gist en Spiritusfabriek (NG&SF) (Delft) (Gales and Sluyterman 1993:68).
28 Later on, Unilever took over the Calvé factory (peanut butter factory) (Wennekes (1993:176, 183).
29 For greater detail see Veenendaal (1996) and Bosch (1948).
30 In the interests of completeness, I would like to mention here that, during World War I, Fokker had a factory in Germany, and for a long time was even the world's biggest constructor of aircraft. In view of the fact that he also lived in Germany in that period, we do not count this investment as FDI. Fokker tranferred his factory to the Netherlands shortly before the end of the war.
31 Van Nieuwkerk and Sparling (1985:36–37).
32 The NISM was an initiative on the part of the Algemeene Maatschappij voor Handel en Nijverheid, but after the liquidation of the Algemeene Maatschappij voor Nijverheid en Handel in 1864/1867, the enterprise was continued by private individuals (Bosch 1948:62–63).
33 For example, in the field of personnel policy, the NISM also wanted to retain the services of married women, which was prohibited in the Netherlands. The motives underlying this approach were less emancipatory than economic, given a chronic shortage of qualified administrative staff.
34 Aliber and Click (1993) erroneously mention that De Koninklijke/Shell is partly American, partly Dutch. This should read: Dutch/British.
35 If one discounts investments in the colonies, the significance of the Netherlands in the field of investments abroad diminishes considerably. The same thing could be said of countries such as Great Britain and France.
36 Turnover and personnel employed in the Netherlands: ABN Amro (52 and 56 respectively), Ahold (48 and 32), Akzo Nobel (8 and 26), DSM (13 and 61), Heineken (21 and 20), Philips (5 and 15), Shell (46 incl. UK, and 12) and Unilever (4 and 10).

37 However, if we take production into account, it is clear that the intra-European share hardly changed between 1978 and 1988 (*c.* 15.5–16 per cent) and the extra-European share rose from 21 to 23 per cent. According to Nieuwkerk (1989), Europe has become increasingly 'extrovert'. However, he provides no figures for the period from 1928, and comparison over a longer period is thus impossible.

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3 Technology characteristics of the Dutch economy

Merijn van Essen and Bart Verspagen

1 Introduction

The times that economists could consider technology as a 'black box', something exogenous to put into a production function, are long gone. Ever since the (first) Industrial Revolution, technology has been central to economic growth and development. In the days of globalisation, technology also claims an ever larger role in government economic policy. The reason for this is that, for the developed countries, competing on costs alone is no longer an option. Many of the products which were traditionally manufactured in North America or Europe are now produced much cheaper in countries outside these traditional 'centres' of the world economy. For the European and North American countries this implies a loss of jobs, which can only be made up by increasing 'technological competitiveness' and a shift of employment to the services sectors. For unemployment to return to socially acceptable levels both these solutions will have to pursued actively. Stimulating the technology infrastructure of a country is therefore high on the agenda of today's governments in Europe and North America. If successful, it enables their economies to maintain high growth rates of per capita income.

At the same time that technology became central to government policy, the phenomenon caught the attention of economists. Following pioneers such as Schumpeter, modern economic theory has (finally) caught up by endogenising technological change into models of market structure (e.g., Kamien and Schwartz 1982), economic growth (Romer 1990), or international trade (Dosi *et al.* 1990). By now, any detailed analysis of a country's economic performance necessarily includes an analysis of technological change and innovation.

With this development, many analytical approaches for looking at technological change have emerged. National systems of innovation (Lundvall 1992), the learning economy and the knowledge based economy are all concepts which place innovation and technology at the centre but offer different perspectives on the precise working of these phenomena and their relation to the economy. One problem with all these approaches is that the nuances of the differences between them can often not be related to empirical data on the performance of national economies with regard to technology.

This chapter will make an attempt to measure and quantify some of the aspects of technology in the Dutch economy. Because the primary aim is to arrive at conclusions which are clearly founded in empirical data, no direct link to any of the above mentioned analytical perspectives will be made. Still, the reader will find elements of the empirical analysis here fit in with the analytical perspectives offered elsewhere.

The highly empirical flavour of the analysis in this chapter does not imply that we make no use of abstract analytical concepts. Our main conceptualisation of technology will be that of the 'technology infrastructure' of a country, in this case the Netherlands. By this we mean that we look at the parts of the technology systems of a country that are institutionalised in an 'infrastructure' of research institutes, laboratories, firms and technology policy agents such as ministries and research councils. The technology inputs and outputs of all these 'institutions' that make up the technology infrastructure of a country can well be quantified by statistics on research and development expenditures (R&D), as well as output indicators such as patents.

Within the technology infrastructure, one may make a distinction between different parts with different roles. In quite general terms, technology efforts by firms are directly aimed at economic progress, for example in terms of product or process innovation. Higher education institutes (universities) are generally aimed at basic research, primarily aimed at the advancement of knowledge without any specific purpose in mind at the time of development of the new knowledge. An intermediate form of R&D is applied research, which aims to apply basic knowledge to practical problems. Applied research is often carried out by government financed R&D institutions, which are often aimed at interaction with the private sector. Finally, experimental R&D (mostly carried out by firms) is only concerned with finding the most practical implementation of an invention.

Viewed in this way, it is clear that, even if the above sketched 'roles' are only a very crude and simple approximation of reality, the different parts of the technology infrastructure interact with each other and are in many ways complementary to each other. Even if the primary focus of the analysis, as in this volume, is on firms, it therefore makes sense to look at the higher education and public science and technology infrastructure as well.

Our analysis starts in Section 2 with a general review of some of the advantages and disadvantages of the indicators used. After this, the macro-characteristics of the Dutch technology infrastructure will be presented in Section 3. Section 4 examines the higher education sector and public research institutes in the Netherlands. The technological position of Dutch business is considered in Section 5. The final section puts together our arguments, and draws some conclusions on the overall competitiveness of the Dutch technology system.

2 Technology indicators and their use

The national accounts system, even if it has its shortcomings, provides a direct estimation of production and consumption patterns in a country. Unfortunately, such a system does not exist for technology. Economists wishing to analyse the role of technology therefore have to rely on a number of rather indirect and crude indicators. One may make a distinction between at least four categories of such indicators.

The first category consists of productivity indicators. These are derived from the national accounts system, and provide an insight to the effect of technology on certain economic variables. The simplest of these measures is labour productivity, i.e., output per unit of labour, or, a cruder form, GDP per capita. Total factor productivity, which takes into account capital- as well as labour productivity, is generally considered to be a superior measure of productivity, because pure labour productivity growth may be influenced by substitution (between capital and labour) as well as by technological progress.

The main disadvantage of productivity measures for technological change is that they cannot distinguish very well between technology and other sources of productivity growth. One may, for example, think of institutional changes, reductions in working time, changes in the measurement of GDP and many other factors influencing productivity. Also, changes in product quality due to innovation are not very well measured in GDP (most price indices used in the national accounts do not correct for quality change). Against these disadvantages, one may argue that the main advantage of productivity measures is that they (among other things) at least reflect the economic impact of innovation, something which is not so clear in the case of other measures to be discussed below.

The second category of technology indicators are the innovation surveys (see Brouwer *et al.* 1994 for an application to the Netherlands). These are specially designed surveys which attempt to measure many aspects of innovation in businesses. Among other things, the questions included in the questionnaires ask for the number of innovations introduced by the firm, the sources of knowledge applied in these innovations, the problems in the innovation process and a breakdown of the different costs associated with innovations.

By their detailed nature, these innovation surveys are of great potential value for the analysis of technology and innovation. However, despite the establishment of the Oslo manual for the construction of innovation survey questionnaires, and the effort by Eurostat to conduct innovation surveys in many European countries, internationally comparable results are not yet available for a large range of countries and long time periods. Also, the detailed nature of the questionnaires and the often limited coverage of the surveys makes it difficult to use the results for macro- or sectoral comparisons.

The third category of innovation indicators concerns so-called input indicators of the innovation process, mainly data on research and development expenditures. Research and development activities may be considered as the main institutionalised form of technology development. In the Frascati manual, R&D is well defined for statistical purposes, which makes collection of the data on an internationally comparable basis relatively easy. It also means, however, that certain aspects of technology development, such as large parts of software development or design are excluded from the definition. Perhaps more importantly, however, R&D statistics only give an impression of the input into the technology process and they cannot account for differences between firms or countries with regard to the efficiency of the R&D process or differences in input costs such as wages. Also, there is evidence that R&D in small firms tends to be underestimated in the official statistics (see Soete and Verspagen 1991, for a more detailed summary of this and other matters in relation to R&D).

Finally, the fourth category of technology indicators are the so-called output indicators. In relation to firms, the main form are patent statistics. Aimed more specifically at the higher education system, one can see data on scientific publications as a form of output indicators. Output indicators may be viewed as overcoming one of the main problems of R&D, i.e., that R&D does not provide any indication of the efficiency of the technology process. This is, however, only partly true, because often the only available data on patents is the crude number of patent grants or applications per sector, country or firm. Such data do not give an indication on the value of individual patents. Moreover, the propensity to patent inventions may differ widely per sector (depending on the effectiveness of patents as a means of appropriation and the availability of other such means). Griliches (1990) provides an overview of the main (dis)advantages of patent statistics.

In this chapter, we will use only data from the third and fourth category, i.e., technology input and output indicators. The main reason for not using the second type of indicators (innovation surveys), is the already mentioned fact that these indicators, are not yet very easy to generalise between countries and for longer time periods. The indicators from the first category, productivity indicators, we consider too distant from the real technology related phenomena which we wish to investigate in this chapter. Van Ark (1993) provides a state-of-the-art analysis of productivity of the Dutch economy.

3 A macro perspective

We start by looking at the R&D investment of the Dutch economy in comparison with other OECD countries. From the purely macroeconomic perspective applied in this section, one may take two different angles on this. First, R&D expenditures as a percentage of GDP, or 'R&D intensity', gives an indication of the relative investment in technology. This measure does not discriminate between large and small countries, and simply assesses how much of the national production is invested in the (formalised) search for new technologies. However, because in many technological activities, scale economies play a role, it also makes sense to look at the absolute amount of R&D spending.

Figure 3.1 therefore gives a country's relative R&D intensity (R&D as a percentage of GDP, expressed as deviations from the mean for all countries) versus the relative size of a country's R&D system (i.e., the country's absolute R&D spending in deviation from the mean for all countries). Although not corroborated by formal analysis, one might distinguish four different groups of countries in this figure. In the upper-right corner of the figure are the large countries (the US, Japan and the three largest European countries: Germany, France and the UK), which spend large absolute amounts of R&D, and have high R&D intensities at the same time. These countries may be considered the R&D leaders of the world, with a relatively large scale of investment as well as high intensities. Finland, Switzerland, Sweden, the Netherlands and Denmark form a second group of countries. All of these countries are well below the mean of absolute R&D spending, but have R&D intensities roughly comparable with the countries in the first group. Their absolute R&D spending is clearly below that of the leading five, however, as could be expected from the size of these countries. One may call these countries 'small but advanced'. A third group is stretched out around the vertical axis of the figure, i.e., these are countries, which, although they differ somewhat with regard to absolute R&D spending, show 'average' R&D intensity. In this group are Norway, Belgium, Austria, Australia and Canada. Denmark,

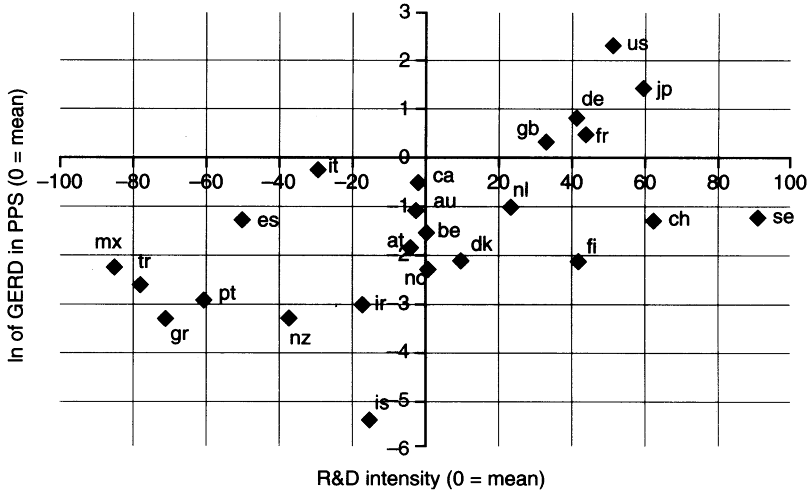

Figure 3.1 R&D intensities versus R&D expenditure, 1994

Note

GERD = Gross expenditure on R&D

PPS = Purchasing power standard

ln = natural logarithm

classified in the second group above, is rather close to this group, and can be considered a borderline case. The last group, with all other countries, is spread out in the left part of the graph. These countries are of mixed size in terms of absolute R&D spending, but all have relatively low R&D intensity.

The Netherlands is thus in a group with three Nordic countries plus Switzerland. Within this group, it has the highest value of absolute R&D spending, but a relatively low R&D intensity. In the European context, this makes the Netherlands a rather special case. On the one hand, it spends roughly as much R&D as other EU-countries which are much larger, such as Italy and Spain. On the other hand, it is not as R&D intensive as some of the smaller, but advanced EU-countries, such as Sweden and Finland. Overall, however, the Netherlands can be characterised as a relatively small but advanced country.

Figure 3.2 gives more information about the composition of R&D expenditures. The breakdown into the R&D-performing sectors is important because each of those sectors is characterised by certain institutional variables. For example, R&D performed by university researchers is generally of a basic character, while researchers in businesses do much more experimental work. Applied research is mainly carried out in (semi-)public laboratories outside universities, but there are important national exceptions to this. For example, in Sweden, most of applied research is carried out in research institutes which are part of the university system.

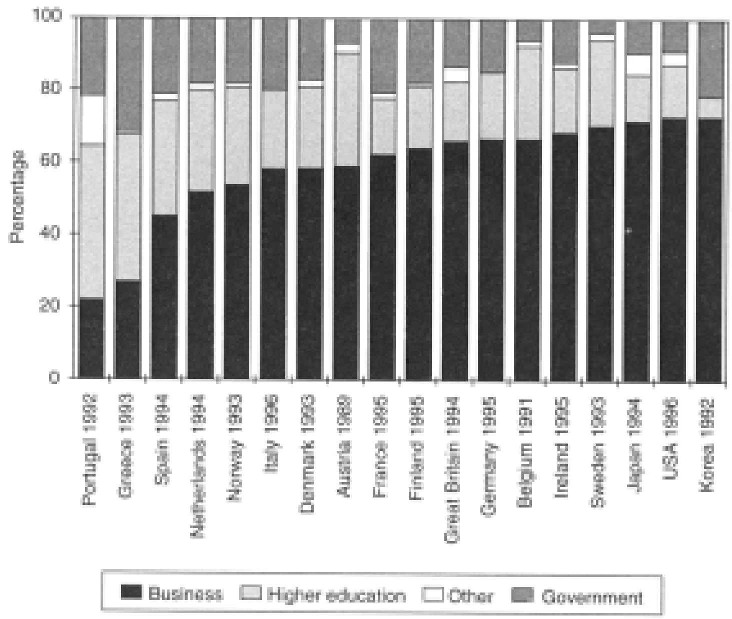

Figure 3.2 R&D expenditures by sector of performance (in percentage of GERD)
Source: OECD R&D database.

In Figure 3.2, the technology leaders from Figure 3.1 are clearly grouped together. The US and Japan are the two countries with the highest share of business in total R&D expenditures in 1994 (slightly over 70 per cent). The three large European countries, Germany, the UK and France are also grouped together, but with clearly lower values of the business share: ranging from 61 per cent to 66 per cent. Overall, private business typically takes a share of total R&D spending which is well above 50 per cent. In the large European countries, higher education and government research institutes account for 10–20 per cent of total spending each. In the US and Japan, this is lower (5–15 per cent), and in these two countries, the higher education sector is clearly larger than the government sector.

The countries in the second group above, the 'small but advanced' countries, are now spread out over the figure, indicating their heterogeneity in terms of the structure of R&D expenditures. Sweden is closest to the US and Japan, with a high share of private business, and higher education clearly larger than government. Finland's structure of R&D spending is close to that in the leading European countries, as is Denmark's (but to a lesser extent). The Netherlands forms somewhat of an exception, with a rather low share of business spending, and a large share of higher education, as well as government R&D.

It is not easy to offer a straightforward interpretation of the advantages and disadvantages of a certain structure of R&D spending. The characterisation of the different forms of R&D performed by the different sectors as outlined above is admittedly a stylised one. Even the very distinction between basic R&D, applied R&D and experimental R&D is stylised and does not describe the nuances of R&D performed in the sectors very well. What is certain is that there are many complementarities and spillovers between the R&D work performed by the different sectors.

One cannot define such a thing as an 'optimal' structure of national R&D expenditure, but some of the differences between the countries in Figure 3.2 do have useful interpretations. For example, the large differences between the Southern European countries on the left and the technology leaders on the right are illustrative of the relatively undeveloped business R&D system in these European countries. This does not hold to the same extent for the Netherlands, which is next in line to Spain, although one may argue that in the Netherlands, the higher education and government R&D systems are relatively more developed. Below, more will be said about the R&D performing sectors in the Dutch economy.

4 The 'public technology infrastructure': R&D in the government and higher education sectors

The higher education sector performs a broad range of R&D activities. Not all of these activities are relevant from the point of view of the development of technology, however. In order to assess which part is relevant, a breakdown into fields of science is useful. Figure 3.3 gives this breakdown for 1990 and 1994. The largest part of the total university budget on R&D is spent on health related R&D: slightly less than 30 per cent in both years. Engineering is the next largest category, followed by the natural sciences. Together, these two categories accounted for 39 per cent and 41 per cent in 1990 and 1994, respectively. The increase is largely due to an increase of the share of engineering (from 20 per cent in 1990 to 23 per cent in 1994). Social sciences and other (economics, humanities, law) decreased from 26 per cent in 1990 to 23 per cent in 1994, and agricultural research was stable around 7 per cent.

Overall, the dynamics of the distribution of university R&D over the fields of science is slow. The increasing share of engineering and natural sciences corresponds with a desire of policy makers to stimulate these fields in total university research, but the changes are slow. There is little material available for an international comparison, because the data in OECD's database are relatively old. The overall impression one gets is that at the beginning of the 1990s the Dutch share of social sciences and health was somewhat higher than, for example, in Germany, but the differences are so small that they may well be eroded by the trends over 1990–4.

The fields with the most direct relevance for technology development are the natural sciences, engineering and agriculture. Health research is also directly economically relevant, but only for a small part of private business. The social sciences and humanities are mostly applied in management or

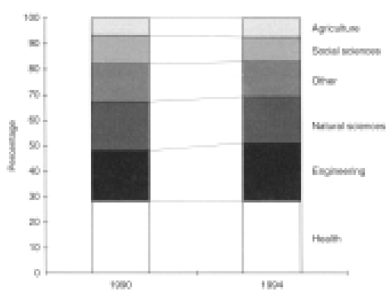

Figure 3.3 The distribution of higher education R&D in the Netherlands over the fields of science, 1990 and 1994

Source: Statistics Netherlands, 'Kennis en Economie', 1996.

policy processes, or are relevant from a cultural point of view. The natural sciences, engineering and agriculture together account for slightly less than half the university R&D budget: 47 per cent in 1990, 48 per cent in 1994.

While Dutch universities are almost entirely financed from government funds (as in most European countries), there is also a considerable 'government' research sector. There are mainly three sorts of institutions in this sector: TNO and DLO, the so-called large technological institutes, and the research council NWO and Academy of Arts and Sciences KNAW. TNO and DLO are semi-public organisations which do mainly applied research, and get an important part of their budget from contract research. TNO (the Dutch abbreviation for 'Netherlands Organisation for Applied Scientific Research') has a rather broad perspective, comparable to the German Fraunhofer Institute, while DLO is aimed solely at agriculture. The large technological institutes, of which there are five, are focused on limited areas, such as maritime research. These institutes are relatively small: together, their budget is about four-fifths of the TNO budget. Finally, the research council NWO and the Academy of Arts and Sciences, KNAW, are mainly aimed at basic research. They interact with universities. NWO finances PhD students at universities, but it also has some institutes performing basic research which operate independently of the university system. KNAW finances, among other things, postdoctoral research at universities.

One of the aims of science and technology policy over the last years has been to promote the interaction between the government sector and the private sector. NWO has been given a more important role in the distribution of research money to universities, and it makes this distribution on a competitive basis. The other main channel through which this interaction is stimulated is TNO. This institution has two main forms of funds: government subsidies and contract research. Figure 3.4 shows the development and distribution of TNO turnover over the last five years. The figure shows that the role of government subsidies has been decreasing over time: from fl 326 million in 1992 to fl 288 million in 1996 (all current prices). At the same time, contract research turnover increased from fl 398 million

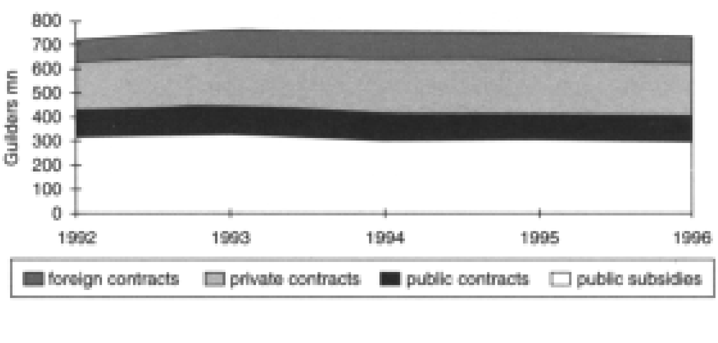

Figure 3.4 Turnover of TNO by client-category, 1992–6
Source: TNO annual reports.

in 1992 to fl 439 million in 1996. In percentage terms, the increase was strongest in contract research for foreign or international organisations (17 per cent), and weakest for domestic public contracts (7 per cent). Overall, public contracts for TNO did not compensate for the decline in public subsidies, so that the organisation increased its overall focus on the private and foreign sectors.

The aim of the increasing policy focus on stimulating interaction between the private and public sector is to increase competitiveness of Dutch firms. While it is difficult to express the public—private interaction in quantitative terms, it is obvious that such increasing interaction would indeed benefit the technological competitiveness of Dutch firms, or foreign firms operating in the Netherlands. One has to keep in mind, however, that, especially for the larger firms, the developments in science and technology in foreign countries are also very important. It cannot be expected, for example, that the 'science input' into business research of Dutch firms comes solely from Dutch universities. One should therefore keep in mind that the university and public research system has a much broader role to play than just contracting out research to firms. The general absorptive capacity of Dutch firms, for example, benefits largely from technically skilled people educated in the domestic higher education system.

5 Technology in Dutch business

In order to assess the general picture of business R&D spending in the OECD countries, we look at a picture for business R&D similar to Figure 3.1 (which was for total domestic R&D). Given the fact that business R&D is in most cases the largest component of total R&D, one might expect that the two pictures for total R&D and business R&D look similar, and this is indeed the case. In Figure 3.5, we find again the five large technology leaders (US, Japan, UK, Germany, France) in the right-upper corner of the figure, indicating their large absolute size of business R&D spending as well as their higher business R&D intensity. In this case, the US and Japan clearly lead over the three European countries in terms of R&D intensity.

There are some changes in the second group of countries identified in Figure 3.1, i.e., the 'small technology leaders'. This group in Figure 3.1 consisted of Sweden, Switzerland, Finland, the Netherlands and Denmark, and was characterised by relatively high R&D intensities, but small R&D scale. Of the five countries in this group, three (Sweden, Finland and Switzerland) are still clearly identifiable as 'small technology leaders' in Figure 3.2. The Netherlands and Denmark, however, are now much less pronounced in terms of R&D intensity. Denmark is clearly below the average, the Netherlands still slightly above, at a level below that of Belgium and roughly equal to that of Austria. The Netherlands thus belongs to the third group, with 'average' values of business R&D intensities, and small absolute spending.

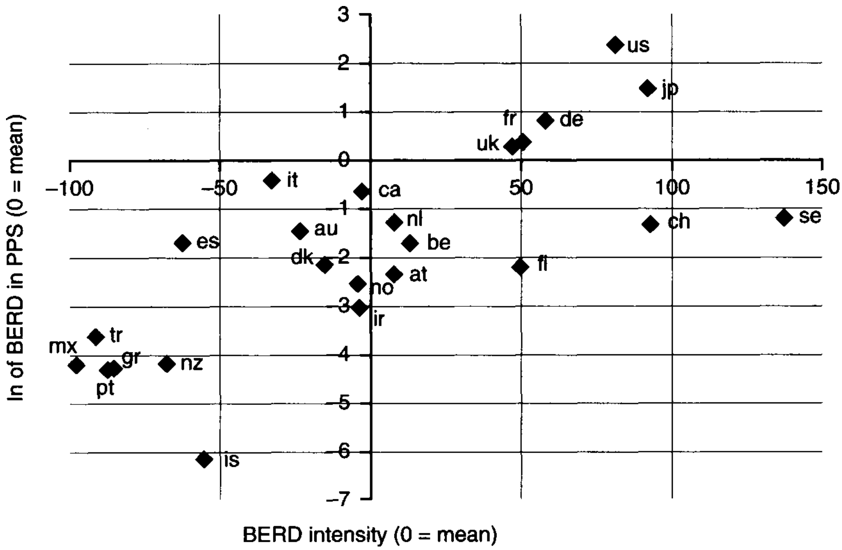

Figure 3.5 BERD intensities versus BERD expenditures, 1994
Source: OECD R&D database.
Note
BERD=Business enterprise expenditure on R&D
ln=natural logarithm

Figure 3.5 thus shows that although the Netherlands is close to the technology leaders in terms of total national R&D intensity, in terms of business R&D intensity, the country is considerably behind the frontier countries. This ultimately raises the questions as to what causes this lagging behind, and what are the economic consequences of it. These questions are, however, difficult to answer with the quantitative material available from the national statistics. What can be done on the basis of the statistics, however, is to relate Dutch R&D investment to some characteristics of the Dutch economic structure. Here, we will consider two of these structural characteristics, namely the sectoral breakdown of the Dutch economy, and the size distribution of firms doing R&D.

It is a well-known fact that R&D is concentrated in a limited number of sectors of economic activity. The largest part of business R&D is performed by manufacturing firms. R&D in services relates mainly to the business services sector (engineering consultancy and specialised R&D firms), communications (where the borderline with hardware manufacturers is vague), and computer services (software). While R&D in these sectors is increasing rapidly, the manufacturing sector still plays a dominant role. Within manufacturing, R&D is again concentrated in a limited number of high-tech sectors. In the OECD definition, these are pharmaceuticals, computers and office machinery, electronics (including radio, TV and communications equipment), aerospace, and instruments.

Figure 3.6 compares the sectoral distribution of the Dutch economy to that in some of the other OECD countries. The sectoral shares are calculated on the basis of employment, and the countries in the figures are the only ones for which data are available in the OECD ISDB database. The definition of services used here includes public utilities, construction and government as well as private services. It is clear that in all countries the services sector (in this definition) is the largest contributor to employment, even as early as 1970. In Germany, the country with the lowest share of services in employment in 1990, the share was around 45 per cent in 1970, increasing to 55 per cent in 1990.

The 'Anglo-Saxon world' scores relatively high on the share of services, with Australia ranking highest of all countries in 1990 (close to 80 per cent), and the US, Canada and the UK also ranking high. The Netherlands ranks among these Anglo-Saxon countries, just before the UK and just behind Canada. In 1970, the country ranked even higher with regard to the

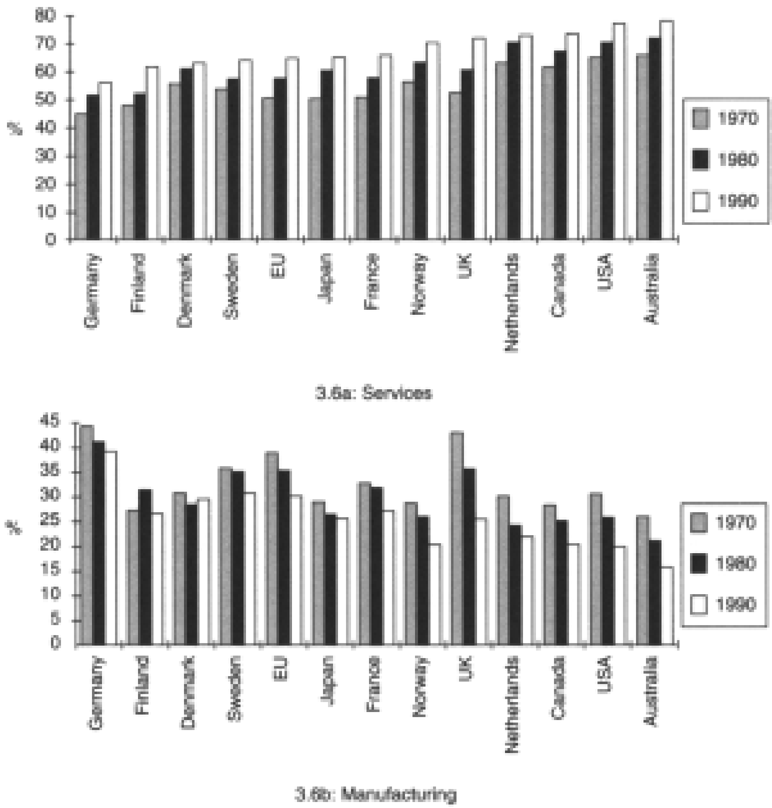

Figure 3.6 The shares of services and manufacturing in total employment, selected OECD countries

Source: OECD ISDB database.

share of services in total employment, but since then other economies have caught up.

Figure 3.6b is to a certain extent the mirror image of Figure 3.6a, giving the share of manufacturing in total employment. Naturally, those countries ranking high in Figure 3.6a now rank relatively low. In 1990, the share of manufacturing in total employment in the Netherlands was around 20 per cent. Germany, the country with the highest share of manufacturing, was close to double this value in 1990. Other advanced European countries, such as Sweden, Denmark and France also rank with significantly higher values than the Netherlands.

The Netherlands thus ranks as a country with a relatively high proportion of services in the economy. This has immediate consequences for the role of technology and R&D in the Dutch economy. One should be careful, however, not to confuse the causal nature of the relationship between R&D and sectoral structure. While it is true that a certain sectoral structure of the economy may be associated with low overall R&D intensity, this does not imply that the sectoral structure should simply be taken as given. In fact, one may well argue that the sectoral structure is a result as well as a cause of the overall technological competitiveness of a country. A country with low overall technological competitiveness can be expected to specialise in low-tech activities, which in turn may depress overall R&D intensity.

The conclusion must therefore be that if one points to the Dutch sectoral specialisation pattern as one of the causes of the low business R&D intensity, one should in turn look at this specialisation pattern from the technological perspective. Traditional strongholds in the Dutch services sector, such as transportation and, more recently, finance, are not among the services activities with a relatively high technological content. However, activities such as software, communications or information technology in general are hard to isolate in the current economic system. They certainly provide good opportunities for future growth, but at this stage it is hard to evaluate the Dutch international position in, for example, the application and use of the Internet.

Within manufacturing, the limited value of the argument of economic structure as a cause of the low Dutch R&D activity can be shown by comparing the R&D intensities of Dutch manufacturing sectors with those in other countries. For this purpose, we chose to compare Dutch R&D intensity in manufacturing to that of the five technological leaders identified in Figures 3.1 and 3.5 above. For each of the 17 sectors, we calculate R&D intensity as R&D divided by gross output. We then take the mean value for the five technology leaders in each sector, and subtract this from the value of Dutch R&D intensity in that sector. The results are depicted in Figure 3.7.

The first result that strikes us in this figure is that Dutch R&D intensity is below that of the technology leaders in all but one sector. In other words, no matter what the sectoral weights would have been, overall Dutch R&D intensity in manufacturing would always be below that of the five technology

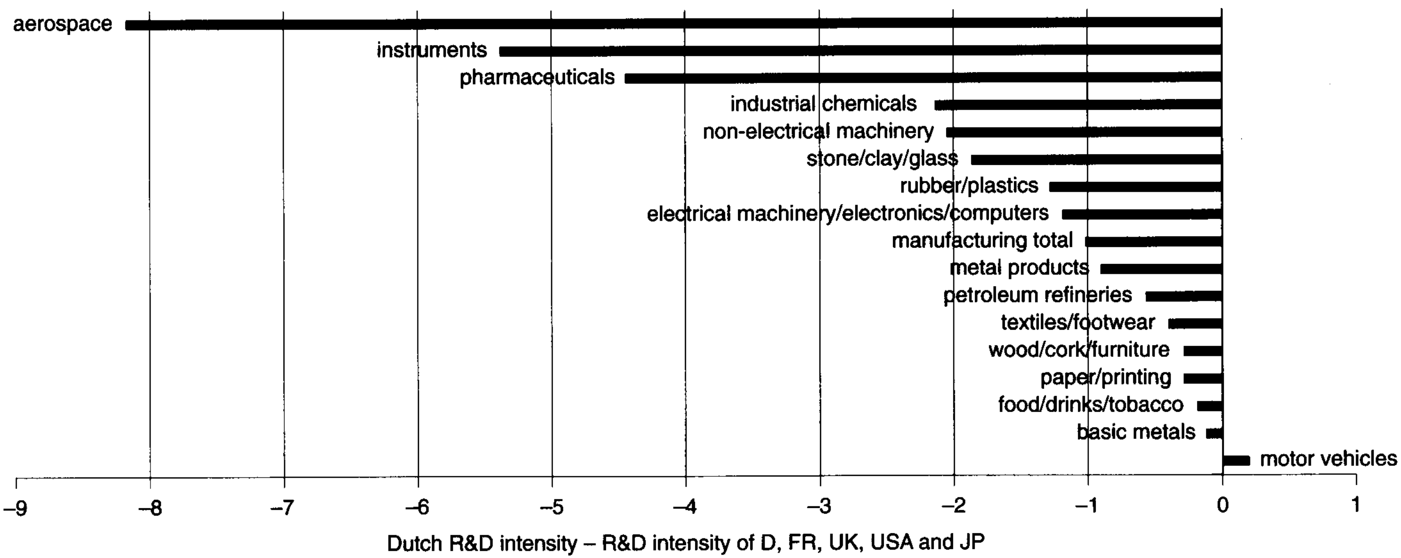

Figure 3.7 BERD by industry: difference between the Netherlands and the technological leaders, 1990–4
Sources: OECD R&D database and MERIT estimation for Dutch sectoral R&D.

leaders. In absolute terms, the difference is largest in aerospace, instruments and pharmaceuticals, all three sectors which are generally considered as 'high-tech'. It should be kept in mind, however, that because R&D intensity is generally high in these sectors as compared to other sectors, the differences one may get in comparing two (sets of) countries can also be expected to be larger. In other words, the large absolute differences in this sector do not necessarily point to a large relative gap between the technology leaders and the Netherlands.

Chemicals other than pharmaceuticals, machinery and electricals/ electronics (also including computers) are some of the other sectors which stand out with relatively large R&D intensity gaps in Dutch manufacturing. Especially given the fact that the 'big-five' multinational companies[1] are active in these sectors makes this result interesting: apparently the ratio between R&D and production of these companies in the home country is lower than that of similar parts of industry abroad.

Low-tech sectors such as food and basic metals are relative strong points of the Dutch business R&D system, as is the motor vehicles sector. The latter sector may show a biased result, however, because the 1990–4 period is one in which the only domestic company in this sector, DAF (a trucks producer) was in severe financial trouble, and was forced to scale down its production strongly, without proportionate cuts in the R&D budget. It is also true, however, that the joint Volvo/Mitsubishi R&D facility in the Netherlands makes the domestic car industry relatively R&D intensive.

Concluding on the link between the sectoral distribution of the economy and Dutch R&D intensity, one may say that the high services content of the Dutch economy indeed gives R&D a limited role in the total economy. Nevertheless, almost all sectors in Dutch manufacturing have a clearly lower R&D intensity compared to the technology leaders. Especially because innovation in services is still to a large extent dependent on 'hardware' inputs from the manufacturing sector, this weak R&D position of Dutch firms seems to be bad for long-run growth.

We now turn to the size distribution of R&D activities. It is well-known that R&D in small firms used to be underestimated by the official statistics (Kleinknecht 1989). However, Statistics Netherlands, which collects the Dutch R&D statistics, recently improved coverage of R&D in small firms, and although the problems are far from completely solved, the situation is probably better in the recent R&D data than it was a couple of years ago.

When comparing R&D in a small country such as the Netherlands with that in the larger European nations, one might expect that a relatively large portion of total Dutch business R&D is performed by small firms. Table 3.1 compares the size distributions of Dutch business R&D with that in France and Germany. For the Netherlands in both cases data for 1994 were used, for Germany the data refer to 1993 and for France to 1994. Despite the fact that 1993 data are available for the Netherlands, we choose to compare the 1994 Dutch data to the 1993 German data (no more recent data exist for

Table 3.1 **Size distribution of R&D expenditures**

Firms with employees	*Germany, 1993*	*Netherlands 1994*
<100	0.05	0.14
100–499	0.09	0.08
500–999	0.05	0.10
>1000	0.81	0.68
	France, 1994	*Netherlands, 1994*
<500	0.20	0.22
500–999	0.09	0.10
>1000	0.71	0.68

Sources: Statistics Netherlands, 'Kennis en Economie', 1996; Bundesbericht Forschung, 1996; R&D dans les entreprises, results 1994.

Germany). The reason for this is that there are rather large differences in concentration for the Dutch case between 1993 and 1994. Part of these differences are related to the different methodology of Statistics Netherlands, trying to detect more of the R&D undertaken in small firms. The numbers in the table simply give the fraction of total business R&D performed by firms in the specified size limits.

For the comparison with Germany, we find indeed a smaller fraction of Dutch R&D in the largest size class (>1000 employees): 68 per cent in the Netherlands versus 81 per cent in Germany. The main difference in the other size classes occurs in the class <100 employees. In this class, the Dutch share is nine percentage points higher. Comparing to France, the differences are much smaller, however. In this case, the two smallest size classes must be joined, which may indeed iron out some of the differences, as the German case shows. The result is an almost equal distribution of R&D over size classes in France and the Netherlands.

A comparison with a smaller country such as Sweden would be useful in order to answer the question whether the role of small firms in the Netherlands is comparable to that in other countries. From the comparison with France and Germany, one would perhaps be inclined to say that more Dutch R&D could be expected from small firms. This conclusion mainly results from the comparison with France, however.

Another aspect of the concentration of R&D expenditures in the Netherlands concerns the role of large multinational companies. There are five of these large companies, usually referred to as the 'big-five': Shell (oil and chemicals), Unilever (food and chemicals), DSM (chemicals), AKZO/Nobel (chemicals) and Philips (consumer electronics). Minne (1997) provides an estimate of the role of these five companies in domestic Dutch R&D, and concludes they spent 70 per cent of total business R&D in 1969, after which their share declined gradually to 47 per cent in 1994. This decline has several causes. One is that smaller firms have started to invest more in R&D. Another has to do with globalisation. For example, Philips, the largest R&D spender of the big-five, spent only 36 per cent of its total world-wide R&D budget in the Netherlands in 1995, whereas it used to spend around half of that budget domestically in the earlier period.

The dominant role of the big-five companies in the Netherlands makes the country's business R&D structure rather sensitive for the impact of globalisation. The exact impact of this is hard to measure, because Statistics Netherlands does not collect any data on R&D investment by Dutch firms abroad. The collection of detailed statistics on R&D performed in the Netherlands by foreign owned firms has started only recently. Statistics Netherlands suggests that 12 per cent of total business R&D in 1994 was financed by foreign companies. According to the official statistics, this was only 2 per cent in 1991. The differences between those two percentages is probably due to both increased sensitivity of the measurement instrument of Statistics Netherlands, as well as an increasing globalisation trend. The figure of 12 per cent puts the Netherlands in the same order of magnitude as the UK and France, both European countries with a relatively large share of foreign financed R&D (see Slabbers and Verspagen 1995).

Minne (1997) gives a detailed list of all foreign owned companies doing R&D in the Netherlands. The largest company on his list is Solvay/Duphar, with 185 million guilders R&D expenditures. The second and third place on the list are for Lucent AT&T/Network Systems (160 mn) and DAF/ Paccar (123 mn). As is evident from this top-three of Minne's list, 'foreign controlled' R&D in the Netherlands consists both of acquisitions of Dutch firms by foreign firms (DAF) and greenfield investment.

Next, we look at the sectoral specialisation pattern of Dutch R&D. For this purpose, we use data on US patent grants to Dutch firms over the period 1987–91. We calculate the Revealed Technology Advantage (RTA) index, which, in its raw form, is defined as the share of a sector in total Dutch patenting divided through by the share of the sector in total patenting of all OECD countries. Because this measure is non-symmetrical with regard to 'advantages' and 'disadvantages', we apply a transformation which scales the index between -1 and 1 and ensures symmetry. This transformation is as follows: RTA*=(RTA-1)/(RTA+1).

Figure 3.8 gives the value of the sectoral specialisation indices. The data include world-wide patent applications by most of the big-five Dutch companies, so that they reflect the specialisation pattern of Dutch companies world-wide, rather than the purely domestic specialisation pattern (see Chapter 4 by Cantwell and Janne for the distinction between the two). A value larger than zero indicates that the Netherlands is relatively specialised.

The impact of the big-five is evident from the fact that roughly two thirds of all sectors with a positive RTA comes from either electronics/ electricals, chemicals or food. These are exactly the sectors in which the

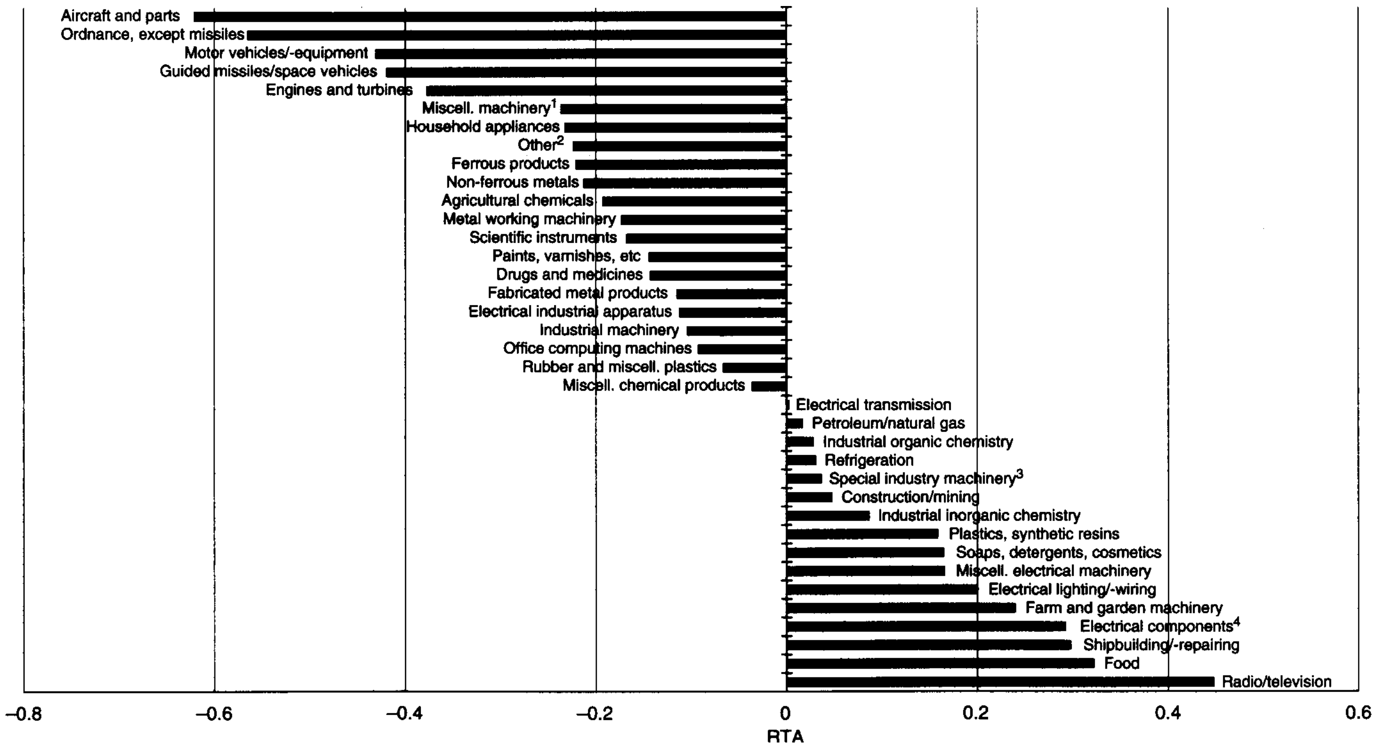

Figure 3.8 Dutch patent RTA per sector, USPO, 1966–93

Source: Calculations on data from US Patent and Trademark office.

Notes

1 Except electrical. 2 Other: textile mill products; stone, clay, glass and concrete products; railroad equipment; motorcycles, bicycles and parts; miscellaneous transportation equipment; and other. 3 Except metal working machinery. 4 Also communication equipment.

big-five companies are active. Despite this, however, there are also a large number of sectors in electronics/electricals or chemicals for which the Netherlands has a negative value of the RTA. In particular, this concerns the high-tech segments of these industries, such as pharmaceuticals and office machinery and computers. Also, the Dutch specialisation index for aerospace and cars (where Fokker and DAF recently had financial problems) are negative.

Comparing the RTA results with the R&D intensities in Figure 3.7, it is clear that the sectors with the largest R&D-gap are not necessarily the ones with low values for RTA. In other words, there is not a one to one correspondence between the input and output indicators for the Dutch technology position. There are several reasons for this.

At the most basic level the differences are caused by the nature of the indicators. The RTA index is a relative one, which compares sectoral performance to that at the macro level. The R&D indicator in Figure 3.7 compares Dutch sectoral performance to foreign performance in the same sector, rather than with the overall Dutch performance. More meaningful differences exist because of the specific role of the big-five multinational companies. It has already been mentioned that the data in the RTA indices reflect world-wide patenting of these companies. With an increasing share of their R&D being carried out abroad, one might indeed expect domestic R&D intensity to go down in the sectors where these companies are active, while total world-wide patenting remains strong in the same sectors.

Finally, we relate the technology indicators considered so far to a more direct economic indicator by looking at the Dutch exports of high-tech products. High-tech exports as an indicator of technological competitiveness are sometimes criticised on the account that there is no inherent reason why exports of some sectors are more important than those of others. For example, Van Hulst *et al.* (1991) argue that by using modern technology in traditional sectors (such as agriculture), exports may also be boosted. This argument is partially right, but it does not acknowledge the fact that high-tech exports are important for economic performance because the markets for these products are growing relatively rapidly. Thus, a constant (or increasing) market share in a high-tech sector often implies stronger growth of exports than the same market share in a more traditional sector. In other words, a strong position in high-tech therefore implies rapid export growth.

In order to be able to distinguish between several subsectors in high-tech, we use data from Eurostat. This also forces us, however, to consider only exports to the European market, because Eurostat does not provide data on trade between non-EU countries (for example, US-Japanese trade). We use an indicator of revealed comparative advantage, similar to the RTA index used above. Specifically, it is defined as sector *i*'s share in Dutch exports to the other 14 countries of the EU divided by the share of that sector in total imports of the 15 EU countries. A similar correction as in the case of RTA is applied in order to make the indicator symmetric. The definition of high-tech exports is similar to the one used by OECD and Eurostat, although small incompatibilities exist because of problems with the data classification.

Figure 3.9 gives the results for total high-tech exports, as well as the eight subsectors it consists of. Overall, the Dutch position has improved dramatically since 1988 (this is the first year for which the Eurostat data are available, so we are forced to choose this rather *ad hoc* starting point). While the overall Dutch RCA for high-tech was clearly negative in 1988, it is close to zero in 1994. At the more detailed level there are important differences. Pharmaceuticals and telecommunications and electro-medical equipment are at more or less the same negative level in 1994 as compared to 1988. Radio-active materials, a small category in terms of the value of trade, goes from positive to negative and computers from negative to positive. Aerospace was the weakest sector in 1988 and becomes even weaker in the period until 1994. Electronics was also relatively weak in 1988 but attains a neutral (zero) position in 1994. Optical equipment, just positive in 1988, also becomes a strong point in 1994.

One may thus conclude that over a large number of sectors in high-tech, the Dutch export performance over 1988 to 1994 has increased dramatically, despite the weak performance in R&D. Especially, electronics, computers and optical equipment have improved their position. The performance in these sectors is clearly related to a limited number of companies. Philips invested

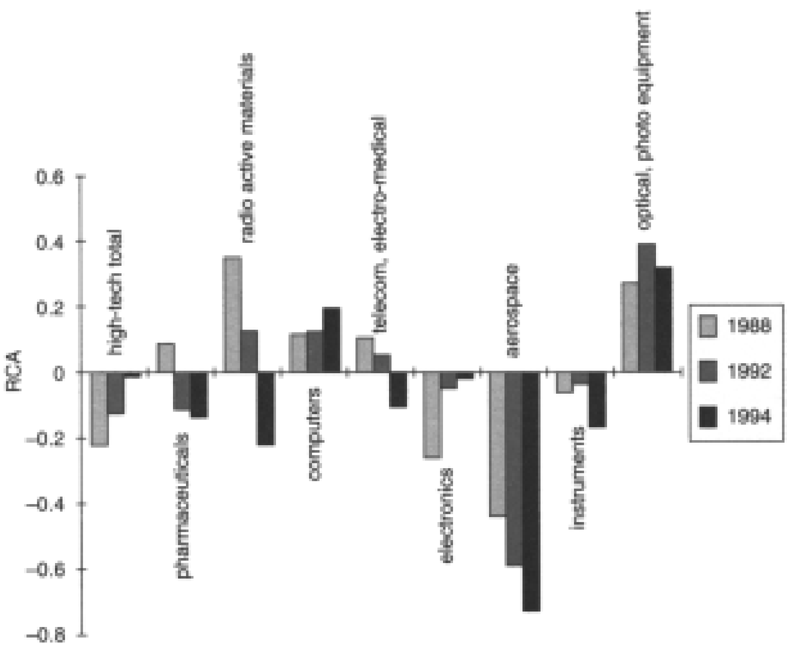

Figure 3.9 The relative Dutch position in high-tech exports to the EU market

heavily in its chips factory in Nijmegen over the period 1988–94, and one may indeed observe a drastic increase in the exports of integrated circuits from the Netherlands (part of electronics in Figure 3.9). The photocopiers of Océ are the main reason for improved performance in the optical sector. Tulip, a PC assembler, is one of the main companies behind the upswing in the computers sector.

It may thus be concluded that, despite the somewhat backward R&D position of Dutch business relative to the technology leaders, export performance has increased somewhat, which is a rather paradoxical situation. One has to keep in mind, however, that the data presented are only for the European market, which is still a relatively closed one. For example, the importance of Japanese and other Asian producers in the European markets is still quite a bit lower than in the US. One may thus argue that competition in the European market is not as strong as in the US market, which gives Dutch and other European producers somewhat of an advantage. Still, the increased position in high-tech is certainly a positive outlook for the Dutch economy.

Conclusions

The above analysis shows that the Netherlands can be considered as a small but relatively advanced country from the technological perspective. Because of the country size, total R&D efforts in the Netherlands are relatively small as compared to the leading countries, but R&D intensity is relatively high. Other countries with similar characteristics are Sweden, Finland, Switzerland and Denmark. Looking at the R&D infrastructure in more detail, the Dutch case emerges as one in which public and higher education R&D, compared to the technology leaders as well as to the other countries mentioned above, is more developed than the business part. Business R&D in the Netherlands is carried out on a relatively small scale (a low share in total Dutch R&D), and low intensity (R&D as a percentage of production).

We discussed various potential explanations for this relatively weak performance of the Dutch business R&D system. Part of it may be related to the very specific structure of Dutch business, with R&D being concentrated in five large MNEs, and the large share of small businesses in the total economy. However, when comparing the size distribution of R&D to that in Germany and France there is only limited evidence of a deficit of R&D in small enterprises in the Netherlands.

Another part of the story is related to the sectoral structure of the Dutch economy, in which services play a large role. The manufacturing sector, which carries out the largest part of R&D is small compared to other OECD countries. However, it was also shown that for almost all sectors within manufacturing (motor vehicles is the only exception) Dutch R&D intensity is below that of the technology leaders. Moreover, it was argued that the relation between sector structure and overall R&D intensity is one in which causality runs two ways.

What do these findings imply for the attractiveness of the Dutch science and technology infrastructure from an international point of view? Can the Dutch economy be considered as an attractive country to locate R&D activities? The main problem from this point of view remains scale. The relatively small scale, due to country size, of Dutch R&D activities implies that only a limited range of technologies or scientific fields can be covered in enough detail. This makes the country attractive only to firms in certain sectors. The scale problem is to some extent relieved by the high quality of the public R&D infrastructure. Especially when compared to other small countries, Dutch public R&D institutions are relatively well developed.

The fact that Dutch business R&D intensity is relatively low is not necessarily a problem from the point of view of (foreign) businesses interested in locating research activities in the Netherlands. These firms are not primarily interested in cooperating with other firms, but rather with (semi-) public institutions such as TNO or universities. If the low R&D intensity of Dutch business is linked to some inherent problem of Dutch firms (such as their small size), this would not affect foreign firms.

The sectors which seem most fit for attracting foreign business research are hard to identify. From the numbers presented above it would seem that the electronics sector, the food/agriculture sector (including biotechnology) and the chemicals sector are relatively well placed. These are the sectors in which Dutch firms are traditionally strong. Nevertheless, business R&D expenditures have declined in some of these sectors, such as electronics. Given the fact, however, that internationally these sectors are still the ones in which R&D is growing, one might well expect more foreign R&D to flow into the country.

Notes

1 Shell (oil and chemicals), Unilever (food and chemicals), DSM (chemicals), AKZO/Nobel (chemicals) and Philips (consumer electronics).

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4 The internationalisation of technological activity

The Dutch case

John Cantwell and Odile Janne

Introduction

Greater attention has been paid recently in the literature to an increase in the process of globalisation, in which multinational enterprises (MNEs) are the key actors (Dunning 1993). Globalisation goes beyond internationalisation through the creation of internationally interdependent networks of trade and production, including the ability of MNCs to develop integrated technological networks, and to coordinate geographically dispersed research and development (R&D) and other innovative activities (Pearce 1989; Pearce and Singh 1992; Cantwell 1995; Cantwell and Janne 1998).

In the most recent studies, two reasons are emphasised why MNCs may take an international integrated approach to technological development (Cantwell 1992, 1995; Howells and Michie 1997; Dunning 1993). First, technological activity in any industry is locationally differentiated, as part of different national systems of innovation (Lundvall 1988; Freeman 1995; Patel and Pavitt 1991b). Recent evidence suggests that there are significant economies of agglomeration or local clustering in the geographical location of innovation (Dosi 1988; Cantwell 1991a, 1991b; Feldman 1993; Audretsch and Feldman 1995; Feldman and Audretsch 1995; Audretsch 1995; Baptista and Swann 1995). The (international) diffusion of technology is then argued not to be easy or 'automatic'. If knowledge diffusion between firms is geographically bounded, involving distinct characteristics of innovations in each country, MNCs could effectively have an important source of competitive advantage by geographically dispersing research facilities to gain access to differentiated but complementary streams of new knowledge, and integrating them at a corporate level.

Second, it follows that the geographical dispersion of research to gain access to new lines of innovation may be related to technological diversification (Cantwell and Piscitello 1997). The 'new' technologies are increasingly complex because of the complex nature of contemporary technological interdependencies[1] (Cantwell and Hodson 1991; Dodgson 1989). As a result, the firm may be obliged to broaden its technological activity through an international strategy if it wants to improve technological development even in its own immediate primary field of interest. In other words, firms adopt strategies of technological specialisation across affiliates in the same way that they specialise in their productive operations by forming integrated global networks (Hedlund 1986; Dunning 1993).

An important debate has related the new technological globalisation of the leading MNCs to the significance of wider national systems of innovation. The globalisation phenomenon might be thought to increase the ease with which knowledge flows between countries, at least within firms or between close partner companies. But globalisation also tends to increase national differentiation and technological specialisation. The two phenomena of globalisation and the relevance of the national system of innovation may be seen as two complementary processes reinforcing one another in their development (Archibugi and Michie 1995; Cantwell and Sanna-Randaccio 1992; Cantwell 1995). Countries have tended to narrow their technological specialisation and become more focused on areas of historical competitive advantage (Cantwell 1989, 1992, 1995; Cantwell and Hodson 1991). Simultaneously, the major firms, as a result of a shift towards 'global' strategies, have tended to geographically disperse research facilities to gain access to complementary paths of technological development. In this sense, globalisation makes the understanding of locational specificity more important, and the national state remains a potent force in the competitive advantage of nations.

As different patterns may consequently emerge and run simultaneously, the problem remains for a country to identify or forecast changes in indigenous technological capabilities, and the role of foreign firms in the process. In this chapter we present evidence on the internationalisation of technological activity by the major Dutch industrial firms, and by the largest foreign multinationals in the Netherlands over the period 1969–95. Comparisons are drawn with the equivalent evidence for other countries. It represents the extension of earlier such studies for the UK, France and Germany (Cantwell and Hodson 1991; Cantwell 1992; Cantwell and Kotecha, 1997; Cantwell and Harding 1997). Using data on the US patenting of the world's largest firms, variations between industries in the extent of the internationalisation of the technological activity are described and discussed. The Dutch case is compared with the US, Japan, Germany and the UK. Changes between the early 1970s and the late 1980s, early 1990s, are investigated.

In the first section we describe the data and the evidence it provides on the internationalisation of technological activity at the national, industry and technological sector levels. We move from an examination of the overall state of the internationalisation of technological activity in large industrial firms in the second section, to a steadily more detailed account of the Dutch case. The third section examines in greater detail the specific position of Dutch firms abroad, and foreign firms in the Netherlands. The internationalisation of activity in some selected Dutch industries is discussed in the fourth section. In the latter part of the chapter we investigate the technological specialisation of selected leading Dutch companies in the context of their international strategies. Some conclusions and prospects for the future are finally drawn.

The data

The use of data and statistics on patents remains one of the most established, directly available and historically reliable methods of analysing innovative activities. Patents granted in the USA by the world's largest industrial firms are used here as a proxy for international patterns of specialisation in innovative activity. A large literature has pointed out the limits as well as the significance of patent statistics as an internationally comparable indicator of technological activity (Soete and Wyatt 1983; Pavitt 1988; Acs and Audretsch 1989; Griliches 1990; Archibugi 1992). A detailed and comprehensive discussion of strengths and limitations of the patent measure is beyond the scope of this chapter.

Total US patenting is considered for the recent period between 1969 and 1995. US patent data distinguish both corporate ownership and the location of inventive activity, as well as providing a classification of the types of technologies being created. All patents granted under the names of affiliates have been consolidated into the relevant corporate group of the parent companies for the world's largest 792 industrial firms for the year 1984 (Dunning and Pearce 1985). Together, they account for over 46 per cent of all patents granted in the USA between 1969 and 1995. The consolidated firms are also allocated to their primary industry of output according to the product distribution of their sales (Dunning and Pearce 1985) so that corporate patenting was then divided into 16 broad industrial groups. Each patent is also classified by the type of technological activity with which it is primarily associated, using a classification scheme derived from the US patent class system. It should be emphasised that this technological classification of each patent is quite distinctive from the industrial (output) classification of the firm to which the patent is granted. Finally, the nationality of the parent company is recorded. The problem of the variation in the propensity to patent the results of innovation over time, among industries, technological sectors and nations is avoided by constructing measures from the US patent statistics in the form of shares and ratios rather that absolute numbers.[2]

The evidence on the internationalisation of technological activity by the world's largest industrial firms

Table 4.1 examines the share of US patents of the world's largest firms attributable to overseas research in terms of the nationality of the parent companies. Overall, there is a modest increase towards the internationalisation of

Table 4.1 The share of US patents of the world's largest firms attributable to research in foreign locations, organised by the nationality of the parent firms, 1969–95 (percentage)

Country	*1969–72*	*1973–7*	*1978–82*	*1983–6*	*1987–90*	*1991–5*
USA	4.91	5.88	6.41	7.54	7.91	8.63
Germany	12.77	11.05	12.07	14.47	17.05	20.72
UK	32.27	33.41	32.95	37.76	39.95	43.01
Italy	13.39	16.03	13.85	12.59	11.14	16.47
France	8.16	7.74	7.17	9.19	18.17	33.18
Japan	2.63	1.88	1.22	1.26	0.93	1.08
Netherlands	63.07	57.32	55.60	61.78	59.52	62.79
Belgium	50.00	54.32	56.27	71.21	59.04	67.25
Switzerland	44.36	43.63	43.78	41.59	42.99	52.47
Sweden	17.82	19.90	26.20	28.94	30.60	42.42
Canada	41.19	39.30	39.49	35.82	40.12	43.96
Others[1]	16.58	19.92	22.38	20.40	17.39	8.73
Total	10.03	10.67	10.55	11.02	11.24	11.24
Total, excluding Japan	10.51	11.74	12.31	13.97	15.71	16.48

Source: The data on the geographical origins and industrial distribution of patents granted in the USA have been compiled at the University of Reading with the support of the US Patent and Trademark Office. The opinions expressed here are those of the authors, and do not necessarily reflect the views of the Patent and Trademark Office.

Note

1 Excluding firms registered in Panama.

technological activity over the 1969–95 period, without completely allowing for the effects of acquisitions.[3] The share of US patents granted to these firms attributable to research in foreign locations (outside the home country of the parent firm) rose from 10.03 per cent in 1969–72 to 11.24 per cent in 1991–5, while there remains a wide disparity between different national groups of firms. The majority of these firms are US- or Japanese-owned, and on average the foreign research share of large US and Japanese companies is less than 10 per cent. However, for large European- and Canadian-owned firms the share of research conducted abroad is much higher, but their much bigger ratios are only weakly reflected in the global average. The most significant increase in internationalisation is found in the two most recent periods. While a significant increase in foreign technological development had already started for most of the national groups of companies in 1987–90, all the groups moved to a greater internationalisation of technological activity in the early 1990s; even those which have had in the past a somewhat more centralised approach to their research strategy, such as the Japanese and Italian. Furthermore, the trend increase in the internationalisation of research has been most stable and marked in US and Swedish companies since 1969, and in German and French firms since 1983 (Cantwell 1995; Cantwell and Kotecha 1997; Patel and Pavitt 1990).

At first sight, it is surprising that the overall average foreign research ratio remains stable at 11.24 per cent between 1987–90 and 1991–5, at a time when the foreign share of every national group separately identified rises. The reason for this apparent inconsistency is the rising share in total corporate patenting of Japanese and Korean firms, which as yet are on average little internationalised in their technological development, and their greater contribution to the total has therefore acted to pull down the global average foreign share. To emphasise the point we have also calculated in Table 4.1 the total foreign share of non-Japanese firms, which rises much more strongly throughout the 1969–95 period, and from 15.7 per cent to 16.5 per cent between 1987–90 and 1991–5. A similar compositional change explains the fall in foreign share in the 'others' category in the most recent period. There has been a recent decline in some Austrian and Finnish firms which had been quite highly internationalised, but an even more spectacular growth of the leading Korean companies with only limited development abroad.[4]

Unsurprisingly, relatively small European countries, such as the Netherlands, Belgium, Switzerland and Sweden, have the highest shares of technological activity abroad. Dutch and Belgian firms have constantly created more patented inventions abroad than within their respective home countries. Swiss firms similarly have increased their proportion of international activity to over 50 per cent in 1991–5. In contrast, firms from larger countries with a strong domestic technological base—Japan, the United States,[5] and until quite recently Germany—have had a much weaker propensity to undertake their technological activity abroad; even though they have all showed an increase in internationalisation in the early 1990s. British firms however have a long international tradition, and have been among the most multinational in their organisation of technological activity with almost half of their technological activity being carried out abroad (Cantwell and Hodson 1991).

While they are most experienced as foreign investors, the Dutch firms have had a roughly stable proportion of their technological activity abroad which has stayed at about 60 per cent since the 1960s. There was a slight decrease in internationalisation during the 1970s (from 63 per cent to 56 per cent), which may correspond to the relatively poor economic performance of the Netherlands during that period. The rise in the internationalisation trend in 1983–6 was not sustained in 1987–90, but has been recovered in the early 1990s with the more vigorous recent economic growth. The figures for Belgium reveal a rather volatile trend over the period although generally an upward one; there was a dramatic increase in the early 1980s in the share of patenting attributable to foreign research that was not sustained in the late 1980s, but recovered in the early 1990s. France, as well as Germany and Italy, used to be in an unusual position among the European countries in the sense that the technological activity of its largest firms had remained until recently very centralised.[6]

Interestingly, there is evidence of centralisation of technological activity in Japan up to the 1980s, but a reverse of this trend in the early 1990s. This recent mild trend to the decentralisation of research facilities abroad by Japanese companies has been seen as an attempt by these firms to catch up with the rapid dispersal of their sales and manufacturing operations (Howells and Wood 1993). The relatively small figures can be explained by the tremendously rapid growth of technological activity in Japan itself, which has outstripped the still quite notable growth of activity in the foreign affiliates of Japanese MNCs (Papanastassiou and Pearce 1995; Pearce and Papanastassiou 1996). The very low Japanese internationalisation figures have also been partially attributed to the institutional characteristics of the Japanese patent system which tends to favour a high domestic orientation of R&D.[7] Finally, this result may well relate more to the relative lack of the internationalisation of technological capability in Japanese firms than to a lack of internationalisation of the R&D function itself in those same companies. As there is evidence that Japanese multinationals are more prone to carry out basic research in their foreign laboratories than they do in the equivalent R&D facilities in Japan (Papanastassiou and Pearce 1995; Pearce and Papanastassiou 1996), the patent data may well not reflect the output of such laboratories.[8]

Data on the internationalisation of technological activity by the world's largest industrial firms in each major manufacturing industry are reported in Table 4.2. Figure 4.1 plots the industries' shares of US patenting attributable to research in foreign locations for the earliest (1969–72) and most recent (1991–5) periods.

Firms involved in the food, chemicals, pharmaceuticals, non-metallic mineral (building materials) and coal and petroleum product sectors had highly international research strategies throughout the period. Moreover, companies involved in the manufacture of food products and non-metallic mineral products have shown a clear trend towards greater internationalisation of technological activity over the period. Firms in the mechanical engineering, office equipment and other manufacturing industries have similarly shown significant increases in their international research activities. By the mid-1980s almost a quarter of the innovative activity of the major food product firms was located outside their home countries, although the trend towards decentralisation of technological activity diminished slightly from the late 1980s. In contrast, technological activity is most geographically concentrated in the aircraft and aerospace, textiles and the professional and scientific instruments industries. In the aircraft and aerospace industry there has been a slight increase in the amount of overseas technological activity, although in the period 1987–90 this trend was temporarily reversed. A trend towards the locational centralisation of technological activity is evident in the professional and scientific instruments sector over the 27 year period,

Table 4.2 The share of US patents of the world's largest firms attributable to research in foreign locations, organised by the industrial group of the parent firms, 1969–95 (percentage)

Sector	*1969–72*	*1973–7*	*1978–82*	*1983–6*	*1987–90*	*1991–5*
Food products	17.36	22.72	26.86	28.00	26.09	26.87
Chemicals n.e.s.	12.37	13.46	13.47	13.78	14.38	16.97
Pharmaceuticals	16.84	19.13	17.19	16.34	18.27	17.80
Metals	10.90	9.18	10.90	9.80	11.71	9.89
Mechanical engineering	10.32	10.13	11.42	14.35	15.12	14.45
Electrical equipment n.e.s.	10.30	9.91	8.79	9.73	10.18	9.57
Office equipment	5.09	8.52	10.11	12.00	11.23	12.40
Motor vehicles	4.56	5.11	5.25	6.95	7.13	4.75
Aircraft	1.93	2.01	2.28	2.93	2.47	2.69
Other transport equipment	9.66	3.52	8.23	5.24	6.54	3.09
Textiles	6.45	8.49	7.10	4.31	3.10	2.40
Rubber and plastic products	7.04	7.46	6.73	6.20	9.12	10.49
Non-metallic mineral products	11.51	12.21	14.16	15.45	16.61	15.68
Coal and petroleum products	13.41	12.07	12.18	13.44	15.77	15.82
Professional and scientific instrument	6.28	4.07	2.97	2.72	1.99	3.61
Other manufacturing	5.07	7.68	10.05	12.31	14.03	21.10
Total (all sectors)	10.03	10.67	10.55	11.02	11.24	11.24

Source: As for Table 4.1.

Note
n.e.s. = not elsewhere specified

although this also seems to have been reversed in the 1990s. Centralisation is also observed in the textiles industry.

The same data are classified in Table 4.3 by the sectoral composition of the technological activity (instead of the industrial group) for comparative purposes. As a rule, firms require a broader range of technological capability to support a narrower range of products[9] (Pavitt, Robson and Townsend 1989).

What emerges when comparing Tables 4.2 and 4.3 is that the trend towards internationalisation of research by firms involved in a particular sector is not necessarily related to the trend in the technological field in which they are most immediately involved, but in other (presumably related) areas. For example, the strong growth of internationalisation of research by office

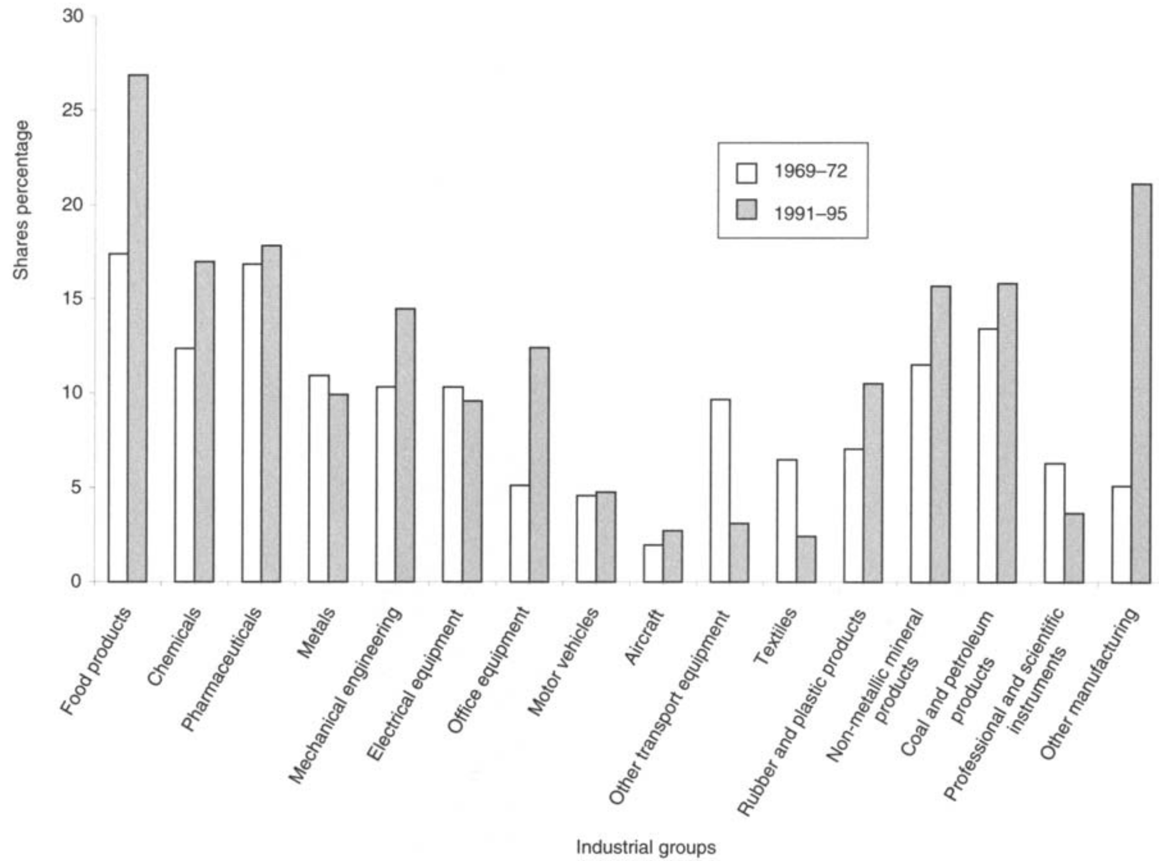

Figure 4.1 Shares of patenting attributable to research in foreign locations (outside the country of the parent firm), by industry, 1969–72/1991–5

Source: As for Table 4.1

Table 4.3 The share of US patents of the world's largest firms attributable to research in foreign locations, classified by technological activity, 1969–95 (percentage)

Sector	*1969–72*	*1973–7*	*1978–82*	*1983–6*	*1987–90*	*1991–5*
Food and tobacco products	12.61	15.65	15.64	17.36	11.52	9.65
Chemicals n.e.s.	11.40	11.93	11.72	11.35	13.17	15.25
Inorganic chemicals	8.44	8.59	8.46	10.75	10.95	11.06
Agricultural chemicals	11.46	10.94	10.92	11.21	11.51	14.20
Chemical processes	10.13	10.70	11.03	11.24	12.49	13.38
Bleaching dyeing processes	8.67	9.98	12.81	16.04	14.01	19.50
Other organic chemicals	12.38	12.84	12.39	11.34	13.97	17.01
Pharmaceuticals	16.26	18.80	19.54	20.67	22.32	21.19
Metals	8.89	9.93	10.20	11.78	11.16	10.57
Metallurgical processes	7.77	8.19	7.96	8.49	8.20	7.17
Other metal products	9.80	11.55	12.17	14.97	13.96	14.41
Mechanical engineering	10.83	11.48	11.79	12.77	13.03	12.05
Chemical and allied equipment	10.86	11.50	10.34	11.48	13.14	13.17
Metal working equipment	8.69	9.43	12.76	13.16	12.89	12.63
Assembly equipment	11.69	11.67	12.19	10.73	11.07	12.71
Mining equipment	15.03	11.92	9.78	11.40	12.10	14.10
Specialised industrial equipment	14.00	15.00	16.42	16.25	15.38	14.22
General industrial equipment	7.98	9.64	9.88	12.60	12.61	8.98
Power plants	5.05	4.36	3.82	7.22	6.85	4.57
Nuclear reactors	7.14	6.05	7.81	9.23	9.59	6.53
Electrical equipment n.e.s.	9.24	9.06	8.14	9.60	9.84	9.76
Telecommunications	13.57	11.51	10.08	11.25	11.16	10.13
Image and sounds equipment	9.05	7.49	7.70	9.35	8.57	10.43
Electrical systems	8.16	8.53	7.39	10.04	10.51	11.36

Table 4.3 continued

General industrial electrical equipment	7.79	7.88	7.93	8.02	8.33	7.49
Semiconductors	9.06	10.21	8.04	8.87	9.54	8.18
Office equipment	7.31	8.70	7.68	7.35	7.79	7.95
Motor vehicles	6.67	5.18	4.13	7.28	5.83	4.93
Aircraft	5.60	1.45	2.40	2.40	2.36	1.98
Other transport equipment	7.19	7.25	12.87	14.96	10.32	9.77
Textile and wood products	11.01	14.53	18.93	10.91	9.43	14.34
Rubber and plastic products	9.21	10.48	10.49	10.84	11.41	10.67
Non-metallic mineral products	7.43	8.35	9.46	9.02	9.93	10.04
Coal and petroleum products	7.70	6.85	6.19	7.41	8.67	7.87
Professional and scientific instruments	8.64	9.29	8.95	9.56	8.71	8.27
Photographic instruments	6.83	6.51	4.19	5.32	2.77	3.13
Other instruments	8.97	9.82	10.03	10.43	9.82	9.50
Other manufacturing and non-industrial	8.69	11.76	9.05	14.09	10.97	9.96
Total (all sectors)	10.03	10.67	10.55	11.02	11.24	11.24

Source: As for Table 4.1.

Note

n.e.s. = not elsewhere specified.

equipment (mainly computing) firms is not matched by a corresponding increase in the internationalisation of the creation of office equipment technology itself. While these computer, or office equipment, firms have now become quite internationalised in their strategies for technological development, they have tended to focus on computer work at home, while specialising relatively more on other complementary technologies in their activities abroad. In general, the major science-based technologies (chemicals and electrical equipment including computers) tend to be chiefly the responsibility of firms in the relevant industry, while the development of other mechanical technologies is more widespread, as user companies in a broad range of industries strive to acquire some upstream capability in their creation (Patel and Pavitt 1993).

An increasing international integration of affiliates reflects a growth in the importance of technological globalisation strategies in large multinational firms (Dunning 1993, 1994). Furthermore, large multinational firms not only control a majority of world technological innovations (Archibugi and Michie 1995; Dunning 1994), but also have an important effect on the national innovatory capacity of both their home and host countries in which they operate. In the high research-intensive sectors in particular, the comparative advantage of a nation often reflects the competitive advantage of a few leading firms (Casson 1991; Dunning 1994). At the European level, Sharp (1989) similarly stresses the key role of three leading firms—Philips, Siemens and Thomson—for European competitiveness in the electronics industry. This is especially meaningful in the case of the Netherlands in which the role of large MNCs is very important, for example in the electronics (Philips), chemical (Akzo) and food (Unilever) industries. It may also be argued that a coherent home national system of innovation is a necessary prerequisite for successful economic growth in a globalising world (Sharp and Galimberti 1993).

The consequences for Dutch firms and industries

In what follows, data on the internationalisation of technological activity by the world's largest industrial firms are related to evidence on the wider geographical composition of innovation in each major manufacturing industry. Some specificity of the Dutch economy and its technological internationalisation are described in the first subsection. Particular attention is then paid to the internationalisation of technological activity by Dutch firms and to the significance of the Netherlands as a research centre.

Technological internationalisation: the specific case of the Netherlands

As one of the smaller countries of Europe, the Netherlands is characterised by an open market and a strong international orientation shown by its high ratio of trade to GDP. The Netherlands has sometimes been considered as a 'gateway' to Europe: Rotterdam is Europe's largest port and Schiphol an airport of international stature; Amsterdam is a major commercial and banking centre; while the Rhine is a crucial link between the Atlantic seaboard and the industrial heartland of West Germany (De Smidt and Wever 1990; Van Rijckeghem 1982).

The Dutch economy is one of the most highly internationalised, often rated second only to Switzerland (Katzenstein 1985). An important characteristic of the Netherlands is its active business climate. A significant number of corporations of international renown and importance are based here: Royal Dutch-Shell, Unilever, Philips, and probably firms like Akzo, Hoogovens and Fokker. Dutch MNCs reinforce the international orientation of the Netherlands. In particular, very large international firms such as Royal Dutch-Shell and Unilever had a global field of operations from the start by being jointly owned and managed with British interests. The regulatory environment in the Netherlands is quite liberal, with few exchange controls or restrictions on foreign investment (Price Waterhouse 1996; Katzenstein 1985).

Relatively small countries are typically more internationalised and specialised in their technological activities than large ones, as has long been known for industrial trade (Archibugi and Pianta 1992). Small and open economies are to some extent forced to specialise in selected niches due to a relative lack of resources and technological expertise to carry out relatively expensive contemporary R&D that entails many risks and uncertainties. As a result, they usually rely disproportionately on international flows and research cooperation (Katzenstein 1985). From the perspective of nation states, there are advantages and disadvantages from outward investment in research. Worries follow from the potential weakening of national technological capabilities in strategic areas (Archibugi and Michie 1995). Benefits follow from technological complementarities between research carried out at home and abroad and improved competitiveness in international markets (Casson 1991). On the one hand, the innovative activities and performance of large firms reflects their home national strengths and performance. On the other hand, the behaviour of a limited number of key large companies may have a major impact on the rate and direction of their home countries' technological activities (Patel and Pavitt 1991b).

The dependence of small states on foreign sources of technology is at the core of their R&D strategy. In such a setting, a small open economy can be superior only in a limited range of technologies. Industrial R&D in the Netherlands has generally been highly concentrated in a few industries and companies. From the perspective of small countries, the Netherlands has developed a relatively successful R&D performance, through a small group of very large multinational corporations which organise basic research (Katzenstein 1985; de Smidt and Wever 1990; Wolters and Coffey 1990). Dutch R&D is highly concentrated within five large firms—Philips, Shell, Unilever, Akzo, and DSM. Furthermore, R&D expenditures in the Netherlands have generally aimed at increasing competitiveness in high research-intensive and high growth industries (Katzenstein 1985).

The structure of patenting of the Dutch largest companies is represented with the aid of Figures 4.2 and 4.3. According to the most recent figures for 1991–5, the electrical equipment industry alone, here represented by Philips exclusively, is responsible for 58 per cent of total US patenting by the largest Dutch companies (including electro-technical manufacturing). The coal and petroleum products and chemicals industries contributed to a further 34 per cent of total patenting (in particular, petrochemical and bulk chemicals). This can be mainly explained by the impact of the giant Shell corporation and Akzo, and to a lesser extend DSM. The traditional industry of food and kindred products, with the large firm Unilever, has still a significant share of 6 per cent. The other traditional industry of metals (including machinery and metallurgy) represents a small 2 per cent of the Dutch corporate patenting (Hoogovens).

There has also been a growing tendency for Dutch firms towards strategic partnership and technological cooperation, especially since the early 1980s (Wolters and Coffey 1990). Dutch companies and institutes have participated above average in European programmes for research and technology development. In particular, the Community programmes like ESPRIT and RACE have been dominated by the twelve largest electronics corporations in Europe, of which the Dutch firm Philips is the leader (Wolters and Coffey 1990; Sharp 1989). In addition, the Dutch government has deliberately attracted foreign researchers and investments. The role of the government in the Netherlands

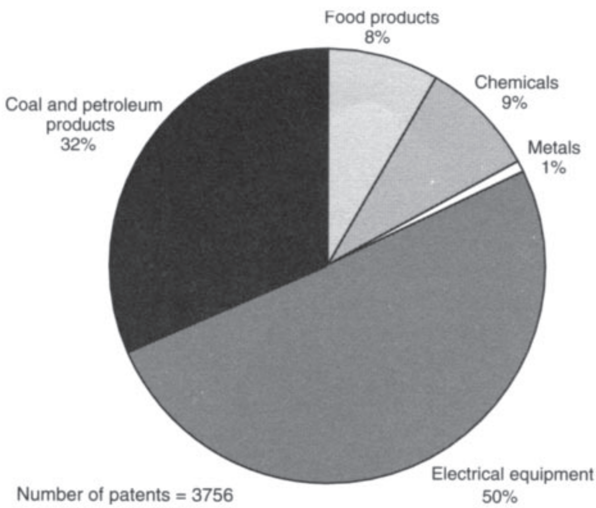

Figure 4.2 Total of US Patents by the largest Dutch companies, classified by industry, 1969–72
Source: As for Table 4.1.

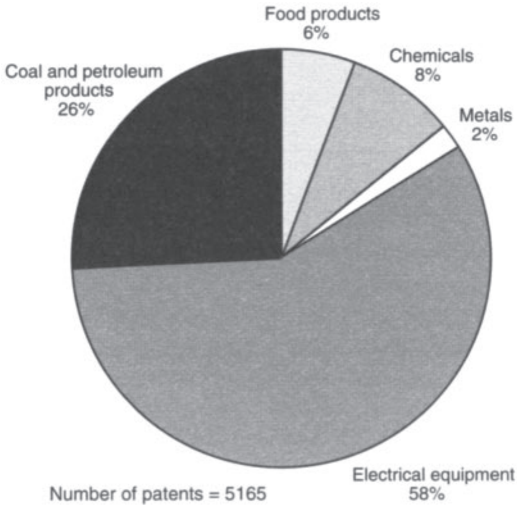

Figure 4.3 Total of US Patents by the largest Dutch companies, classified by industry, 1991–5
Source: As for Table 4.1.

is seen as helping enterprises by creating the best conditions for technological dynamism, and an upward trend in the level of publicly funded R&D has been observed in the early 1990s (Wolters and Coffey 1990; Bughin 1992).

In the 1980s, several competitive pressures have been emphasised to challenge the Dutch industrial position (de Smidt and Wever 1990; Cook and Sharp 1991). These emanate from the US, Japan and West Germany for technologically sophisticated products, the Newly Industrialised Countries (NICs) for capital goods, the OPEC countries for petrochemicals and developing countries for labour-intensive products. The strong point of the Netherlands in this competitive and increasingly global environment is its MNCs, since these firms are already acquainted with international competition, with a substantial technological component. Finally, it has been argued that the relatively successful economic record of the Netherlands in the global times of the late 1980s and early 1990s has hardly been noticed because of the focus of attention on Japan and Germany as the model for economic and social success (Thrift 1994). Yet, the characteristics of the Dutch economy—small and highly internationalised, with a large share of high research-intensive firms in manufacturing industries—make the Netherlands more vulnerable to the relocation abroad of the activities of its firms, as options have increased across countries and regions.

Dutch firms abroad

Table 4.4 shows the share of US patents of Dutch firms attributable to research or related activity undertaken outside the Netherlands, organised

Table 4.4 The share of US patents of the largest Dutch firms attributable to research outside the Netherlands, organised by the industrial group of the parent firms, 1969–95 (percentage)

Sector	*1969–72*	*1973–7*	*1978–82*	*1983–6*	*1987–90*	*1991–5*
Food products	84.84	86.84	84.97	85.34	82.09	85.38
Chemicals n.e.s.	35.08	43.76	51.50	55.56	51.52	58.92
Metals	91.67	86.36	61.82	52.56	58.93	57.58
Electrical equipment n.e.s.	52.30	47.55	46.39	54.03	54.44	55.27
Coal and petroleum products	81.29	76.66	68.90	76.78	69.40	76.18
Total (all sectors)	63.07	57.32	55.60	61.78	59.52	62.79

Source: As for Table 4.1.

Note
n.e.s. = not elsewhere specified.

according to the industrial group of the parent company. As already discussed, Dutch technological activity is concentrated in only a few industries and firms. Large Dutch firms are represented in only five out of our 16 industrial groups (see Appendix 4.1). Dutch R&D has become more internationalised in food products and chemicals and electrical equipment over the whole time period 1969–95. The US patenting share of Dutch companies attributable to research abroad in coal and petroleum products has decreased from 81 per cent in 1969–72 to 76 per cent in 1991–5. Figures for the metals industry should be interpreted with care since the numbers of patents registered by Dutch companies in that industry are very low (well below 100 before 1987). Consequently, slight changes are reflected in large percentage increases or decreases in the internationalisation of research. Notwithstanding this qualification, the period 1969–95 has witnessed a decreasing trend in the internationalisation of research in the metals industry.

Generally, each of the industries, except metals, experienced an increase in the internationalisation of technological activity between 1987–90 and 1991–5. The largest Dutch companies in the food and coal and petroleum products are the most international in the spread of technological activity with respectively 85 per cent and 76 per cent of their patenting activity from foreign research in 1991–5. However, the most important increases in the geographical dispersion of technological activity over the entire period have been by large firms in the chemicals and electrical equipment industries. The increase in technological activity abroad took place earlier and to a greater extent for the major Dutch chemical firms than for their counterparts in the electrical equipment sector. The share of US foreign patents assigned to the largest Dutch chemical firms increased from 35 per cent in 1969–72 to

56 per cent in 1983–6, during the restructuring period of the 1970s and early 1980s. The Dutch electrical equipment company Philips has also moved into foreign activity since the early 1980s, increasing its share of patenting from outside the Netherlands from 46 per cent in 1978–82 to 55 per cent in 1991–5. This move during the 1980s and early 1990s towards a more geographically dispersed technological activity in the electrical equipment industry coincides with the emergence in the European semiconductor industry of technological strategies more directed towards strategic partnership, as well as more aggressive investment and marketing strategies in order to compete with American and Japanese rivals (Sharp 1989).

By breaking down the Dutch patenting activity in the five main industries into areas of technological activity, it emerges that the internationalisation of R&D has been far more broadly-based than Table 4.4 might suggest, due to the greater diversification in technology than in output. The shares of US patents attributable to research outside the Netherlands as classified by technological activity are given in Table 4.5. The problem of small numbers of patents occurs in most of the technological sectors being considered because of the detailed level of disaggregation into 33 distinct sectors. This problem was probably avoided only in 12 out of those 33 sectors (denoted by *) in which the overall number of patents attributed to inventions outside the Netherlands has been 100 or more in 1991–5, and in most of the sub-periods over 1969–95.

Two of the important Dutch industries, food and tobacco and coal and petroleum products, may rely on a quite heterogeneous mixture of technologies so that there was a problem of small numbers in the equivalent fields of technological activity. For example, coal and petroleum products rely importantly on chemical and related technologies, and food and tobacco on allied equipment technologies (e.g. food and kindred products equipment). The most R&D-intensive industries, electrical equipment and chemicals, are more easily associated with corresponding fields of technological activity in electrical, chemical and related technologies.

Electrical technologies were significantly internationalised (with a share of foreign patenting above 50 per cent from 1983–6) with a generally increasing trend over 1969–95, especially during the 1980s in image and sound equipment and telecommunications. In 1975, Philips acquired the American company Signetics to gain access to the American semiconductor technology market and, as a result, became the only European producer to rank among the top-ten international semiconductor manufacturers in the 1970s (Morris 1990). The trend to greater internationalisation of technological activity has nevertheless been decreasing in semiconductors and especially in office equipment (including computer) technologies until the late 1980s, but this was reversed in the early 1990s. This might reflect the relatively weak position of Philips as a semiconductor and computing manufacturer, and its recent adjustment and collaboration strategies from the mid-1980s (Sharp 1989). In 1984, for example, Philips and Siemens announced their

Table 4.5 The share of US patents of the largest Dutch firms attributable to research outside the Netherlands, classified by technological activity, 1969–95 (percentage)

Sector	*1969–72*	*1973–7*	*1978–82*	*1983–6*	*1987–90*	*1991–5*
Food and tobacco products	75.00	72.12	65.15	72.06	55.00	66.67
Chemicals n.e.s.*	60.58	62.10	61.28	68.93	64.59	72.14
Inorganic chemicals	38.71	36.36	42.50	73.44	66.67	57.50
Agricultural chemicals	58.33	78.57	100.00	92.31	100.00	85.71
Chemical processes*	59.64	67.34	60.53	69.33	65.99	72.69
Bleaching dyeing processes	89.47	95.45	100.00	100.00	84.62	100.00
Other organic chemicals*	61.43	58.85	59.93	64.65	62.93	72.01
Pharmaceuticals*	71.25	78.08	71.35	78.95	78.26	70.80
Metals	61.18	49.03	46.00	64.39	52.11	45.54
Metallurgical processes	42.65	44.44	54.84	56.82	43.10	21.05
Other metal products	76.19	53.01	42.03	68.18	58.33	60.32
Mechanical engineering*	71.80	63.30	60.66	62.72	62.68	66.99
Chemical and allied equipment*	70.07	56.91	55.40	55.88	59.81	62.30
Metal working equipment	52.63	56.52	50:00	52.17	38.30	44.44
Assembly equipment	85.39	78.21	65.67	58.33	57.50	55.56
Mining equipment*	89.41	85.59	68.42	83.64	73.44	90.83
Specialised industrial equipment	55.91	63.29	68.33	68.27	67.62	62.50
General industrial equipment	58.95	45.24	55.42	59.18	70.53	68.75
Power plants	30.00	28.95	9.09	75.00	50.00	100.00
Nuclear reactors	100.00	33.33	0.00	N.A.	100.00	100.00
Electrical equipment n.e.s.*	55.87	49.43	44.85	55.52	56.15	58.00
Telecommunications*	63.19	55.42	53.39	62.14	68.19	64.11
Image and sounds equipment*	62.24	35.80	38.78	42.33	55.85	64.77
Electrical systems*	46.24	41.89	36.60	53.02	47.91	51.03

Table 4.5 continued

General industrial electrical equipment*	56.90	58.96	53.66	61.15	61.54	57.89
Semiconductors*	66.06	68.00	54.39	66.38	57.48	63.51
Office equipment*	64.47	40.23	40.08	41.26	44.21	50.56
Motor Vehicles	N.A.	66.67	85.71	100.00	70.59	94.74
Aircraft	N.A.	N.A.	N.A.	75.00	66.67	0.00
Other transport equipment	44.44	46.67	57.14	75.00	86.67	100.00
Textile and wood products	100.00	60.00	100.00	100.00	100.00	50.00
Rubber and plastic products	50.00	63.83	70.00	60.38	61.22	61.90
Non-metallic mineral products	59.72	56.25	50.00	57.47	61.81	60.47
Coal and petroleum products	75.49	55.10	53.95	51.25	65.59	70.00
Professional and Scientific instruments	71.53	66.39	69.25	69.39	60.06	55.86
Photographic instruments	35.71	50.00	57.14	61.54	60.00	40.00
Other instruments*	73.41	66.76	69.81	69.70	60.06	56.01
Other manufacturing and non-industrial	71.15	84.09	80.00	91.89	79.27	92.98
Total (all sectors)	63.07	57.32	55.60	61.78	59.52	62.79

Source: As for Table 4.1.

Notes

n.e.s. = not elsewhere specified. N.A = not available.

strategic partnership in a four year joint venture in memory chip building. A decreasing trend in technological internationalisation is also found in the related technologies of other professional and scientific instruments (e.g. measuring and testing electricity) which however have remained relatively important. Chemical technologies were among the most internationalised (over 70 per cent in 1991–5). In addition, there was an increasing trend to the international diversification of research. Dutch firms have particularly carried out research outside the Netherlands in chemical processes (e.g. petrochemical processes, oil refining and coatings) and other organic chemicals (e.g. carbon compounds, resins, rubbers and fibres). In the more heterogeneous group of mechanical engineering technologies, the most important areas are the chemical and allied, and specialised industrial equipment, and to a lesser extent mining equipment.

It is worth noting that the technological areas of clear internationalisation are related to the industrial areas in which the Netherlands has dominated. This might lead to the expectation that, in relation to the world's largest companies, Dutch companies have relatively increased their foreign research in these key areas. A comparison of Dutch performance with world trends might lead to a clearer understanding of whether this was a particular feature of Dutch companies in their fields of traditional strength, or whether it was simply a reflection of the industries and technologies in which international dispersion has been greatest in general. The relative internationalisation of research by Dutch firms compared to the largest firms of all other nationalities can be seen in Tables 4.6 and 4.7 (which are derived from a comparison of Tables 4.2 and 4.4, and of 4.3 and 4.5 respectively). Table 4.6 shows that by the standards of others, Dutch firms have always been particularly reliant upon research located outside the Netherlands in all represented industries,

Table 4.6 **The share of US patents of the largest Dutch firms attributable to research abroad relative to the equivalent share of the world's largest firms considered together, organised by the industrial group of the parent firms, 1969–95 (percentage)**

Sector	*1969–72*	*1973–7*	*1978–82*	*1983–6*	*1987–90*	*1991–5*
Food products	4.89	3.82	3.16	3.05	3.15	3.18
Chemicals n.e.s.	2.84	3.25	3.82	4.03	3.58	3.47
Metals	8.41	9.41	5.67	5.36	5.03	5.82
Electrical equipment	5.08	4.80	5.28	5.55	5.35	5.77
Coal and petroleum products	6.06	6.35	5.66	5.71	4.40	4.81
Total (all sectors)	6.29	5.37	5.27	5.61	5.29	5.59

Source: As for Table 4.1.

Note
n.e.s. = not elsewhere specified.

undertaking at least five times as much as of their technological activity abroad as did all the other firms during 1969–95.

However, the ratio of Dutch foreign-origin patenting to world foreign-origin patenting has slightly decreased over all industrial sectors between 1969 (6.3 per cent) and 1995 (5.6 per cent). Effectively, the share of foreign corporate R&D in the largest Dutch companies, which was already very high, has not risen much; while companies traditionally more concentrated in their home countries (such as Germany, France and Japan) appear to be taking off in their operations abroad. Despite this, a relative geographical decentralisation of technological activity by Dutch companies is observed in the electrical equipment and chemicals industries. Therefore, it does seem that the major Dutch firms have become relatively more prone to increase their internationalisation of technology in these science-based industries. In contrast, there were reductions in the ratio of foreign-origin patenting in metals, food and coal and petroleum products. Whilst metals firms can be analysed, their relevance tends to be weakened by the small number problem discussed earlier.

In the electrical equipment industry, the share of US patents of the largest Dutch electrical equipment firm, Philips, attributable to research abroad relative to the share of all the worlds largest firms had risen to 5.77 per cent by 1991–5 from 5.07 per cent at the beginning of the 1970s, with the greatest increase occurring at the end of the 1980s. The non-Dutch firm international share remained steady or decreased slightly in this industry (Table 4.2), indicating that the change resulted from an increasing tendency towards decentralisation by the Dutch firm rather than a change in the behaviour of its non-Dutch counterparts. In the chemical sector, Dutch firms increased their relative internationalisation of technological activity during 1969–95 (from 2.8 to 3.5 per cent), despite the constant increase in the existing levels of overseas technological activity of non-Dutch firms (Table 4.2). Nevertheless, the figures show that while Dutch chemical firms had a stronger internationalisation trend in the 1970s and early 1980s, the relative internationalisation of the Netherlands degraded from the late 1980s because of a strong renewed increase in relative world decentralisation of activity during the later period (Table 4.2).

Conversely, Dutch firms in the food and coal and petroleum products industries have shown a relative tendency towards the geographical centralisation of technological activity between 1969–72 (4.9 and 6.0 per cent respectively) and 1991–5 (3.2 and 4.8 per cent respectively). Dutch firms in the food sector have had a much weaker tendency to disperse abroad their technological activity than non-Dutch firms. In the coal and petroleum sector, Dutch companies have had an average tendency to centralise their technological activity despite non-Dutch ones locating more and more of their research abroad (Table 4.2).

Table 4.7 demonstrates evidence similar to that of Table 4.6, showing the greater tendency of Dutch firms to decentralise their technological activity

Table 4.7 The share of US patents of the largest Dutch firms attributable to research abroad relative to the equivalent share of the world's largest firms considered together, classified by technological activity, 1969–95 (percentage)

Sector	*1969–72*	*1973–7*	*1978–82*	*1983–6*	*1987–90*	*1991–5*
Food and tobacco products	5.95	4.61	4.16	4.15	4.77	6.91
Chemicals n.e.s.*	5.32	5.20	5.23	6.07	4.90	4.73
Inorganic chemicals	4.59	4.23	5.03	6.83	6.09	5.20
Agricultural chemicals	5.09	7.18	9.16	8.24	8.69	6.04
Chemical processes*	5.89	6.29	5.49	6.17	5.28	5.43
Bleaching dyeing processes	10.32	9.57	7.81	6.23	6.04	5.13
Other organic chemicals*	4.96	4.58	4.84	5.70	4.50	4.23
Pharmaceuticals*	4.38	4.15	3.65	3.82	3.51	3.34
Metals	6.88	4.94	4.51	5.47	4.67	4.31
Metallurgical processes	5.49	5.43	6.89	6.69	5.25	2.94
Other metal products	7.77	4.59	3.45	4.55	4.18	4.19
Mechanical engineering*	6.63	5.51	5.15	4.91	4.81	5.56
Chemical and allied equipment*	6.45	4.95	5.36	4.87	4.55	4.73
Metal working equipment	6.06	5.99	3.92	3.96	2.97	3.52
Assembly equipment	7.30	6.70	5.39	5.44	5.20	4.37
Mining equipment*	5.95	7.18	7.00	7.33	6.07	6.44
Specialised industrial equipment	3.99	4.22	4.16	4.20	4.40	4.39
General industrial equipment	7.39	4.70	5.61	4.70	5.60	7.66
Power plants	5.94	6.64	2.38	10.39	7.30	21.87
Nuclear reactors	14.00	5.51	0.00	0.00	10.42	15.31
Electrical equipment n.e.s.*	6.05	5.45	5.51	5.78	5.71	5.94
Telecommunications*	4.66	4.81	5.29	5.52	6.11	6.33
Image and sounds equipment*	6.88	4.78	5.04	4.53	6.52	6.21
Electrical systems*	5.67	4.91	4.95	5.28	4.56	4.49

Table 4.7 continued

General industrial electrical equipment*	7.30	7.49	6.77	7.63	7.39	7.73
Semiconductors*	7.29	6.66	6.76	7.49	6.03	7.77
Office equipment*	8.82	4.63	5.22	5.62	5.68	6.36
Motor vehicles	0.00	12.87	20.77	13.74	12.10	19.21
Aircraft	0.00	0.00	0.00	31.25	28.28	0.00
Other transport equipment	6.18	6.43	4.44	5.01	8.40	10.23
Textile and wood products	9.08	4.13	5.28	9.16	10.61	3.49
Rubber and plastic products	5.43	6.09	6.67	5.57	5.36	5.80
Non-metallic mineral products	8.04	6.74	5.29	6.37	6.22	6.02
Coal and petroleum products	9.80	8.05	8.72	6.92	7.57	8.90
Professional and Scientific instruments	8.28	7.15	7.74	7.26	6.89	6.75
Photographic instruments	5.23	7.68	13.62	11.58	21.65	12.79
Other instruments*	8.19	6.80	6.96	6.68	6.12	5.90
Other manufacturing and non-industrial	8.19	7.15	8.84	6.52	7.22	9.34
Total (all sectors)	6.29	5.37	5.27	5.61	5.29	5.59

Source: As for Table 4.1.

Note
n.e.s. = not elsewhere specified.

relative to all firms. Table 4.7 represents the ratio of Dutch foreign-origin patenting relative to world foreign-origin patenting broken down by sectors of technological activity.

It has already been noted above that the Dutch electrical equipment firm Philips has shown a greater tendency to decentralise their technological activity relative to all firms in the industry, similarly its research in electrical equipment technologies has also been subject to a greater and increasing relative degree of internationalisation relative to its competitors particularly in telecommunications, general electrical equipment and semiconductors. The increases in foreign patenting in those technological areas are a particularity of Philips as other firms in the industry have shown overall the opposite trend towards less internationalisation of technological activity in those sectors (Table 4.3). Furthermore, Philips has had the greatest relative dominance in foreign-origin patenting in these technological fields (when avoiding the problem of small numbers discussed earlier). In all other technological fields (except in mining equipment), in which there were significant numbers of patents, there was a slight decline in the relative overseas research undertaken by Dutch companies. In chemical and pharmaceuticals technologies, for example, this is explained by the earlier tendency of Dutch firms to adopt internationalisation strategies back in the 1970s, whilst non-Dutch firms began to adopt such strategies increasingly in the late 1980s and early 1990s.

Foreign enterprises in the Netherlands

If technology develops along a national trajectory of specialisation which is both supportive of and underpinned by the technological activities of a country's largest companies, then we might expect to see inward R&D activity seeking to exploit the technological advantages of a particular nation in key sectors of the economy. Indeed, from the data above, we would expect to see a significant part of the R&D activity from the world's largest firms based in the Netherlands resulting in US patenting in chemicals and electrical equipment technologies, in which the largest Dutch firms have also most increased their internationalisation of technological activity.

Table 4.8 presents the relative share of foreign research by non-Dutch firms which has been directed to the Netherlands. The relative attractiveness of the Netherlands as a location for the technological activity of non-Dutch firms may seem modest, but it has risen from 1.1 per cent in 1969–73 to 1.8 per cent in 1991–5, with a slight reduction in the latest periods. Whilst the attractiveness of foreign firms to the Netherlands has been increasing, there still are particular impediments to that trend: the small Dutch market; the relatively high wage costs; the relatively low investment bonuses (e.g. compared with Scotland or Ireland); and the relatively unknown position of the Netherlands as an industrial nation (de Smidt and Wever 1990). Trade, transport and other services (rather than manufacturing) are also increasingly

Table 4.8 The share of US patents of the largest non-Dutch firms attributable to research in the Netherlands, as a proportion of non-Dutch patenting due to research in all foreign locations, organised by the industrial group of the parent firms, 1969–95 (percentage)

Sector	*1969–72*	*1973–7*	*1978–82*	*1983–6*	*1987–90*	*1991–5*
Food products	1.22	0.48	1.59	0.51	0.00	0.22
Chemicals n.e.s.*	0.55	0.66	0.88	0.97	0.92	1.00
Pharmaceuticals	0.30	0.46	0.64	0.38	0.31	0.68
Metals	1.90	1.78	4.03	4.66	3.24	3.27
Mechanical engineering	0.65	2.94	3.14	3.67	3.94	2.23
Electrical equipment*	1.96	1.13	1.07	2.01	2.67	2.51
Office equipment	3.58	2.79	0.84	1.90	1.39	1.34
Motor vehicles*	0.24	0.76	6.58	3.14	3.81	6.28
Aircraft	0.69	4.35	0.00	1.05	0.51	0.37
Other transport equipment	0.00	0.00	0.00	0.00	0.00	0.00
Textiles	0.00	0.00	0.00	7.32	0.00	0.00
Rubber and plastic products	1.32	2.05	0.75	0.00	0.67	0.54
Non-metallic mineral products	0.43	0.68	0.00	0.00	0.00	0.74
Coal and petroleum products*	1.22	1.04	1.11	2.22	3.54	4.55
Professional and scientific instruments	1.11	1.42	0.56	1.19	2.08	0.73
Other manufacturing	1.06	0.34	0.00	0.00	0.31	0.00
Total (all sectors)	1.09	1.16	1.53	1.86	1.94	1.83

Source: As in Table 4.1.

Note
n.e.s. = not elsewhere specified.

selected for foreign investments in the Netherlands, as the 'gateway to Europe' function of the Netherlands is increasingly emphasised (de Smidt and Wever 1990).

Within industries, the activities of large foreign firms in the Netherlands have led to substantial absolute numbers of patents only in the chemicals, coal and petroleum products, motor vehicles and electrical equipment industrial groups (denoted by * in Table 4.8). In these four industries, the number of US patents assigned to foreign-owned firms but derived from technological development in the Netherlands reached at least 50 or more in 1991–5, but over 100 only for the electrical equipment industry. The world's largest non-

Dutch companies have also increased the amount of technological activity undertaken in the Netherlands relative to other countries in those fields of activity. This trend has been clearest for motor vehicles firms in the 1980s, and particularly in the early 1990s, in which the figure has increased from 3.1 in 1983–6 to 6.3 in 1991–5. The ratio of 6.3 per cent is well above the average for all industries (1.8) and has been since 1978–83, which implies that foreign research has been particularly attracted to the Netherlands in this industry. Japanese manufacturers, in particular, have more recently seen the Netherlands as an attractive location for foreign installation. The automobile manufacturer Mitsubishi has established a production facility in the Netherlands as part of a joint venture with Volvo (Silberston and Raymond 1996). Within manufacturing, the Japanese subsidiaries in the Netherlands have mostly concentrated on vehicles and electronics, even though otherwise their efforts are mainly directed to trade and services (de Smidt and Wever 1990).

The attractiveness of the Netherlands for the location of non-Dutch technologies has also been above average since 1983–6 in the coal and petroleum products (4.5 per cent in 1991–5), mechanical engineering (2.2 in 1991–5) and electrical equipment industries (2.5 in 1991–5) in particular. By the mid-1980s, foreign firms in the Netherlands were principally British- and American-owned in the coal and petroleum products industry, and American in the electrical equipment industry (de Smidt and Wever 1990). In the chemicals industry, non-Dutch firms have increased their proportion of patenting from the Netherlands but the figure stays relatively low compared to the importance of other locations. Interestingly, foreign corporate research in the food products industry was low and even sharply decreasing over the whole period. This shows that at a time in which the world's largest food firms have been increasingly geographically dispersing their technological activity, it has not been to the benefit of the Netherlands.

Table 4.9 shows that a relatively important and rising share of foreign research in the Netherlands can also be seen in some of the equivalent sectors of technological activity in electrical equipment, chemicals and mechanical engineering, but not in motor vehicles and coal and petroleum products. However, low numbers might affect the foreign share ratios constructed in Table 4.9 (and in Table 4.11 below). It is only in chemicals (mainly in other organic chemicals and chemical processes), mechanical engineering (mainly in metal working equipment) and electrical equipment (mainly in electrical systems and telecommunications) that around 50 or more patents were assigned to foreign firms in 1991–5 based on inventions in the Netherlands.

Firms in the coal and petroleum industry did not focus on the equivalent coal and petroleum products technologies but rather on other related technologies such as for example bulk petrochemical or chemical processes, a particular strength of Rotterdam. While motor vehicles companies (and especially vehicle component suppliers as opposed to assemblers) have recently been more attracted to the Netherlands as a location for research, their Dutch-based research has not focused on their core technologies, but has been part of a strategy of international technological specialisation. Conversely, the Dutch share of foreign firms' research is much higher for technological activity associated with electrical systems and metal working equipment, which may be quite closely related to the motor companies' own basic transport technologies. Thus, it is plausible to suppose that some foreign companies in the motor vehicle industry have a strategy of international corporate technological specialisation in which they site much of their basic motor vehicle development at home, but they focus on the acquisition of related electrical systems and metal working equipment technologies in their Dutch located facilities. This locational strategy would take advantage of the Dutch comparative advantage in technological activity in those fields.

In chemicals technologies, non-Dutch firms' share in the Netherlands as a proportion of their total foreign chemical technological activity increased constantly throughout 1969–95 although it remained below average, but higher than the corresponding figure for chemical firms. The Dutch share is particularly significant and high, at a ratio of 2.0 per cent in 1991–5, in technological activity in other organic chemicals (e.g. carbon compounds, resins and fibres). Yet high shares of the patenting of large foreign firms attributable to Dutch located invention are observed in the electrical equipment technologies, in which there is the highest absolute number of patents; and foreign firms seem particularly keen to use the Netherlands as a location for their research in telecommunications and electrical systems. This is reflected in the amount of Dutch based research undertaken by firms in the electrical equipment industry. These electrical equipment fields are also areas of Dutch technological strengths, as for some organic chemicals or petrochemical development (Patel and Pavitt 1991a; Cook and Sharp 1991).

The international operations of foreign firms in the Netherlands are linked to the pattern of their specialisation in technological activity. Since technological specialisation has a locational dimension, multinational firms may develop a strategy of technological specialisation across space, in particular across national boundaries to tap into national technological strengths. In this instance it seems that the choice of the fields on which foreign firms concentrate when developing new technology in the Netherlands is linked to the main Dutch sources of local capability, and in which the Netherlands can be viewed as a centre of expertise. Foreign firms in the Netherlands have particularly focused on technological areas in electrical systems, telecommunications, other organic chemicals and metal working equipment.

Table 4.10 provides further depth to this analysis by looking at the share of research activity undertaken by non-Dutch firms in the Netherlands relative to all research activity conducted in the Netherlands. This gives an indication of the dominance or otherwise of Dutch firms over total US

Table 4.9 The share of US patents of the largest non-Dutch firms attributable to research in the Netherlands, as a proportion of non-Dutch patenting due to research in all foreign locations, classified by technological activity, 1969–95 (percentage)

Sector	*1969–72*	*1973–7*	*1978–82*	*1983–6*	*1987–90*	*1991–5*
Food and tobacco products	0.00	2.14	4.35	1.97	0.96	4.17
Chemicals n.e.s.	0.61	0.62	0.81	1.26	1.40	1.59
Inorganic chemicals	0.00	1.23	0.72	3.25	3.74	4.55
Agricultural chemicals	2.08	1.30	0.00	0.00	0.00	0.97
Chemical processes	1.22	0.81	0.91	0.94	0.89	0.90
Bleaching dyeing processes	3.85	1.43	0.00	0.00	1.43	0.00
Other organic chemicals	0.29	0.50	0.83	1.46	1.72	2.01
Pharmaceuticals	0.26	0.20	0.66	0.35	0.30	0.23
Metals	2.19	1.63	3.44	3.81	2.93	1.90
Metallurgical processes	3.15	1.18	2.27	5.26	3.39	2.25
Other metal products	1.53	1.92	4.11	2.99	2.67	1.69
Mechanical engineering	1.39	1.80	2.83	2.74	3.06	3.20
Chemical and allied equipment	1.18	1.57	1.62	2.41	2.01	0.92
Metal working equipment	1.13	3.52	8.43	4.99	9.82	15.76
Assembly equipment	4.21	1.85	2.17	3.42	2.16	1.15
Mining equipment	0.00	0.00	3.48	1.57	0.00	2.08
Specialised industrial equipment	0.41	1.89	2.01	3.47	3.90	2.06
General industrial equipment	1.78	1.35	2.27	1.39	1.44	2.43
Power plants	0.00	0.00	0.00	0.00	1.19	2.30
Nuclear reactors	0.00	0.00	0.00	0.00	0.00	8.33
Electrical equipment n.e.s.	1.34	1.21	1.11	1.73	2.96	2.18
Telecommunications	0.52	0.51	1.04	1.60	4.12	4.38
Image and sounds equipment	0.00	0.00	0.00	0.00	1.22	0.18
Electrical systems	2.12	2.08	1.79	3.04	4.50	3.04

Table 4.9 continued

General industrial electrical equipment	0.99	1.21	0.91	1.34	1.07	0.30
Semiconductors	2.56	0.00	0.00	0.00	0.39	0.00
Office equipment	1.24	1.24	0.51	1.25	0.38	0.87
Motor vehicles	0.00	0.00	0.71	2.34	3.85	2.65
Aircraft	0.00	0.00	0.00	0.00	0.00	0.00
Other transport equipment	0.00	0.68	0.00	0.00	1.52	0.00
Textile and wood products	0.00	0.00	3.45	8.33	0.00	0.00
Rubber and plastic products	2.46	0.00	0.00	0.75	1.85	3.03
Non-metallic mineral products	1.55	3.13	3.59	2.16	3.40	3.14
Coal and petroleum products	0.88	1.44	2.80	3.91	2.94	6.54
Professional and Scientific instruments	1.66	1.86	0.69	1.97	1.13	1.29
Photographic instruments	2.68	2.80	2.00	1.65	0.00	0.00
Other instruments	1.49	1.72	0.55	2.01	1.20	1.40
Other manufacturing and non-industrial	0.00	0.52	3.54	1.43	1.64	3.08
Total (all sectors)	1.09	1.16	1.53	1.86	1.94	1.83

Source: As in Table 4.1

Note
n.e.s. = not elsewhere specified.

Table 4.10 The share of US patents of the largest non-Dutch firms attributable to research in the Netherlands, as a proportion of the number due to research in the Netherlands by Dutch or non-Dutch large firms, organised by the industrial group of the parent firms, 1969–95 (percentage)

Sector	*1969–72*	*1973–7*	*1978–82*	*1983–6*	*1987–90*	*1991–5*
Food products	6.00	3.13	9.38	3.85	0.00	2.22
Chemicals n.e.s.	6.64	8.09	8.36	12.15	14.35	22.91
Pharmaceuticals	100.00	100.00	100.00	100.00	100.00	100.00
Metals	83.33	72.73	62.50	45.59	35.21	37.31
Mechanical engineering	100.00	100.00	100.00	100.00	100.00	100.00
Electrical equipment n.e.s.	4.14	1.71	1.78	3.89	4.81	7.70
Office equipment	100.00	100.00	100.00	100.00	100.00	100.00
Motor vehicles	100.00	100.00	100.00	100.00	100.00	100.00
Aircraft	100.00	100.00		100.00	100.00	100.00
Other transport equipment						
Textiles				100.00		
Rubber and plastic products	100.00	100.00	100.00		100.00	100.00
Non-metallic mineral products	100.00	100.00				100.00
Coal and petroleum products	4.29	5.13	4.92	9.86	8.99	13.55
Professional and scientific instruments	100.00	100.00	100.00	100.00	100.00	100.00
Other manufacturing	100.00	100.00			100.00	
Total (all sectors)	7.84	8.06	10.58	13.49	11.89	16.22

Source: As in Table 4.1

Note
n.e.s. = not elsewhere specified.

patents emanating from Dutch-based research. The proportion of Dutch research due to foreign companies has more than doubled to 16.2 per cent by 1991–5 from 7.8 per cent in 1969–72. This might indicate some decline or withdrawal of domestic R&D in the Netherlands by indigenous companies. However, it is more likely to reflect the relatively improved attractiveness of the Netherlands as a location of technological activity to foreign firms (Tables 4.8 and 4.9), as there is overall a renewed trend to internationalisation by non-Dutch companies.

The greatest increases in foreign participation in Dutch research were achieved in chemicals and coal and petroleum products, respectively from 6.6 per cent and 4.3 per cent in 1969–72 to 22.9 per cent and 13.6 per cent in 1991–5. There has been only a brief reversal of the trend for the coal and petroleum products industry between the crisis periods of 1973–7 and 1978–82. The electrical equipment industry exhibits a more moderate increase from 4.1 per cent in 1969–72 to 7.7 per cent in 1991–5, which really started from the early 1980s. The relatively smaller share of foreign-controlled research in the Netherlands and low increase in that industry means not only that non-Dutch companies have increasingly come to the Netherlands, but also that domestic R&D by Dutch companies has similarly increased.

In the motor vehicles industry, there has been an increasingly important but exclusively foreign technological activity in the Netherlands, which has risen to result in 51 patents in the early 1990s (from just 1 patent in 1969–72). As mentioned earlier, non-Dutch motor vehicle firms increased their research in the Netherlands as a proportion of their total research from abroad (Table 4.8). Some industries, against the trend, witnessed a decline in Dutch research over the 1969–95 period. This was recorded in food products and metals, even though the relatively extreme values and volatility of the figures in those industries are due to small absolute numbers of patents. In the food industry, the Dutch research of foreign-owned firms has always been very small and volatile, implying that foreign firms are much less inclined to locate their research activity in the Netherlands than indigenous firms. In the metals industry, the increased absolute importance of that industry has been sustained by Dutch companies undertaking more domestic R&D relative to foreign companies in the Netherlands.

The type of technological activity involved is shown in Table 4.11. In chemicals, there was a net increase in the share of foreign-controlled research in the Netherlands in the two most important technological areas of other organic chemicals and chemical processes. Especially for other organic chemicals (e.g. carbon compounds, resins and fibres), this suggests that the Netherlands has had strength in those technologies and that foreign companies have located R&D in the Netherlands in order to take advantage of this. The trend is upward overall in mechanical engineering technologies; even though the heterogeneous characteristic of this group (as those technologies may be used by firms in very different industries) involves some small number of problems at the more disaggregated level. In particular, a high proportion (66 per cent) of the metal working equipment technologies invented in the Netherlands (the most important in absolute number of patents within the group of mechanical engineering technologies) is controlled from abroad.

In the important electrical equipment sector, there was a noticeable increase in the proportion of Dutch research due to overseas companies from 4.9 per cent in 1969–72 to 10.2 per cent in 1991–5, mainly in

Table 4.11 The share of US patents of the largest non-Dutch firms attributable to research in the Netherlands, as a proportion of the number due to research in the Netherlands by Dutch or non-Dutch large firms, classified by technological activity, 1969–95 (percentage)

Sector	*1969–72*	*1973–7*	*1978–82*	*1983–6*	*1987–90*	*1991–5*
Food and tobacco products	0.00	12.12	23.33	13.64	3.57	57.14
Chemicals n.e.s.	5.50	6.62	7.13	11.43	11.24	18.72
Inorganic chemicals	0.00	6.67	4.17	19.05	20.00	26.09
Agricultural chemicals	16.67	14.29	N.A.	0.00	N.A.	25.00
Chemical processes	8.11	7.14	6.92	7.75	8.22	12.75
Bleaching dyeing processes	50.00	50.00	N.A.	N.A.	33.33	N.A.
Other organic chemicals	3.14	5.88	7.52	13.58	11.99	21.09
Pharmaceuticals	4.17	5.88	14.52	16.67	16.67	11.11
Metals	16.90	15.05	31.65	37.33	26.09	22.54
Metallurgical processes	15.22	9.09	30.00	42.42	23.26	18.92
Other metal products	20.00	20.41	32.20	33.33	28.57	26.47
Mechanical engineering	15.53	19.55	29.63	29.96	27.93	34.88
Chemical and allied equipment	14.58	13.83	15.07	18.92	13.40	10.00
Metal working equipment	14.29	56.52	61.70	62.07	52.46	66.22
Assembly equipment	48.00	29.17	20.69	28.57	22.73	20.00
Mining equipment	0.00	0.00	25.00	18.18	0.00	16.67
Specialised industrial equipment	5.08	22.67	28.30	38.89	35.85	26.83
General industrial equipment	18.75	13.75	28.85	21.57	30.00	51.61
Power plants	0.00	0.00	0.00	0.00	33.33	100.00
Nuclear reactors	N.A.	0.00	0.00	N.A.	N.A.	100.00
Electrical equipment n.e.s.	4.94	3.09	2.80	5.30	8.24	10.25
Telecommunications	4.29	2.63	3.31	6.19	16.67	22.04
Image and sounds equipment	0.00	0.00	0.00	0.00	2.22	1.06

Table 4.11 continued

Electrical systems	6.15	3.97	3.32	6.71	9.02	9.90
General industrial electrical equipment	5.06	5.43	5.00	10.00	6.67	2.44
Semiconductors	5.08	0.00	0.00	0.00	1.09	0.00
Office equipment	5.26	3.16	1.39	3.66	1.40	5.53
Motor vehicles	N.A.	0.00	50.00	100.00	64.29	83.33
Aircraft	N.A.	N.A.	N.A.	0.00	0.00	0.00
Other transport equipment	0.00	11.11	0.00	0.00	50.00	N.A.
Textile and wood products	N.A.	0.00	100.00	100.00	N.A.	0.00
Rubber and plastic products	12.50	0.00	0.00	4.55	13.64	30.43
Non-metallic mineral products	12.12	20.75	23.73	17.78	22.54	37.04
Coal and petroleum products	3.85	4.35	7.89	11.36	8.57	20.59
Professional and Scientific instruments	13.98	14.18	6.60	17.32	5.49	9.06
Photographic instruments	25.00	50.00	25.00	28.57	0.00	0.00
Other instruments	12.35	12.03	5.10	16.67	5.54	9.16
Other manufacturing and non-industrial	0.00	12.50	40.00	25.00	10.53	50.00
Total (all sectors)	7.84	8.06	10.58	13.49	11.89	16.22

Source: As in Table 4.1.

Notes
n.e.s. = not elsewhere specified.
N.A. = not available.

telecommunications and electrical systems technologies. The proportion of foreign-controlled research nevertheless overall remained below average for electrical equipment technologies over the period. The share of non-Dutch firms' research activity in telecommunications and electrical systems in the Netherlands relative to that of all the world's largest firms is systematically much higher than is the case for the related figures for electrical equipment firms (Table 4.10). This suggests that telecommunications and electrical systems have remained domestic technological strengths and are areas of increasing technological specialisation that are attracting foreign firms. This is consistent with the specialisation and high levels of patented research conducted by the Dutch company Philips abroad and covered earlier. On the other hand, Philips has also pursued strategies of international diversification into some different but usually related technological areas in image and sound, general electrical equipment, semiconductor and other professional and scientific instruments (e.g. measuring and testing electricity, optics and X-ray).

International corporate technological specialisation at the industry level

We now turn our attention to selected Dutch industries, and relate the patterns of corporate technological specialisation to the internationalisation of activity as discussed in earlier sections. Three industries are chosen for analysis in greater detail, these being those in which the bulk of Dutch corporate patenting is done: chemicals and electrical equipment in which the volume of science-related activity is most intense, and metal products. The food and coal and petroleum products industries are not selected here as the two Dutch giant firms Unilever and Shell are jointly owned and managed with Britain. In each industry, particular attention is paid to the international specialisation of corporate technological activity across locations in which each location provides access to specific capabilities complementary to those found elsewhere. This is argued to be the major effect of the current reorganisation of international research networks by the world's leading companies.

The Revealed Technological Advantage (RTA) index is a measure of technological specialisation across different fields of technological activity. The RTA of a firm (or a group of firms) in a particular sector of technological activity is given by its share of US patents in that sector granted to companies in the same industry, relative to the firm's overall share of all US patents assigned to firms in the industry in question. Denoting as P_{ij} the number of US patents granted in the field of activity i to firm (or selected group of firms) j in a particular industry, then the RTA index is defined as follows:

$$RTA_{ij} = (P_{ij}/\Sigma_j P_{ij})/(\Sigma_i P_{ij}/\Sigma_i \Sigma_j P_{ij})$$

The index varies around unity, such that values greater than one suggest that a firm (or group of firms) is comparatively specialised in the activity in question relative to other firms in the same industry, while values less than one are indicative of a position of a lack of specialisation by the standards of the industry. Just as difficulties can be created when constructing ratios that rely on small numbers of patents as discussed above, so there are particular problems associated with the use of small numbers when using an RTA index (Cantwell 1991b 1993). Due to these problems the analysis is restricted to sectors in which over 1,200 US patents were granted to large firms in the industry in question between 1969 and 1995. Sectors that do not meet this criterion are omitted from the RTA values reported from Table 4.12 onwards.

Table 4.12 shows the RTA indices for non-Dutch firms in the Netherlands relative to all large firms in their particular industry, across each different category of technological activity. Sufficient numbers of patents (1,200 in the period as a whole) were granted to large firms in 21 fields of technological activity out of 33 in the chemicals industry (not counting aggregate groupings of related fields), in 22 areas in electrical and computer equipment and in 13 sectors in the metals industry. The index is here used as an indicator of the attractiveness of the Netherlands as a location for foreign research for a particular technology.

The technological activity of the non-Dutch chemical firms has been especially based in the Netherlands in nine fields: inorganic chemicals, chemical and allied equipment, assembly and handling material equipment, general industrial and office equipment, rubber and plastic products, non-metallic mineral and coal and petroleum products, and photographic instruments. It is noticeable that foreign chemical companies are inclined to base their research facilities in the Netherlands in accordance with the national sectoral strengths, which do not belong mainly to the 'core' chemical technologies. The coal and petroleum products technological sectors refer to the mature industries of oil refining and petrochemicals, a particular strength of Rotterdam. Technologies in rubber and plastic products are strongly linked to petrochemicals. For the chemical industry, those 'older' chemical technologies are usually associated with mass products and process innovations (rather than products innovations). Inorganic chemical technologies include highly heterogeneous chemicals (such as soda, sulphuric acid and colorants), among which some have been highlighted as fast-growing technological areas (Albach *et al.* 1996; Cook and Sharp 1991).

The technological specialisation of chemical foreign firms located in the Netherlands is also significant (with an RTA above 1) in general electrical and office equipment which reflects as well Dutch technological strengths (e.g. Philips). Chemical and allied equipment technologies are similarly undertaken in the Netherlands by foreign companies, including food and kindred products equipment, gas coatings and paper making apparatus. The attractiveness of the Netherlands as a location for research in some of the mechanical engineering technologies, such as assembly and handling

Table 4.12 The revealed technological advantage of non-Dutch firms in the Netherlands relative to all firms in that industry, across fields of technological activity, 1969–95 (RTA indices)

Sector	*Chemicals*	*Metals*	*Electricals*
Food and tobacco products			
Chemicals n.e.s.	0.93	0.62	2.10
Inorganic chemicals	2.22	0.69	
Agricultural chemicals	0.26		
Chemical processes	0.87	0.82	0.17
Bleaching dyeing processes	0.78		
Other organic chemicals	0.92	0.38	8.72
Pharmaceuticals	0.37		
Metals	0.00	2.24	0.93
Metallurgical processes	0.00	1.31	1.06
Other metal products	0.00	4.00	0.69
Mechanical engineering	1.37	0.58	1.82
Chemical and allied equipment	1.47	0.52	1.18
Metal working equipment		0.59	2.06
Assembly equipment	2.91	1.00	2.00
Mining equipment			
Specialised industrial equipment	0.94	0.44	1.05
General industrial equipment	0.92	0.56	2.70
Power plants			0.39
Nuclear reactors			1.28
Electrical equipment n.e.s.	0.61	0.07	0.90
Telecommunications			1.79
Image and sounds equipment			0.10
Electrical systems	0.00	0.00	1.04
General industrial electrical equipment	1.42	0.13	0.40
Semiconductors			0.18
Office equipment	1.99		0.35
Motor vehicles			4.24
Aircraft			
Other transport equipment			
Textile and wood products			
Rubber and plastic products	2.42		
Non-metallic mineral products	1.55	4.62	1.35
Coal and petroleum products	3.36		
Professional and Scientific instruments	1.03	0.00	0.75
Photographic instruments	1.24		0.53
Other instruments	0.94	0.00	0.78
Other manufacturing and non-industrial	0.57		1.18

Source: As in Table 4.1.

Note
n.e.s. = not elsewhere specified.

material equipment, might also reflect the role of the Netherlands as a distribution centre to Europe. The significant specialisation in photographic instruments technologies (including photocopying equipment) could similarly be partly explained by the 'gateway to Europe' function of the Netherlands (e.g. the important Dutch distribution and manufacturing centre of Rank Xerox in Venray).

Non-Dutch electrical companies in the Netherlands show specialisation in telecommunications and electrical systems, which are areas of Dutch expertise. The RTA index is higher than one in most of the mechanical engineering technologies (except mining equipment), and motor vehicles technologies. The Dutch technological activity of non-domestic firms is also concentrated in other organic chemicals. As technologies have increasingly become interrelated, many manufacturing innovations have increasingly involved combinations of mechanical, chemical and electrical/electronics technologies. Many new developments in the electronics industry have been initiated in collaboration with chemical companies, sometimes referred as 'chematronics' inventions, particularly in the ceramics area (Cook and Sharp 1991). 'Mechatronics' has also described combinations of mechanical and electronics technologies. This group includes namely robotics, flexible manufacturing systems, and a variety of measurement and test, storage/handling and transport equipment. The Netherlands is found to be an attractive location for some of those related and complementary technologies.

In the metals industry, the problem of small numbers of patents restricted the analysis to just 13 sectors. Non-Dutch firms have considered the Netherlands as a base for their research in metal products, non-metallic and handling material equipment, and to a lesser extent in assembly and handling material. Some of the composition of Dutch-based research of foreign companies may be explained again by the gateway function of the Netherlands. In particular there are the activities of the Rotterdam port complex, for example, with two important pipelines for the transhipment of oil (using metal products technologies).

Table 4.13 looks at the technological specialisation of all the activity (at home or abroad) of large Dutch firms in the three selected industries. The technological specialisation of Dutch large chemical firms relative to that of all the world's largest chemical firms is considered first. Dutch chemical firms record the highest absolute level of technological activity in other organic chemicals, chemical processes and in broader terms in the mainstream technologies of chemicals, and a slightly lower level in pharmaceuticals or mechanical engineering technologies. Overall, the table reveals that whilst Dutch chemical firms are slightly less inclined to undertake technological activity in chemicals than are other chemical companies, they are relatively strong in inorganic chemicals which is possibly an area of future growth. Outside the 'core' chemical areas, Dutch chemical firms have a relative tendency to focus their research activity on pharmaceuticals, some mechanical engineering, electrical systems and rubber and plastic products technologies.

Table 4.13 The revealed technological advantage of Dutch firms in selected industries, across fields of technological activity, 1969–95 (RTA indices)

Sector	*Chemicals*	*Metals*	*Electricals*
Food and tobacco products			
Chemicals n.e.s.	0.85	0.40	0.80
Inorganic chemicals	1.08	0.40	
Agricultural chemicals	0.24		
Chemical processes	0.63	0.73	0.90
Bleaching dyeing processes	0.21		
Other organic chemicals	0.98	0.03	0.43
Pharmaceuticals	1.02		
Metals	0.59	0.58	0.94
Metallurgical processes	0.57	0.30	0.66
Other metal products	0.60	1.10	1.44
Mechanical engineering	2.34	2.02	0.62
Chemical and allied equipment	1.39	2.27	0.64
Metal working equipment		1.85	0.67
Assembly equipment	3.60	1.57	0.57
Mining equipment			
Specialised industrial equipment	4.69	3.53	0.81
General industrial equipment	2.18	1.49	0.48
Power plants			0.73
Nuclear reactors			0.13
Electrical equipment n.e.s.	0.81	0.41	1.21
Telecommunications			1.05
Image and sounds equipment			1.68
Electrical systems	1.82	0.70	1.41
General industrial electrical equipment	0.45	0.28	0.79
Semiconductors			1.16
Office equipment	0.00		0.73
Motor vehicles			0.45
Aircraft			
Other transport equipment			
Textile and wood products			0.97
Rubber and plastic products	2.29		
Non-metallic mineral products	0.85	0.95	
Coal and petroleum products	0.88		
Professional and Scientific instruments	0.47	0.54	1.10
Photographic instruments	0.00		0.22
Other instruments	0.65	0.54	1.24
Other manufacturing and non-industrial	0.64		1.01

Source: As in Table 4.1.

Note
n.e.s. = not elsewhere specified.

For Dutch electrical equipment firms most activity is carried out in their 'core' technologies. This might be expected because of the relative strength of Dutch research in electrical equipment technology, which is undertaken by the large firm Philips. The greatest absolute level of technological activity of Philips is recorded in descending order respectively, in electrical systems, other instruments (e.g. measuring and testing instruments in electricity and optics, X-ray systems or devices), office equipment and telecommunications. The RTA index (with values above one) shows that Philips' specialisation relative to all large firms in this industry is found in telecommunications, image and sound equipment, electrical systems and semiconductor technologies, and also in other metal products and instruments, and other manufacturing and non-industrial. This contrasts with the results for office equipment (with an RTA of 0.7) in which Philips may consequently have a relative weakness; i.e. Philips is not particularly strong in this area of research despite the relatively large absolute amount of activity recorded.

Consistent with Philips relative strength in electrical systems and telecommunications technologies, we have shown that the Netherlands is an attractive location for these areas of research by non-Dutch firms. Table 4.9 shows that compared to an overall average of 1.8 per cent in 1991–5, the proportion of research by all firms in the Netherlands undertaken in those fields by non-Dutch firms is 3 per cent in electrical systems and 4 per cent in telecommunications. While electrical systems technologies have attracted an above average amount of foreign-owned research into the Netherlands since 1969, telecommunications seem to be relatively more important to foreign firms from 1987. In telecommunications, furthermore, the share of foreign-controlled patenting of all inventions based in the Netherlands (as seen in Table 4.11) is also well above average since 1987. Thus, it is suggested that the specialisation of the largest Dutch electrical company in electrical systems and telecommunications has helped to attract non-Dutch companies to carry out research into those technologies in the Netherlands, and this tendency has been relatively more recent and stronger for telecommunications technologies since the late 1980s.

Dutch metals firms are relatively specialised in their research in chemical and allied, metal working and assembly equipment, specialised and general industrial equipment and other metal products. Dutch firms' greatest strength lies in specialised industrial (e.g. textile and printing machinery, construction equipment) and chemical and allied equipment (e.g. coating apparatus, food, drink and tobacco equipment).

Table 4.14 looks at the relative technological specialisation of Dutch firms when located outside the Netherlands. For chemical firms, the bulk of their foreign research activity occurs in other organic chemicals, specialised industrial equipment, chemical processes and pharmaceuticals. However, in terms of their relative specialisation the RTAs of other organic chemicals, chemical processes and pharmaceutical technologies are relatively low at 0.69, 0.65 and 0.85 respectively, implying a relative weakness in overseas

Table 4.14 The revealed technological advantage of Dutch firms outside the Netherlands in selected industries, across fields of technological activity, 1969–95 (RTA indices)

Sector	*Chemicals*	*Metals*	*Electricals*
Food and tobacco products			
Chemicals n.e.s.	0.65	0.19	0.70
Inorganic chemicals	0.59	0.25	
Agricultural chemicals	0.20		
Chemical processes	0.66	0.29	0.81
Bleaching dyeing processes	0.31		
Other organic chemicals	0.70	0.05	0.24
Pharmaceuticals	0.86		
Metals	0.76	0.58	0.78
Metallurgical processes	0.90	0.10	0.52
Other metal products	0.63	1.48	1.26
Mechanical engineering	3.41	2.06	0.58
Chemical and allied equipment	1.58	2.50	0.73
Metal working equipment		1.88	0.46
Assembly equipment	6.68	0.41	0.62
Mining equipment			
Specialised industrial equipment	7.50	4.45	0.64
General industrial equipment	3.16	1.28	0.45
Power plants			0.32
Nuclear reactors			0.16
Electrical equipment n.e.s.	1.46	0.54	1.23
Telecommunications			1.21
Image and sounds equipment			1.66
Electrical systems	3.50	1.11	1.23
General industrial electrical equipment	0.66	0.36	0.88
Semiconductors			1.39
Office equipment	0.00		0.63
Motor vehicles			0.80
Aircraft			
Other transport equipment			
Textile and wood products			
Rubber and plastic products	2.43		
Non-metallic mineral products	0.87	1.30	0.68
Coal and petroleum products	0.66		
Professional and Scientific instruments	0.53	0.30	1.30
Photographic instruments	0.00		0.22
Other instruments	0.73	0.31	1.47
Other manufacturing and non-industrial	0.75		1.68

Source: As in Table 4.1.

Note
n.e.s. = not elsewhere specified.

technological specialisation by Dutch chemical firms in these fields of activity. In inorganic chemicals, the RTA value is particularly low (0.58) despite their general comparative specialisation (Table 4.13).

Dutch firms' technological activities outside the Netherlands in the chemical industry are strongest in specialised (RTA of 7.5) and general (3.16) industrial equipment, assembly and material handling equipment (6.68), electrical systems (3.5), rubber and plastic products (2.43) and chemical and allied equipment (1.58). These technologies generally are areas of technological strengths for Dutch chemical companies (Table 4.13) that do not belong to the 'core' chemical technologies. Hence, they have attempted to develop further some of those technologies abroad. The RTA values greater than one are systematically higher in Table 4.14 than in Table 4.13, which denotes a higher degree of technological specialisation of Dutch firms in their research activity abroad than domestically. Given the lesser degree of technological focus at home of Dutch chemical companies compared to their major competitors (Table 4.13), this suggests that Dutch chemical companies have adopted strategies of international related specialisation.

In its foreign activity, Philips has RTAs greater than one in image and sound equipment (e.g. music, acoustics and television), electrical systems (e.g. illumination and specialised electrical devices), telecommunications (e.g. special radio systems) and semiconductors (e.g. transmission systems) in its industry core technologies; and also in other manufacturing and non-industrial, other instruments and other metal products. The Dutch electrical equipment firm is also specialised in those sectors at home (Table 4.14) but to a lesser extent (except for other metal products). The trend towards increasing internationalisation of research has been shown to be particularly important in telecommunications and semiconductor technologies (Table 4.7), so that those sectors may be considered as areas of further potential growth and specialisation abroad for the Dutch electrical company. This also reflects Philips' renewed emphasis on microchips and the development of its downstream interests, such as its digital compact cassette business (Silberston and Raymond 1996).

Therefore, Philips uses foreign research as part of an internationally specialised network mainly within its core technologies but also in related technologies such as other instruments and controls, in which telecommunications and semiconductor technologies seem to be developing rather more abroad (in relative terms). In particular, Philips plays a key role in the European semiconductor industry. Its main European semiconductor subsidiaries are the British 'Mullard', the French 'La Radio Technique' and the German 'Valvo' (Tilton 1971). The world-wide organisation character of Philips allows an important flexibility in its policies. For example, the company did transfer much of its semiconductor and integrated circuit production from Europe to South East Asia in the early 1980s, affecting particularly its French subsidiary 'La Radio Technique' (Morris 1990; Silberston and Raymond 1996).

The evidence on the technological activity of Dutch metals firms outside the Netherlands points towards a relative strength in specialised industrial and chemical and allied equipment technologies, which have RTAs of 4.45 and 2.5 respectively and are also the sectors in which most activity is recorded. Dutch metals companies are also strong abroad in metal working and general industrial equipment, electrical systems and non-metallic mineral products technologies. An RTA above one in electrical systems and non-metallic mineral products technologies demonstrates that Dutch metals firms are much more specialised in this type of technological activity outside the Netherlands rather than domestically, in which the RTA revealed relative weaknesses (Table 4.13). By contrast, Dutch companies at home are specialised in assembly and material handling equipment but not especially abroad. This amounts to an argument in favour of an international specialisation strategy, in which firms have fulfilled some of their technological requirements through their international technological activity.

International corporate technological specialisation at the firm level

We proceed now from the industry level to the company level, and investigate the technological specialisation of three leading Dutch companies in the context of their international strategies. The companies selected are Philips, Akzo and Hoogovens, because they represent each of the three significant Dutch industries of electrical equipment, chemical and metals, and have carried out a substantial share of their research abroad. Table 4.15 shows the share of the US patenting of these three companies attributable to foreign research and, by way of comparison, also includes data for other leading European innovators such as Bayer, ICI, Ciba-Geigy, Hoechst, Rhone-Poulenc, Siemens, GEC, Thomson, Sandvik Group, Alussuisse and Thyssen.

Philips is the only large firm representing the Netherlands in its industry, and the internationalisation of its research activity has already been amply described above. Philips was founded in 1891 as a supplier of products, systems and services in the fields of lighting and electronics. Over the years, the company has broadened its range of activities and operates on a world-wide scale. Its important share of research activity undertaken abroad (as measured by its foreign share of patenting activity) increased moderately over the period to reach 55 per cent in 1991–5, and the trend was only reversed during the recession of the 1970s (Table 4.15). The figures for other companies in the electrical industry have always been much lower and show that the trend towards technological internationalisation for those firms has been more dramatic overall and especially important from the 1980s onwards. Siemens, GEC and Thomson all exhibit a substantial increase in international technological activity from the 1980s which reflects the

Table 4.15 The share of US patents of the leading Dutch firms attributable to research in foreign locations as a proportion of total US patents assigned to the firm in question, 1969–95 (percentage), with other leading competitors shown for comparison

Sector	*1969–72*	*1973–7*	*1978–82*	*1983–6*	*1987–90*	*1991–5*
Akzo	52.36	68.01	68.12	76.19	67.63	65.83
Hoogovens Group	85.71	90.91	73.53	46.88	63.00	59.55
Philips	52.30	47.55	46.39	54.03	54.44	55.27
Rhone-Poulenc	8.16	6.52	7.27	15.88	14.39	17.76
Bayer	22.95	18.63	16.68	18.75	15.41	23.17
Hoechst	16.81	18.17	18.19	24.56	38.16	35.53
ICI	18.8	22.63	21.69	26.69	32.63	32.83
Ciba-Geigy	38.54	36.49	38.97	40.43	43.92	52.22
Siemens	4.07	4.71	7.57	16.58	19.52	28.84
GEC	17.25	32.14	27.22	18.18	37.11	56.21
Thomson	2.36	1.14	1.09	3.88	16.4	57.36
Sandvik Group	30.77	26.83	51.96	34.88	30.71	31.75
Thyssen	52.14	24.02	27.84	32.97	29.59	41.73
Alussuisse	56.78	44.81	46.85	34.48	36.75	29.38

Source: As in Table 4.1.

recent renewed interest in internationalisation strategies. However, trends are somewhat different between firms. For example, the French firm Thomson showed large increases in foreign patenting from the late 1980s, while this occurred rather earlier in the mid-1980s for Siemens, and was associated with a much greater volatility in the case of the British GEC.

In the chemical industry, Akzo's trend in international technological activity reflects a story similar to that for the Dutch chemical industry as a whole (Table 4.4), except for the slight decrease between 1987–90 and 1991–5 (compensated at the aggregate level by the large increase in internationalisation of DSM). Akzo was formed in 1969 as a result of the merger of 'Koninklijke Zout Organon' (salt) and 'Algemene Kunstzijde Unie' (synthetic yarns and fibres). The most recent and significant change occurred in early 1994 when Akzo acquired the Swedish Nobel Industries to become Akzo Nobel. Akzo's internationalisation strategy has mainly built on the already existing international tradition within its ENKA-Glanzstoff division (partly originating from Germany) and was also highly oriented towards the United States. Akzo's corporate strategy continues today to focus on improving the geographic distribution of its activities (Albach *et al.* 1996; Annual Report 1996). The number of employees at year-end 1996 was 70,700 in over 50 countries, of which about 45 per cent were in European countries other than the Netherlands (especially in Germany) and 16 per cent in the USA and Canada (Annual Report 1996).

Akzo recorded an increase in the proportion of its patenting abroad from the 1960s to the mid-1980s and a decrease later on, but its degree of internationalisation was already at a much higher level than for its major competitors (above 65 per cent). Some of the other leading European firms in the chemical industry, Hoechst, ICI, Ciba-Geigy and Rhone-Poulenc display trends in the internationalisation of research that increased during the 1980s. Bayer, however, shows an overall decrease of its share of foreign located research until 1987–90, and an increase in the trend only in the early 1990s. Such conflicting trends help to explain why in the chemical industry in general there was only a rather moderate increase in the degree of internationalisation of technological activity over the period (Table 4.2).

Hoogovens Group, 'Koninklijke Nederlandse Hoogovens Staalfabrieken' (the Royal Netherlands Blast furnaces and Steel works), was established in 1918 as part of a strategy of creating a national iron and steel basic industry. Unfortunately, the number of total and foreign patents registered from Hoogovens is relatively small which affects the values of foreign shares constructed in Table 4.15, and so the results we are about to discuss may be misleading, especially with respect to the earlier periods. The company's share of foreign technological development saw an overall decrease over 1969–95 which might reflect the general decline of the steel industry. For example, Hoogovens (a blast furnace at a coastal site) merged with the German company Hoesch (a high-quality steel mill centrally located) in 1972 as part of its internationalisation strategy. The resulting corporation, Estel, was however dissolved in the early 1980s because of losses occurred in connection with the decline of the industry (de Smidt and Wever, 1990). A restructuring and modernising programme was launched by Hoogovens in 1982 with the aim of reducing significantly its steel production capacity and workforce by the end of 1985. As a result, Hoogovens became more modern and competitive than most European steel companies (Wolters and Coffey 1990). Of some of the other European companies in the metals industry, Sandvik Group, Alussuisse and Thyssen display trends in the internationalisation of research that are quite dissimilar to that of Hoogovens. As in the chemical industry, the differences between trends at the firm level may explain why there was overall a slight decrease in the share of foreign located research in the metals industry (Table 4.2).

The particular areas of technological specialisation of the Dutch firms Akzo and Hoogovens relative to the world's largest firms can be observed by looking at their revealed technological advantages (RTAs) across fields of technological activity. Table 4.16 shows the two companies' RTAs across different technological fields for their patenting attributable to research in all locations during 1969–95 (constructed similarly to Table 4.13), while Table 4.17 focuses on the RTAs of these companies from their research outside the Netherlands (constructed similarly to Table 4.14). Here we examine in particular the international specialisation of corporate technological activity abroad as opposed to at home, in which each location provides access

Table 4.16 The revealed technological advantage of Akzo and Hoogovens Group, across fields of technological activity, 1969–95 (RTA indices)

Sector	*Akzo*	*Hoogovens Group*
Food and tobacco products		
Chemicals n.e.s.	0.71	0.52
Inorganic chemicals	0.56	0.52
Agricultural chemicals	0.19	
Chemical processes	0.66	0.92
Bleaching dyeing processes	0.25	
Other organic chemicals	0.78	0.04
Pharmaceuticals	1.35	
Metals	0.67	0.43
Metallurgical processes	0.72	0.40
Other metal products	0.62	0.48
Mechanical engineering	2.78	2.13
Chemical and allied equipment	1.29	1.56
Metal working equipment		2.40
Assembly equipment	5.01	0.57
Mining equipment		
Specialised industrial equipment	6.42	4.10
General industrial equipment	2.35	1.92
Power plants		
Nuclear reactors		
Electrical equipment n.e.s.	1.08	0.21
Telecommunications		
Image and sounds equipment		
Electrical systems	2.51	
General industrial electrical equipment	0.53	0.36
Semiconductors		
Office equipment		
Motor vehicles		
Aircraft		
Other transport equipment		
Textile and wood products		
Rubber and plastic products	2.04	
Non-metallic mineral products	0.92	1.19
Coal and petroleum products	0.73	
Professional and Scientific instruments	0.58	0.25
Photographic instruments		
Other instruments	0.80	0.25
Other manufacturing and non-industrial	0.85	

Source: As in Table 4.1.

Note
n.e.s. = not elsewhere specified.

to specific capabilities complementary to those found elsewhere. Through multinational strategies, leading firms are enabled to draw on a wider system (spectrum) of related technologies to support their core strengths. A distinction is drawn between the pattern of technological development of parent companies in their home country, and the composition of technological activity in their affiliates located abroad.

In the 1970s, Akzo concentrated a dominant proportion of its production in synthetic fibres, but the demand for that product had to face a steep decline and pushed the company into difficulties. However, Akzo succeeded in diminishing its dependence on fibre production and increased its share in coatings and pharmaceuticals. The company similarly followed a strategy of specialisation by focusing on other speciality chemicals such as highly refined and advanced polymers. Akzo is today considered as one of the market leaders in paints and varnishes; its strategy to continue its development in coatings led to its acquisition of the Swedish Nobel Industries in 1994 (Albach *et al.* 1996). In addition to its coating products, the company offers special consultancy service centres for the customers of its varnishes, and special service equipment (such as for mixing varnishes and paints). Pharmaceuticals and paints and varnishes tend to be business lines particularly associated with high R&D-intensity, a relatively high share of product innovations and high potential for growth and profit. Fibres or basic chemicals belong to more mature lines of products, have lower R&D-intensity, a higher share of process innovations and lower growth prospects. In 1996, the distribution of Akzo R&D expenditures was 47 per cent in pharmaceuticals, 17 per cent in coatings, 19 per cent in chemicals and 9 per cent in fibres (Annual Report 1996).

Table 4.16 shows that Akzo is relatively specialised (RTA above one) in several mechanical engineering technologies (chemical and allied, assembly, specialised and general industrial equipment), electrical systems, rubber and plastic products and pharmaceuticals. This reflects Akzo s relative strengths already described and the company's specialisation in pharmaceuticals, coatings and specialised chemicals. In particular, chemical and allied, specialised and general industrial equipment technologies include specialised and general coating machinery and apparatus; the assembly equipment technologies (e.g. material handling and store service equipment) specialisation may reflect Akzo's efforts towards consumer services. The electrical systems relative specialisation is mainly explained by Akzo's development of photonic components for controlling traffic in telecommunication networks (glass fibres, optical polymers, optical switches). Akzo's specialisation in rubber and plastic products technologies reflects its involvement in new materials (special plastics) such as high-performance polymers (used in the electronics, coatings and transport industries).

Akzo's research outside the Netherlands is not very active in its important field of strength at home in pharmaceuticals (Table 4.17). The company's international research is more heavily focused on the areas of mechanical

Table 4.17 The revealed technological advantage of Akzo and Hoogovens Group, from their research facilities outside the Netherlands, across fields of technological activity, 1969–95 (RTA indices)

Sector	*Akzo*	*Hoogovens Group*
Food and tobacco products		
Chemicals n.e.s.	0.65	0.22
Inorganic chemicals	0.61	0.33
Agricultural chemicals	0.21	
Chemical processes	0.68	0.33
Bleaching dyeing processes	0.32	
Other organic chemicals	0.67	0.07
Pharmaceuticals	0.90	
Metals	0.73	0.27
Metallurgical processes	0.94	0.14
Other metal products	0.53	0.51
Mechanical engineering	3.45	2.32
Chemical and allied equipment	1.53	1.66
Metal working equipment		2.44
Assembly equipment	6.98	0.18
Mining equipment		
Specialised industrial equipment	7.80	5.90
General industrial equipment	2.93	1.63
Power plants		
Nuclear reactors		
Electrical equipment n.e.s.	1.53	0.24
Telecommunications		
Image and sounds equipment		
Electrical systems	3.67	
General industrial electrical equipment	0.69	0.48
Semiconductors		
Office equipment		
Motor vehicles		
Aircraft		
Other transport equipment		
Textile and wood products		
Rubber and plastic products	2.29	
Non-metallic mineral products	0.80	1.63
Coal and petroleum products	0.69	
Professional and Scientific instruments	0.53	0.08
Photographic instruments		
Other instruments	0.74	0.08
Other manufacturing and non-industrial	0.79	

Source: As in Table 4.1.

Note
n.e.s. = not elsewhere specified.

engineering, electrical systems and rubber and plastics which are also areas of strength at home, but to a lesser extent. Akzo therefore seems to have adopted a strategy of international specialisation in its technological activity to extend some of its existing strengths, where its foreign affiliates have a well specified technological role as part of that strategy. Akzo's recent acquisition of Nobel Industries, for example, was motivated by its wish to further develop its coatings competencies (Albach *et al.* 1996).

Table 4.16 also reveals Hoogovens' relative technological strengths in the fields of chemicals and allied, metal working, specialised and general industrial equipment, and non-metallic mineral products. Hoogovens has particularly focused its research on specialised industrial and metal working equipment with RTAs of respectively 4.1 and 2.4. The firm's relative specialisation in non-metallic mineral products might reflect its involvement in fast growing new materials technologies in, for example, the areas of ceramics and special glass products. Abroad, Hoogovens concentrates more on extending its home technological specialisation, as shown in Table 4.17.

Conclusions

The emergence of more closely integrated international networks in the organisation of MNCs is likely to reinforce countries' patterns of technological specialisation, especially when these operations are located in an economically integrated region such as the EU. While countries have tended to narrow their technological specialisation (becoming more focused on their areas of strength), as a result of the new multinational strategies the major firms have tended to broaden the extent of their technical specialisation (drawing on a wider system of related technologies to support their core strengths). These trends have been explored for the leading Dutch firms compared to other multinationals in the chemicals, electrical equipment and metals industries.

Just as governments influence innovative activities in firms and the development of technological capacity in their own countries so MNCs also affect the international competitiveness of countries and the rate and direction of innovative activities in general. In particular, the role of outward direct investment in research has been emphasised as it may benefit the home location through backward linkages. These derive from the improved international competitive position of the individual MNC, and from technological complementarities between research carried out at home and abroad. The role of MNC's has been stressed as the main source of both the creation and diffusion of technology. In the 1960s and 1970s, the largest Dutch industrial firms were among the most internationalised in their research by comparison with their leading European competitors. By the 1980s, the gap has closed somewhat as companies from other countries, namely the US, France and Germany, appear to be increasing their levels of R&D activity abroad. Foreign research facilities provide a specialised source of support to each MNC's overall technological development. In some cases companies take up technological activities abroad that lie outside their core areas, but which are related to them. As Dutch R&D is highly internationalised, the Netherlands is also an increasingly attractive location for foreign-owned R&D, in particular when referring to other organic chemical, electrical systems and telecommunications technologies.

One essential element in the national innovative performance of the Netherlands is its large innovative MNCs, with a strong R&D presence abroad, which have successfully combined the resources of several geographically dispersed units and served a number of national markets. The Netherlands has also relative technological advantages in only a few selected sectors. The Dutch giant Philips, for example, has succeeded in establishing itself as one of the world's leading electronics companies by operating manufacturing and research facilities in the most important international centres in its industry. Philips' leading position and world-wide activities surely benefited the Dutch economy as a whole and helped to establish the Netherlands as a centre of excellence for electronics, whose importance is more than proportional to the country's size and economic resources. Philips' pattern of technological specialisation clearly focuses on the core areas of electrical equipment technologies, and demonstrates revealed technological advantages domestically and abroad from research in these areas. The high internationalisation of patenting and global scale of that company suggest that it has successfully adopted a strategy of related technological diversification abroad in areas that belong to the 'core' technologies in the electrical industry (e.g. image and sound equipment and electrical systems), but also other related technologies (e.g. miscellaneous metal products and professional and scientific instruments). In particular, telecommunications and semiconductors technologies have been identified as areas of technological advantage and increasingly further development of Philips abroad.

Dutch firms have tended to concentrate outside the Netherlands on some existing fields of strength, in which their technological competence has already been established. This applies to Philips and its development of electrical equipment abroad, Akzo in mechanical engineering, electrical systems and rubber and plastics products, and Hoogovens in specialised industrial and metal working equipment. Other areas of technological emphasis of these companies in the Netherlands have nevertheless been excluded from their foreign research strategies. In addition, leading Dutch firms have also broadened out their technological specialisation over time by geographically dispersing their foreign research facilities to take advantage of local sources of expertise and innovation in each site. For example, Akzo merged with the Swedish Nobel Industries as part of a strategy to develop further its strengths in coatings technologies. Philips acquired the American company Signetics in 1978 to get access to the local US expertise in semiconductor technologies and manufacturing. Hoogovens is relatively specialised in its foreign research activity in electrical systems and non-metallic mineral products, which are not domestic areas of technological strengths. The internationalisation of technological activity in the Dutch case is therefore unlikely to be a matter of simply extending the same fields of development abroad, but will increasingly continue to involve international corporate networks aimed at an internationally integrated structure of technology creation.

Finally, the national technological performance of the Netherlands relies on a few large multinational corporations that have highly internationalised their technological activity on the basis of competencies and technological strengths developed historically at a national and corporate level. What exactly defines the ability of Dutch companies to continue to learn and compete in the global world should be the subject of further investigation. For example, the need for the firm to conduct an effective management of its technology has been increasingly recognised due to the complex and internationally interconnected nature of contemporary technologies. A better understanding of the determinants, characteristics and management of the globalisation process of Dutch companies would clearly be a topic for further research.

Notes

1 For example, electronics technologies have converged with the mechanical kind to create 'Mechatronics' (Kodama 1992, Bessant and Haywood 1991)

2 To illustrate, as a measure of the degree of internationalisation of technological activity we calculate the share of total patenting of some given group of firms that is attributable to research or other technological activity outside the home country of the parent company. Firms in different industries, or originating from different home countries, can then be compared with one another. The higher propensity to patent of, for example, pharmaceutical firms relative to shipbuilding companies does not affect matters, provided that pharmaceutical firms are equally more likely to patent from both their foreign and their home located activity, which is a plausible assumption.

3 The consolidation of patents to corporate groups in their 1984 form means that unfortunately it is difficult to assess the true extent of any trend over time towards the internationalisation of technological activity. Any such trend is likely to be understated in the data on the patenting of the world's largest firms for two reasons. First, where this internationalisation was achieved through acquisition before 1984 this is not recorded as a change in the geographical composition of the firm's technological development since the affiliate has been considered as part of the corporate group at both the beginning and the end of the period. Second, where acquisitions have had motives other than the extension of research facilities (and there have been many of these), it may be expected that the new parent company would tend to wind down affiliate research. Any duplication with the existing research of the MNC may be eliminated, and other functions may be centralised in the technological headquarters. This would appear in the data as a move away from the internationalisation of technological activity.

4 Samsung's foreign share in 1991–5 was 3.4 per cent, while that of the Lucky Group was only 1.6 per cent.

5 Even when taking into account that the internationalisation of technological activity by the largest US firms is probably understated in this measure, owing to their high propensity to patent in their own home market from domestically located research.
6 This is consistent with the relatively late internationalisation of French firms in terms of investments in the other major industrialised countries (Cantwell and Kotecha 1997). The largest French firms witnessed substantial increases in the internationalisation of their technological activity in 1987–90 and 1991–5, much greater than any other group of firms and bringing them well above the largest German industrial companies. See also Cantwell and Harding (1997).
7 In Japan, the different technical aspects of an invention cannot be included in the same patent application, thus inducing investors to multiply the number of their domestic applications (Archibugi and Pianta 1992).
8 Where an R&D facility conducts basic research on a specialised basis in one location (in a host country), but unrelated to any local production plants, the results of such pure research may be incorporated into problem solving efforts in production and R&D elsewhere (in the home country). Especially in the chemical industry, Japanese firms have set up fundamental research facilities in Europe, attracted by local scientific expertise, but as yet not very closely related to European located production and the broader local development of technological capability.
9 As described earlier, branches of technological activity do not correspond to industries. For example, chemical firms all have a substantial involvement in the creation of new chemical equipment, which appears under mechanical rather than chemical technology. Pharmaceutical technology here includes biotechnology.

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APPENDIX 4.1

List of Dutch firms included in the world's largest in selected industries

Chemicals

DSM
Akzo

Electricals

Philips

Metals

Hoogovens Group
Royal Packaging Industries Van Leer
Thyssen-Bornermisza

Food

Unilever
Koninklijke Wessanen
Douwe Egberts

Oil and petroleum products

Royal Dutch/Shell

5 Services FDI and the Dutch economy[1]

Joachim Stibora and Albert de Vaal

Introduction

It is a well-known and often articulated fact that in most of the industrialised countries, and to a lesser extent in less developed economies, services sectors account for the bulk of a nation's value added activities and its labour employment. In the Netherlands, for example, the current share of services in GDP is roughly 64 per cent, whereas 73 per cent of the labour force finds employment in services sectors. It is less well documented, however, that also in international relations services play an important role. This is particularly true for industrialised countries, but the acknowledgement of it is obscured by a bias in focus on trade data *vis-à-vis* direct investment data. Whereas for most countries services trade typically accounts for less than 20 per cent of the total current account, suggesting that services are not quite that important in trade relations as they are in national economies, the share of services in international direct investment flows is roughly half of the total.

In this chapter we look at new trade and foreign direct investment (FDI) figures, both from a theoretical and applied perspective. First, the conceptual issues are dealt with. We will argue that it is the difference between the nature of goods and services provision that logically gives rise to a difference in the trade share of services and the share of services in FDI. Given the fact that the provision of services typically requires the close, if not simultaneous, interaction of producer and consumer, the international provision of services relies primarily on the cross-border movement of either the consumer or the producer of the service. It then stands to reason that the share of services in FDI pops up as more significant than in ordinary trade figures.

Attention is also paid to the more practical side of the matter. Using the well-known eclectic paradigm of multinational enterprises, we will discuss (potential) differences in motivation between services and goods firms to engage in FDI. Much of the analysis we present in this respect draws upon the insights of the work of Dunning, in particular Dunning (1989). As we will see, many of the familiar ownership, location and internalisation advantages also apply to services multinationals, though it is primarily the need to be close to one's clientele that drives services firms to engage in FDI.

Having discussed the theoretical issues we then turn to the empirical part of this chapter. We do so in two steps. The first step consists of a bird's-eye view of the importance of services in the world economy. We will see that in terms of production and employment shares many countries have turned into genuine 'services' economies. The second step involves a detailed analysis of the importance and performance of the services sectors of the Netherlands, both nationally as well as internationally. This is accomplished by using a newly created inter-country input-output data set (covering the years 1970, 1975, 1980, 1985), not only to identify the key services sectors of the Dutch economy, but also to assess the importance of international services linkages by calculating revealed comparative advantage (RCA) indices. In addition, we make use of standard econometric techniques to find out if there is a relation between the RCA index and the domestic importance of services. In a less elaborate way, we also relate developments in services FDI with developments in the key services sectors of the Dutch economy.

Finally, we put our main findings in a policy perspective. We will claim that Dutch services firms should see the recent developments on the liberalisation of services trade, the European unification, and the major constitutional changes in Eastern European countries, as opportunities, rather than as threats.

Conceptual issues

The issue of what delineates a good from a service has been a subject of controversy throughout the literature. Although no one seems to have intuitive problems with distinguishing services from goods—generally speaking a good is something you can touch, whereas a service is something intangible—from a scientific point of view, the distinction between goods and services requires more than just relying on individual intuition. As long as services have been analysed, economic theorists have therefore tried to come up with a definition of services that not only covers those features that make services different from goods, but that also facilitates a straightforward classification of services. Different authors have advanced different solutions to the definition problem of services, where the solutions range from simply defining services as everything that is not a good to constructing comprehensive lists with services characteristics (see Riddle 1986 and Nicolaides 1989 for an overview).

However, these approaches do not lead to an unambiguous comprehension of what a service is. In earlier work[2] we have therefore tried to make a case for the consistent use of the definition of a service as proposed in Hill (1977), where a service is defined as: 'a change in the condition of a person, or of a good belonging to some economic unit, which is brought about as the result of the activity of some other economic unit, with the prior agreement of the former person or economic unit' (Hill 1977:318). Although one can disagree regarding the overall validity of the definition, it must be clear that the definition is capable of generating some of the most salient differences between services and goods—non-storability, simultaneity of production and consumption, heterogeneity and flexibility in production.

To see this, note that in Hill's definition a service is taken as the end result of a production process aimed at altering the condition of either a good or person. The service rendered is therefore a flow and hence non-storable. Moreover, given the flow character, production and consumption must take place simultaneously: the production process of the service is completed once the service is consumed, and vice versa. The flow character of services provision therefore also typically implies physical proximity of consumer and producer, though technological advances in the telecommunications and information technology sectors increasingly facilitate the locational separation of production and consumption. Nevertheless, generally speaking there will be close interaction between consumer and producer during the production process of a service, which widens the scope for customisation and makes services 'heterogenous products par excellence' (Sapir 1991). Flexibility in production, in the sense that a firm is able to switch to alternate specifications at low cost, may then also be a key feature of services production. Moreover, the heterogeneous nature of services provision implies that services markets are typically characterised by some form of imperfect competition. This is reinforced by the fact that the provision of services typically takes place in an environment of asymmetric information, for instance with respect to the quality aspects of the service rendered.

To delineate international trade in services requires the insight that both economic units engaged in the service transaction reside in different countries. This leads to the following categorisation of international trade in services, which is due to Sampson and Snape (1985).[3]

1 Transactions without movement of factors of production or of the receiver of the services, the so-called separated services.
2 Transactions as a consequence of the movement of the factors of production, but not of the receiver of the service.
3 Transactions with the movement of the receiver of the service, but not of the provider.
4 Transactions with the movement of both factors of production and the receiver of the service.

Of these four categories, only the first can be regarded as international trade in the traditional goods-like sense. The other three items all require some sort of cross-border movement of the actors involved with the service transaction. An example of separated services trade may be consultancy services that are handled by mail, telephone and other communication networks so that physical proximity is no longer required. On the other hand, it is hard to believe that producer and consumer do not actually meet at some point during the production process of the consultancy service. Most international services transactions will therefore take the form of any of the other four items on the list above (or perhaps a hybrid form). Whatever the case, it is clear that the Sampson and Snape classification poses a serious challenge to the popular idea that services are by and large 'non-tradable'.[4]

FDI in services enters the analysis via the second and fourth item of the list. Note however that both items comprise much more than just FDI, as they also include the temporary cross-border movement of labour and/or capital goods needed to produce a service abroad. When, however, the provision of services requires a permanent presence in the foreign country, FDI is typically required to get one's service across national borders.

The question then is if FDI in services is so special that it requires a special analytical framework to explain its incidence, or that we can rely on the familiar insights generated by the eclectic approach to FDI and MNEs. It will come as no surprise that the richness of ingredients of the eclectic paradigm also forms a sufficient basis to understand the transnationality of services firms. Moreover, the essence of the eclectic approach is invariant to the nature of a firm: a firm will sell its product across borders if it can provide it more successfully than indigenous firms (ownership advantages), and if the advantages of keeping control over its own production (internalisation advantages) and the advantages of producing abroad rather than at home (location advantages) are such that it can most effectively do so by establishing a local subsidiary. This also holds for services firms, irrespective of whether they actually have a choice between exporting and FDI. Once the desire arises to sell one's service abroad, it still depends on the combination of the three types of advantages just described whether it is economically sensible to establish a foreign subsidiary.

The question now arises whether there are ownership, location and internalisation advantages that are more appropriate to services firms than they are to manufacturing firms. Dunning (1989) gives an extensive overview of many of the issues involved and we will therefore confine ourselves to a brief overview of the most salient differences between goods producing and services producing MNEs.

Ownership advantages

To begin with, reputation is a far more important ownership asset to services firms than to manufacturing firms. This has partly to do with the heterogeneity of services, but the main reason is their 'experience goods' character. In fact, one could argue that it is the need to establish a reputation that makes the provision of services so heterogeneous: to establish brand loyalty a services firm will have to differentiate its product from its closest competitors in terms of quality and specification (Enderwick 1992).

With respect to economies of scale and scope, the odds of importance are against services MNEs. For instance, although the ability to offer a wide variety of things at low cost can be an important ownership advantage to some services firms (retail stores), for most services firms the true economies of scope lie in the fact that the firm's production structure is such that it can easily, and most importantly at low cost, change the pre-specified design of the service it provides. As such, it is the capability to customise services to special desires of consumers that constitutes an ownership advantage to services firms, and not so much economies of scope due to increased bargaining power or less dependence on the success of one or two products. In a similar fashion economies of scale constitute a less important ownership advantage to services MNEs. For instance, the tendency to customise production confines the potential benefits of scale economies to the realm of organisational overhead costs, such as marketing expenditures and R&D, as it reduces the potential benefits from moving people and information between different parts of the organisation considerably.

Finally, we mention market access as an ownership advantage that in some instances has turned out to be of great importance to services firms. For many services MNEs the first move abroad has been to supply their output to foreign subsidiaries of their fellow-country manufacturing MNEs. As these manufacturing firms are more likely to use services inputs from firms they already know, home services firms have a market access advantage over local services firms.

Location advantages

The extent to which location advantages are important for the decision of services firms to move abroad depends highly on the type of service. In fact, location advantages can only play a role if a services firm actually has a choice regarding the mode by which it can get its product abroad. In the Sampson and Snape classification this means that location advantages do not bear too much relevance for those services that require the permanent cross-border movement of the supplier. Moreover, for many services it is hard, if not impossible, to separate the different stages of the production process, which renders location advantages less important to the decision how to spatially organise production.

When, however, services firms do have a choice between FDI and exporting, location factors become at least as important for services firms as they are for goods producing firms. In some instances it may even be imperative for services firms to be present in the foreign market, for instance because of local tastes or because of complex government regulations.[5]

Internalisation advantages

As it is mainly the relative transactional costs of the alternative modalities that determines the organisation of the cross-border exploitation of ownership specific advantages to firms, there is no fundamental difference between services and goods MNEs on this account. Spelling out the difference between the two, however, reveals that information related internalisation advantages and the need or desire to protect the quality of the end product are of particular importance to services firms. Whereas the former is related to the high information content of many services, the latter goes back to the heterogeneous nature of services. To the extent that information cannot be adequately codified or that it is too complex to be exchanged at low cost, and to the extent that quality cannot be satisfactorily protected by contracts, a firm does best to keep control over its ownership assets, thus making FDI the most suitable option to sell one's product abroad.

To summarise, we have seen that there is no fundamental difference between the ways in which manufacturing and services MNEs decide to establish local subsidiaries abroad. Most of the ingredients of the eclectic paradigm of FDI also play a role in a services firms' decision to become multinational. However, whereas a goods producing firm always has the option of selling its product by means of ordinary exports, services firms often do not have that choice. Although recent advances in communications, data processing, etc., have widened the scope for separated services trade, there are still many services activities for which it is important to establish a permanent presence abroad. Consequently, FDI in services can be expected to remain one of the primary modes by which services firms will offer their products abroad.

Services in the world economy

To show the importance of services throughout the world, Table 5.1 presents figures on the share of services in output and total labour employment for a number of selected OECD countries and for three separate years. The table reveals what has been referred to as the deindustrialisation process of the industrialised world. Despite considerable differences in percentages across countries, over the past two decades all countries witnessed a considerable increase in both the employment share and the output share of their respective services sectors. The Netherlands, for example, saw its employment share of services rise from nearly 60 per cent in 1975 to over 73 per cent in 1995. Likewise, the output share of services in the Netherlands rose from 49 per cent in 1975 to somewhat over 64 per cent 20 years later. Most of the other countries in the table share this pattern, with services nowadays accounting for 60–70 per cent of total employment and roughly 60 per cent of total output.[6]

Some care should be taken though in interpreting the figures on the output share of services. As these are based on data in current prices, part of the rising trend over time may be due to faster rising services prices *vis-à-vis* manufacturing prices. As it is well known that the productivity growth of many services sectors falls short of the productivity growth of manufacturing industries, see for instance Baumol *et al.* (1989), it follows that services prices tend to rise faster than manufacturing prices. The main consequence is that

Table 5.1 Share of services in output and employment (in percentages for selected OECD countries)

Country	*Output share*			*Employment share*		
	1975	*1985*	*1994*	*1975*	*1985*	*1995*[a]
Belgium	49.8	58.9	64.5	56.5	66.7	69.7[b]
Canada	50.0	53.8	60.2[b]	64.6	69.6	72.9
Denmark	55.0	57.9	60.4	58.7	65.2	69.0[c]
France	48.2	56.1	63.3	51.1	60.4	68.9
Germany[d]	43.4	49.3	57.6	47.8	54.4	59.2
Italy	44.5	53.9	59.6	44.1	55.2	60.3
Japan	49.2	53.0	57.1	51.5	56.4	60.7
Netherlands	49.2	54.7	64.1	59.4	63.8	73.3[e]
United Kingdom	49.0	52.2	63.4	56.8	65.9	69.8[e]
United States	56.9	61.7	67.6[c]	65.3	68.8	73.1

Sources: Employment shares are obtained from OECD (1994, 1996a) and ILO (1995). Output shares stem from United Nations (1986) and OECD (1996c). For each country, the services share is calculated as the sum of the major divisions 6,7, 8, and 9 of the ISIC, divided by the industry total (major divisions 1–9). Services thus comprise the sectors 'wholesale and retail trade', 'restaurants and hotels', 'transport storage and communication', 'finance, insurance and real estate and business services', 'community, social and personal services', and 'activities not adequately defined'.

Notes
a The percentages for 1995 are not completely comparable with those of earlier years, due to a number of minor and less minor revisions undertaken in some of the countries. However, upon juxtaposing the unrevised data and revised data for the year 1992, it appears that for all countries concerned the revisions lead to changes in the total share of services employment of less than 1 percentage point. b 1992 share. c 1993 share. d Data refer to West Germany. The output share for 1994 relates to 1993. e 1994 share.

when expressed in constant prices, there is no clear trend in services and manufacturing shares visible (IMF 1997). However, this varies among countries. For the Netherlands, for example, it can be shown that also in constant prices the share of services has risen over the past two decades, although less pronounced than in current prices (de Vaal 1997). Moreover, whatever the particular reason behind the growth of the services sector's output share, the basic message of the table remains valid. At the end of the twentieth century services account for the bulk of value added activities in the industrialised world.

To gauge the importance of services in international economic relations, Table 5.2 provides data on the share of services in current account transactions for the same OECD countries as listed before. The overall picture is that for most countries services account for only a modest 15–20 per cent of the total of current account transactions. The 'move' into services economies

Table 5.2 Share of services in the current account (in percentages for selected OECD countries)

Country	*1975*	*1980*	*1985*	*1990*	*1995*
Belgium	16.4	16.3	13.9	13.3	12.2
Canada	12.0	10.9	10.5	12.8	11.2
Denmark	21.5	21.9	19.6	20.5	16.1
France	19.4	18.2	19.2	19.1	17.3
Germany	19.1	17.9	16.1	14.1	14.9
Italy	18.2	17.3	15.3	19.0	19.4
Japan	18.1	16.1	14.1	15.3	14.8
Netherlands	19.4	17.9	16.8	16.3	19.1
United Kingdom	22.5	19.1	13.2	13.1	14.1
United States	15.4	12.5	15.0	17.6	16.6

Sources: The figures are based on various issues of the Balance of Payments Yearbook, published by the IMF. For each country, the share of services is calculated as the sum of the credit and debit items of the categories 'shipment', 'other transportation', 'travel', 'other official services', and 'other private services', divided by the sum of all debit and credit entries in the current account. The figures for 1990 and 1995 are based on data that were collected in accordance with the 1993 Balance of Payments Manual of the International Monetary Fund and are therefore not directly comparable with earlier years. It is noteworthy, though, that for most countries the revision had an effect on the services shares reported of less than 1 percentage point (for the 1990 figures). The strongest effect of the revision was for Italy, for which the reported 1990 figure is 1.1 percentage points lower than the unrevised 1990 figure.

apparently did not translate into a concomitant increase in the trade share of services. For most countries the share of services trade oscillates around the same percentage for more than two decades, indicating no clear upward or downward trend. Moreover, whenever a trend is discernible it shows a decline in the services share—see for instance Japan, the United Kingdom, Germany and Belgium. Nevertheless it is noteworthy that the extent to which countries trade in services may differ considerably. For instance, whereas in 1995 the Dutch involvement in services trade approached 20 per cent, the share of services trade in Belgium lies roughly 6 percentage points lower.

There is reason to believe, however, that current account data do not accurately measure the importance of services transactions in international economic relations. To begin with, there are several reasons to doubt the reliability of data on international services flows. These range from the non-reporting of specific services items like shipment receipts—even by some major exporters—to a misclassification of services transactions altogether (for instance, as factor income),[7] see World Bank and UNCTAD (1994) and, more extensively, Hoekman and Stern (1991). The two factors that seem to be most important in constituting a downward bias in services-trade data are, however, the common practice of recording certain services transactions as net flows (e.g. insurance transactions) and the fact that many services transactions are not captured in the balance of payments, either because they are established in the context of intra-firm trade, or because they are included in goods transactions.

In addition, we call attention to a conceptual point that can be made regarding the underrepresentation of services trade *vis-à-vis* goods trade. As we have discussed in the previous section, the nature of services provision implies that services trade often requires the cross-border movement of either the consumer or the producer of the service. The current account thus misses all international transactions that take place via the FDI positions of multinational enterprises.[8] To complete the picture on the importance of services in international trade relations, we therefore report in Table 5.3 on the share of services in direct investment positions.[9] The table shows that, despite marked differences between individual countries, services typically account for 40–60 per cent of the total FDI stock. Moreover, since 1985 some countries have shown a remarkable increase in the services share of their FDI stock. See in particular Italy, Japan and Germany, but also the Netherlands and the United States.

Services FDI and the Dutch economy

Leaving the broad international comparison of the importance of services, we now turn to a detailed investigation of the importance and performance of the Dutch services sectors. In particular, we want to describe the development of the Dutch services sectors over time, their relation to the rest of

Table 5.3 Share of services in total foreign direct investment (as percentages of total position at year-end for selected OECD countries)

Country	*Inward direct investment*			*Direct investment abroad*		
	1985	*1990*	*1994*	*1985*	*1990*	*1994*
Canada	30.46	33.38	33.31	40.97	49.17	47.31
France	n.a.	56.00	60.83	n.a.	50.75	55.99
Germany	49.31	46.19	75.16	30.55	40.46	65.82
Italy	37.62	58.30	59.08	53.35	58.22	64.08
Japan	26.93	36.14	44.83	57.18	67.23	65.52
Netherlands	44.55	45.26	50.21	33.56	43.13	48.40
Sweden	n.a.	52.11	43.43	n.a.	75.44	33.71
United Kingdom	n.a.	41.08	41.36	n.a.	41.89	41.21
United States	49.63	47.93	53.79	31.47	46.90	53.21

Source: OECD (1996b), which gives for each country a sectoral decomposition of the total stock of FDI. The services reported correspond to what the OECD refers to as the 'tertiary sector', which comprises the categories 'construction', 'wholesale and retail trade', 'transport and storage', 'finance, insurance and business services', 'communication', and 'other services'. Data for Belgium, Denmark and Spain were not available at a decomposed level.

the economy and the importance and preferred mode of services transaction in international relations. The aim is to detect possible services key sectors in the Dutch economy. Such an analysis might help us to shed more light on the issue of whether the increasing use of services as intermediate inputs influences the trade performance of the more traditional commodities. Moreover, it also enables us to see if there exists a link between being a key sector in the economy and having a comparative advantage.

To inquire into the relation between inter-industry linkages and trade performance we make use of a newly developed set of inter-country input output (I/O) tables.[10] By using these tables one can, in general, single out possible key sectors, which are those having the highest multiplier and the most extensive interdependence with the rest of the economy. The advantage of using inter-country I/O tables is that it not only allows us to find key sectors concerning a country's domestic production structure, but it also enables us to find sectors key to the international relations of a country.

The countries included are: Germany, France, Italy, the Netherlands, Belgium, and Denmark;[11] as well as the aggregates 'Other European Countries' and 'Rest of the World'. All transactions are evaluated in European Currency Units (ECU) and expressed in constant prices. For each country, inter-country I/O tables comprise exports and imports per sector and country of origin as well as per sector and country of destination. In more technical terms, the diagonal matrices of the inter-industry I/O table represent domestic sectoral transactions of the intermediate and final output. The off diagonal matrices represent sectoral import and export transactions of intermediate and final output between countries. The inter-country I/O tables are available in a 25 sector classification for each country and are available for the years 1970, 1975, 1980, and 1985. Nine of the 25 sectors represent services sectors (see Appendix 5.2 for a listing of the sectors included). Given the inter-country set-up of the tables, we therefore not only have information on how much services of, for instance, the Dutch credit and insurance sector are used in the chemical industry of the Netherlands, but also how much of this sector's output is used in the chemical industries of the five other specified EC countries.

For the purpose of this chapter it is paramount to have a consistent data set for services expressed in constant prices, which the aforementioned I/O tables provide. However, the advantage of having such a consistent data set comes at a cost. These tables are constructed by disaggregating intra-European Community trade flows and Eurostat's national I/O tables for the European Community and several problems arise in constructing these inter-country I/O tables. The interested reader is referred to the elaborate discussion in van der Linden and Oosterhaven (1995) for the estimation of the inter-country trade flows, and to Dietzenbacher and Hoen (1997) for the method of converting the tables in constant prices. Here we give just a brief overview of the main problems involved.[12] Despite these problems, we strongly believe that the tables we have used are the best we can get and that the qualitative results of our analysis are quite reliable. Nevertheless, our results should be read cautiously.

The first problem relates to intra-EC trade flows. Unfortunately at that level of detail, trade flows by sector and country of origin as well as sector and country of destination are not available. Eurostat trade statistics include EC imports by country of 'consignment', imports from third countries by country of 'origin' and exports by country of 'destination'. In order to receive a sectoral distribution of the trade flows, constant import coefficients over sectors of destination are assumed. Moreover, these trade statistics do not specify trade in services. In order to characterise the flow of services the whole of services imports is divided across the sectors of destination in the same proportion that the goods-imports have been found to find their way to the different sectors. The procedure, however, leads to inconsistencies in total intra-EC trade per sector and country. In general, sectoral exports of a country should be equal to the total imports of the output of all importing countries. As it turns out, the estimates do not match.[13] Van der Linden and Oosterhaven (1995) re-estimate intra-EC import flows by making use of the so-called RAS method, developed by Stone (1961).[14] This procedure leads to consistent export and import flows, as intra-EC trade flows are approximately repriced in producer prices.

The second problem relates to the method evaluating transactions in constant prices. In general, inter-country I/O tables contain transactions in both current and constant prices rendering a comparison of tables over time impossible. However, the data set at hand is evaluated in constant prices. As Dietzenbacher and Hoen (1997) show, deflating the inter-country I/O tables by using a variation of the RAS method is superior in comparison to the general practice using double deflation.

The data set described above offers unique possibilities to analyse long-run inter-sectoral and inter-country interdependencies. We start our analysis by describing the broad pattern of structural changes over time. In the previous section we have seen that in terms of output and employment the Netherlands has witnessed a structural change towards a 'services' economy. Another way to look at this structural change is to calculate the so-called dependency ratio of the primary and secondary sectors on services. This ratio measures the degree of importance of an input in relation to the total inputs required to produce a given output, see UNIDO (1992). We calculate this dependency ratio by using (1) domestic services only and (2) the total amount of services. The difference between the two ratios is then attributable to imported services. As it turns out in the calculations, the amount of imported services is quite small so that the difference between the two ratios is negligible. As a result, we report in Table 5.4 only the average annual growth rate of the domestic dependency ratio on total and domestic services between 1970 and 1985 for the Netherlands. Except for agricultural, forestry and fishery products the services sectors have, as an aggregate, expanded as an input to the other sectors. The general increase in intermediate demand

Table 5.4 Dependency ratio on domestic services, the Netherlands

Industry	*1970*	*1975*	*1980*	*1985*	Average growth *1970–85*
Agriculture, forestry, fishery products	0.14	0.16	0.14	0.13	–0.40
Fuel, power products	0.05	0.04	0.09	0.10	5.62
Ferrous, non-ferrous ores, metals	0.13	0.10	0.13	0.21	3.06
Non-metallic mineral products	0.21	0.23	0.26	0.30	2.31
Chemical products	0.11	0.11	0.16	0.17	3.10
Metal products except machinery, transport equipment	0.10	0.12	0.14	0.23	5.73
Agricultural, industrial machinery	0.10	0.13	0.18	0.31	8.29
Office, data processing machines	0.15	0.16	0.25	0.44	7.21
Electrical goods	0.09	0.13	0.15	0.35	9.47
Transport equipment	0.07	0.09	0.12	0.25	8.98
Foods, beverages, tobacco	0.10	0.11	0.10	0.13	1.69
Textiles, clothing, leather, footwear	0.13	0.14	0.17	0.18	2.25
Paper, printing products	0.22	0.23	0.19	0.27	1.44
Rubber, plastic products	0.12	0.17	0.20	0.20	3.42
Other manufacturing products	0.19	0.20	0.22	0.36	4.35
Building, construction	0.14	0.15	0.13	0.21	2.83

Source: Own calculations.

for services is particularly strong for electrical goods, transport equipment, agricultural and industrial machinery, and office and data processing machines. All these sectors have annual average growth rates of more than 7 per cent in their service dependency. The overall picture for the other countries (not shown) is that also there the dependency on services expanded. One exception is Belgium where no clear trend emerged.

The domestic dependency ratio of the non-services sectors on services sheds some light on the degree of the importance of services as an aggregate. However, to single out possible key services we have to turn to a more disaggregated analysis. Key sectors are those having the highest multiplier and the most extensive intersectoral linkages with the rest of the economy. A normalised formulation of intersectoral linkages is given by the backward linkage and forward linkage indices, respectively. The backward linkage measures the degree of interaction of a sector to those sectors from which it purchases inputs. Hence, the backward linkage index for a sector compares the average multiplier of sector j with the overall average. In contrast, the forward linkage measures the degree of interaction due to an increase in the supply of a particular sector to those sectors to which it sells its output. Hence, forward linkage indices measure the extent of output change of sectors in response to a larger input supply of a given sector. An index in excess of one suggests that the sector in question yields linkages above the

Table 5.5 Sectoral backward and forward linkages for the Netherlands (sector ranking in parentheses)

Sector	Backward linkages				Forward linkages			
	1970	*1975*	*1980*	*1985*	*1970*	*1975*	*1980*	*1985*
Non-service sectors								
Agriculture, forestry, fishery products	1.22 (3)	1.21 (5)	1.26 (3)	1.23 (3)	1.24 (5)	1.21 (5)	1.27 (5)	1.28 (3)
Fuel and power products	0.81 (24)	1.12 (7)	0.78 (25)	0.83 (22)	1.04 (12)	1.12 (7)	0.93 (14)	1.03 (8)
Ferrous and non-ferrous ores, metals	0.86 (21)	0.90 (13)	0.89 (18)	0.87 (20)	1.06 (9)	0.90 (13)	0.90 (15)	0.93 (15)
Non-metallic mineral products	1.01 (7)	1.36 (2)	1.04 (6)	0.98 (8)	1.41 (2)	1.36 (2)	1.32 (3)	1.28 (4)
Chemical products	1.00 (9)	0.87 (14)	1.04 (7)	0.97 (9)	0.91 (13)	0.87 (14)	0.87 (16)	0.82 (18)
Metal products excepts machinery, transport equipm.	0.95 (13)	1.15 (6)	0.96 (10)	0.95 (10)	1.13 (7)	1.15 (6)	1.16 (6)	1.12 (6)
Agricultural and industrial machinery	0.96 (12)	0.85 (17)	0.92 (14)	0.95 (11)	0.88 (14)	0.85 (17)	0.86 (18)	0.82 (20)
Office and data processing machines	0.75 (25)	0.65 (25)	1.01 (9)	0.93 (13)	0.65 (25)	0.65 (25)	0.75 (23)	0.77 (22)
Electrical goods	0.84 (23)	0.76 (20)	0.84 (21)	0.84 (21)	0.79 (18)	0.76 (20)	0.78 (21)	0.84 (17)
Transport equipment	0.97 (10)	0.75 (22)	0.93 (13)	1.02 (7)	0.77 (22)	0.75 (22)	0.79 (19)	0.77 (21)
Food, beverages, tobacco	1.22 (2)	0.85 (16)	1.30 (2)	1.27 (2)	0.86 (15)	0.85 (16)	0.95 (12)	0.95 (14)
Textiles and clothing, leather, footwear	0.90 (16)	0.76 (21)	0.91 (15)	0.92 (15)	0.77 (21)	0.76 (21)	0.78 (20)	0.76 (23)
Paper and printing products	1.06 (5)	1.32 (3)	1.09 (5)	1.02 (6)	1.29 (4)	1.32 (3)	1.32 (2)	1.27 (5)
Rubber and plastic products	0.90 (17)	1.08 (9)	0.94 (12)	0.93 (14)	1.04 (11)	1.08 (9)	1.06 (8)	1.01 (11)
Other manufacturing products	0.94 (14)	0.97 (11)	0.95 (11)	0.91 (17)	1.05 (10)	0.97 (11)	0.99 (11)	0.99 (12)
Building and constructing	1.03 (6)	0.87 (15)	1.12 (4)	1.13 (4)	0.78 (20)	0.87 (15)	0.96 (11)	0.96 (13)

Table 5.5 continued

Services sectors																
Recovery, repair services, wholesale and retail trade	1.00	(8)	0.84	(18)	0.90	(17)	0.91	(16)	0.83	(17)	0.84	(18)	0.86	(17)	0.82	(19)
Lodging and catering services	1.19	(4)	0.80	(19)	1.02	(8)	1.11	(5)	0.79	(19)	0.80	(19)	0.76	(22)	0.86	(16)
Inland transport services	0.96	(11)	1.10	(8)	0.87	(19)	0.94	(12)	1.22	(6)	1.10	(8)	1.11	(7)	1.04	(7)
Maritime and air transport services	0.91	(15)	0.73	(23)	0.84	(22)	0.79	(24)	0.70	(23)	0.73	(23)	0.74	(24)	0.67	(25)
Auxiliary transport services	0.88	(18)	1.02	(10)	0.90	(16)	0.91	(18)	1.10	(8)	1.02	(10)	0.97	(10)	1.02	(9)
Communication services	0.85	(22)	1.32	(4)	0.80	(24)	0.75	(25)	1.32	(3)	1.32	(4)	1.30	(4)	1.29	(2)
Credit and insurance	2.04	(1)	2.10	(1)	2.00	(1)	2.15	(1)	1.84	(1)	2.10	(1)	1.89	(1)	1.97	(1)
Other market services	0.88	(19)	0.92	(12)	0.82	(23)	0.83	(23)	0.85	(16)	0.92	(12)	0.94	(13)	1.02	(10)
Non-market services	0.87	(20)	0.70	(24)	0.87	(20)	0.87	(19)	0.69	(24)	0.70	(24)	0.72	(25)	0.73	(24)

Source: Own calculations.

national average. The main difference between the two indices is that while backward linkages give the intersectoral reaction induced by input demand, forward linkages give those induced by output supply.

In identifying key sectors, it is often argued that backward linkages are superior in comparison to their forward counterparts, see e.g. UNIDO (1992). This is because additional supply of a sector is induced by additional input demand from other sectors, which might have a larger effect on increasing overall output and employment than supply induced by forward linkage. Table 5.5 reports backward and forward linkage indices in combination with their corresponding ranking for the Netherlands for the years of observation. With one major exception, the results suggest that most services have weak backward linkages. The forward linkages indices of services are somewhat better.[15] The most remarkable exception is the credit and insurance sector, revealing the highest backward and forward linkage index for the whole economy. Comparing the performance of the credit and insurance sector across countries shows that it is ranked among the highest. Individual sectoral indices tend to vary substantially among sectors and for some sectors over time as well; that is, they show no consistent pattern of intersectoral linkages. In the light of the higher dependency ratio this is quite surprising. However, the restricted intersectoral interdependence of services can be understood as a large number of those sectors were heavily regulated and strongly government dominated during and beyond the years of our sample.

To measure the development of services in trade relations is more intricate. One possible way to gauge the trade performance of services is by calculating 'revealed comparative advantage' indices as a proxy for determining the pattern of comparative advantage for the Netherlands. However, this index can only be considered as an imperfect measure of comparative advantage as a large part of services trade requires a local establishment. Although this index is only loosely related to the theoretical concept of comparative advantage, it is nevertheless helpful to develop some measurement for the export orientation of those sectors. To this end, we define the Balassa index for 'revealed comparative advantage' (RCA) index as the ratio of the sector's export to the country's total export in relation to the same ratio for the sum of all countries in the sample (see Appendix 5.1 for the mathematical formula). In value this index may range from zero to a very large number. A value greater than one suggests that the country has a comparative advantage in the particular sector. Table 5.6 reports RCA indices for the Netherlands for various years. Except for other market services, the Netherlands have a comparative advantage in all service industries—a result which is persistent for the four time observations we have. Looking at the other sectors of the Dutch economy, a mixed picture emerges. Only for a few non-service industries does the RCA index show a sign greater than one. As a result, we can conclude that the Netherlands has become specialised in services over time. This trend is less articulated for the remaining countries in the sample.

Table 5.6 RCA index for the Netherlands

Sector	*1970*	*1975*	*1980*	*1985*
Non-service sectors				
Agriculture, forestry, fishery products	1.014	1.175	1.295	1.413
Fuel and power products	2.045	2.536	3.271	3.119
Ferrous and non-ferrous ores, metals	0.397	0.504	0.453	0.479
Non-metallic mineral products	0.405	0.478	0.511	0.451
Chemical products	1.279	1.262	1.155	1.158
Metal products except machinery, transport equipm.	0.655	0.637	0.563	0.597
Agricultural and industrial machinery	0.415	0.485	0.320	0.270
Office and data processing machines	0.448	0.546	0.312	0.220
Electrical goods	0.882	0.909	0.844	0.692
Transport equipment	0.316	0.304	0.228	0.181
Food, beverages, tobacco	1.691	1.281	1.345	1.470
Textiles and clothing, leather, footwear	0.558	0.428	0.414	0.313
Paper and printing products	0.997	0.909	1.021	0.759
Rubber and plastic products	0.800	0.575	0.483	0.525
Other manufacturing products	0.517	0.726	0.504	0.406
Building and constructing	2.110	2.813	2.851	2.156
Services sectors				
Recovery, repair services, wholesale and retail trade	1.527	1.244	1.347	1.637
Lodging and catering services	n.a.	n.a.	n.a.	n.a.
Inland transport services	1.179	0.896	1.499	1.584
Maritime and air transport services	1.289	1.371	0.734	1.529
Auxiliary transport services	0.923	1.325	0.686	1.334
Communication services	0.776	2.099	0.185	1.886
Credit and insurance	1.659	1.711	1.619	1.627
Other market services	0.089	0.562	0.402	0.740
Non-market services	2.880	1.296	1.032	2.370

Source: Own calculations.

Moreover, it can be shown that countries specialise in different services sectors, which is in accordance with previous results obtained by, for instance, Hoekman (1992). For example, Germany has a comparative advantage in one service sector only: lodging and catering. On the other side it has a consistent pattern of comparative advantage in various manufacturing sectors (not shown).

Does there exist a relation between the RCA indices and the extent of the backward and forward linkages as well as of the dependency ratio? We examine possible relations by conducting two regression analyses. The first regression evaluates whether a sector's RCA is influenced by the fact that it is a key sector in the economy. The regression considered is given by

$$RCA_j = a_0 + a_1 \ln(bl_j) + a_2 \ln(fl_j) + \varepsilon$$

where RCA_j denotes the revealed comparative advantage indices of country j. This index contains all sectors of the economy. The variables $\ln(bl_j)$ and $\ln(fl_j)$ respectively denote the logarithm of the backward linkage and forward linkage indices of country j. Theoretically, there exists no direct link between the revealed comparative advantage of a sector and the strength in its backward and forward linkages. Since backward linkages measure the effect of an increase in demand of that sector on the rest of the economy, however, one can conjecture that the more influential a sector is in its domestic environment, the more likely is this sector to be of importance in international trade relations. As a consequence, we expect the coefficient on $\ln(bl_j)$ to be positive. The relation between RCA and forward linkages is less clear, primarily because of the somewhat artificial nature of the definition of forward linkages. As discussed, the forward linkage measures the degree of response of output of other sectors due to the unit increase in supply of a particular sector. If this response is low then most of the additional supply is absorbed by the total final demand, of which exports are part. It then follows that the relation between RCA and forward linkages could potentially be negative for a country in which a relatively large number of sectors are experiencing a revealed comparative advantage.

The second regression examines the relation between the RCA indices of the primary and secondary sectors and the corresponding backward and forward linkages and the domestic dependency ratio for services. In particular, the regression considered is given by

$$RCAg_j = a_0 + a_1 \ln(blg_j) + a_2 \ln(flg_j) + a_3 \ln(dprs_j) + \varepsilon$$

where the index 'g' indicates that we only make use of the non-services sectors in the estimation. The variable $\ln(dprs_j)$ denotes the dependency ratio of the primary and secondary sectors on domestic services. This latter regression is loosely related to the theoretical literature on comparative advantage and services (see, in particular, van Marrewijk *et al.* 1997). As argued there, factor intensity and services intensity together determine the comparative advantage of the final good. In the regression analysis we take the dependency ratio of the primary and secondary sectors on services as a proxy for the services intensity. Although we cannot control for factor endowments and factor intensities, for example, it is interesting to see whether there exists a relation between the RCA index of goods and the dependency ratio of services and of what sign this relation is. Theoretically, the sign of ln(dprs) can go either way: positive in cases where the relatively capital abundant country can export the capital intensive good; and negative in cases where the relatively labour abundant country can export the capital intensive good, provided it is not sufficiently services intensive.

In performing our regressions we have to be careful in our choice of regression methods. The use of standard regression methods seems not to be appropriate as we can observe for each country and year several outliers. Ordinary least squares regression analysis would then force the regression line towards the outliers and could potentially distort the sign of the regression coefficients, see e.g. Davidson and MacKinnon (1993). In order to find the central tendency of our data set we decided to apply quantile regressions and a probit regression analysis. In addition, we have taken the logarithm of the independent variables. Quantile regression estimates the median of the dependent variable conditional on the independent variables, by finding a line through the data that minimises the sum of the absolute residuals. This is a more robust estimation method than ordinary least squares, which minimises the sum of the squared residuals. As an alternative way to eliminate the influence of outliers we have performed a probit analysis. In this method, rather than using the actual values taken on by the independent variable, i.e. the RCA indices, we created a new RCA variable which equals one if the value of the RCA index is greater than one and zero elsewhere. The estimation method (maximum likelihood) then tries to predict the probability that a sector has a revealed comparative advantage.

The results for the first regression are given in Table 5.7 reproducing the estimates of the quantile regression (7a) and the probit regression (7b) for selected countries and years. The choice of countries depicted in the table is mainly motivated by the amount of information they give. The level of significance is indicated by the number of asterisks reported: one for the five per cent level and two for the ten per cent level. The results reported from the probit regressions give the computed elasticities; they represent the marginal effects, dP/dlnx, divided by the predicted probabilities.

In general, the results for both estimation techniques are mixed but the coefficients generally have the expected signs. This suggests that the RCA index of a country is positively influenced by the backward linkage index and negatively by the forward linkage index. That is, the more important the sector in question is—in the sense defined above—the more likely it is that this sector has a revealed comparative advantage. In particular, we observe positive relations for the Netherlands and Italy.

The probit results for the second regression did not reveal any significant results, and we therefore only report the quantile regression results for this equation, again for selected countries and years (Table 5.8). As before, the results are mixed and the signs of the estimated coefficients are not consistent. However, inspecting the cases where a significant result is obtained we see that the RCA index of a primary and secondary sector depends negatively on its domestic dependency ratio of services. The more a primary or secondary sector of the economy uses domestic services as intermediates the more likely that sector's comparative advantage is negatively

Table 5.7a Quantile regression results for selected countries and years (t values in parentheses)

	Germany			*France*			*Italy*			*Netherlands*		
	1975	*1980*	*1985*	*1975*	*1980*	*1985*	*1975*	*1980*	*1985*	*1975*	*1980*	*1985*
Constant	1.156	1.098	0.991	0.934	1	0.896	0.876	0.937	1.12	0.988	0.811	0.87
	(4.771)*	(7.931)*	(5.081)*	(0.122)	(6.671)*	(9.196)*	[a]9.825)*	(5.028)*	(8.419)*	(6.061)*	(7.438)*	(3.203)*
Log(backward)	1.733	1.059	1.078	1.141	0.007	0.899	0.698	0.534	1.707	1.222	1.88	0.728
	(1.367)**	(1.598)**	(1.044)	(1.838)*	(0.012)	(2.022)*	(1.893)*	(0.630)	(3.031)*	(1.483)**	(3.829)*	(0.505)
Log(forward)	–1.341	–1.313	–0.996	–0.234	0.76	0.328	0.338	–0.508	–0.979	–0.308	–0.782	0.294
	(1.362)**	(2.182)*	(1.207)	(0.545)	(1.311)	(0.836)	(1.143)	(0.732)	(2.065)*	(0.388)	(1.465)**	(0.198)

Table 5.7b Probit regression results for selected countries and years (reported coefficients reflect elasticities, t values in parentheses)

	Germany				*Italy*				*Netherlands*			
	1970	*1975*	*1980*	*1985*	*1970*	*1975*	*1980*	*1985*	*1970*	*1975*	*1980*	*1985*
Log(backward)	2.242	2.828	1.178	1.444	2.661	2.247	0.802	3.181	3.814	1.425	3.456	0.988
	(1.539)**	(1.983)*	(1.089)	(1.026)	(1.81)*	(1.318)	(0.638)	(1.874)*	(1.983)*	(0.94)	(1.645)**	(0.73)
Log(forward)	–1.923	–1.346	–0.922	–1.676	–0.671	–0.714	–0.693	–1.562	–1.298	0.092	0.387	0.227
	(1.956)*	(1.454)**	(1.12)	(1.548)**	(0.74)	(0.62)	(0.811)	(1.539)**	(1.056)	(0.086)	(0.278)	(0.209)

Source: Own calculations.

Notes
* = 5% significance level; ** = 10% significance level.

Table 5.8 Quantile regression results for selected countries and years (t values in parentheses)

	Germany				*France*				*Netherlands*			
	1970	*1975*	*1980*	*1985*	*1970*	*1975*	*1980*	*1985*	*1970*	*1975*	*1980*	*1985*
Constant	1.087	1.05	1.625	2.013	0.887	–0.047	–0.247	0.79	–0.751	–0.806	0.181	–0.813
	(1.815)*	(0.917)	(1.909)**	(2.32)*	(1.346)	(0.140)	(1.227)	(2.852)*	(5.766)*	(2.869)*	(0.818)	(1.374)**
Log(backward)	0.538	0.991	1.037	1.639	1.075	2.07	1.81	0.55	0.441	0.0415	1.956	–0.778
	(0.827)	(0.600)	(1.354)**	(2.639)*	(0.828)	(3.041)*	(5.949)*	(0.652)	(1.184)	(0.037)	(4.226)*	(0.447)
Log(forward)	–0.659	0.116	–0.36	–0.421	1.126	–0.047	0.247	0.321	–0.478	0.105	0.298	0.155
	(2.233)*	(0.143)	(0.413)	(0.537)	(2.077)*	(0.159)	(1.266)	(1.006)	(2.224)*	(0.18)	(0.951)	(0.157)
Log(dprs)	–0.057	0.017	0.403	0.704	–1.175	–0.744	–0.986	–0.082	–0.969	–1.052	–0.32	–1.306
	(0.167)	(0.023)	(0.696)	(1.143)	(2.884)*	(3.128)*	(6.582)*	(0.358)	(15.263)*	(8.228)*	(2.175)*	(2.914)*

Source: Own calculations.

Notes

* = 5% significance level; ** = 10% significance level.

influenced. As before, the RCA indices of primary and secondary sectors depend positively on the strength of the backward linkage index and negatively on that of the forward linkage index.

There are several ways to explain the inverse relation between the RCA index of primary and secondary sectors and their dependency on services. One is related to the technique used to derive the services import flows for the original data set. As discussed before, such a procedure might lead to miscalculations in the dependency ratio on total services for the different goods sectors, simply because every goods sector is assumed to use foreign services in the same proportion as it uses foreign goods. The extent of this bias depends on the magnitude of services imports in relation to domestically produced services inputs. Because the amount of imported services is relatively small, we think it has no serious impact on our calculations.

A different way to interpret this result is the following one. We used the dependency ratio variable as a proxy for the process of 'outsourcing'. By this we mean the development in which manufacturing firms delegate intermediate-stage processing activities to specialised outside producers, in order to achieve cost advantages. These cost advantages can be achieved because outside producers are able to fully exploit scale economies by supplying producer services to several firms and are forced by market conditions to produce efficiently. It might be that our data set just captures the starting period of this process in which the outside producers were not yet able to exploit scale economies because of the limited size of the market.

Of course, these explanations can only tell part of the whole story since we do not have any information on factor endowments and factor intensities, which we know play a role in determining the comparative advantage of goods. A more rigorous attempt to estimate these relations is left for future research. In addition, we note that an analysis that primarily concentrates on tradable services is doomed to give a distorted picture of the importance of services trade. As we have argued and shown in previous sections, many services are not tradable in a goods-like sense and require either the free movement of labour and/or the right of establishment. International services transactions by the temporary movement of labour are recorded in the current account and are therefore included in our inter-country I/O table. Recall in this respect, though, our earlier remarks regarding the accuracy by which services transactions enter the current account. Moreover, FDI appeared to be a pretty important mode to contest in foreign markets. Unfortunately, our inter-regional input-output data set does not contain information on foreign ownership of domestically produced output, and it is therefore impossible to get a clear view on the actual influence of international services transactions on the domestic input—output structure. The only thing we can do then is to show that it is a reasonable conjecture that, in terms of FDI relations, Dutch services sectors are important to the five economies distinguished in our I/O tables.

To begin with, as the first chapter of this book revealed, the Netherlands holds a prominent position among the OECD countries in terms of the share it takes in the world's total FDI stock (both as a host and home country). Keeping this in mind, we report in Table 5.9 on the distribution of the stock of Dutch inward and outward FDI across sectors since 1975. The table shows that at the end of 1995 over 48 per cent of the Dutch direct investment position abroad was held in services. Similarly, around 55 per cent of the total of inward FDI is directed towards the services sectors. The latter increase goes mainly at the cost of the manufacturing sector and to a lesser extent at that of the building and construction sector.

Combining these insights with the notion that the share of services in Dutch FDI roughly corresponds to that of the other OECD countries (see Table 5.3), it seems fair to conclude that the Netherlands also holds a prominent position in the total of OECD services FDI.

The sectoral and regional distribution of services FDI is given in Table 5.10. It appears that a large share of Dutch services FDI is in the banking and insurance sector as well as in wholesale and retail trade. Banking and insurance accounts for 35 per cent or more of the total stock of outward investments in services. Of the total stock of services FDI in the Netherlands, wholesale and retail trade have the biggest share. With respect to the regional distribution of services FDI, Table 5.10 shows that the EU countries constitute the primary target of Dutch services investments, approaching a share of more than 55 per cent in 1995. Of those EU-countries, Germany and Belgium and Luxembourg are the countries the Netherlands invests most into. This certainly reflects the fact that the Netherlands also shares very strong linkages in goods trade with these countries. The EU countries also account for 60 per cent of total services FDI in the Netherlands.

When taken together, these insights not only strengthen our claim that the Netherlands has a revealed comparative advantage in services sectors, but they also make clear that Dutch services FDI is important to the five economies that were distinguished in our I/O tables.

The main results of this section can now be summarised as follows. This section has analysed available data on the performance of the Dutch services sector and conducted two regressions on the relation between the RCA index and the backward and forward linkage index as well as the dependency ratio on domestic services. We have shown that: (1) the primary and secondary sectors of the Netherlands, and the remaining countries included in the analysis, increasingly depend on domestic services; (2) services exhibit relatively low backward and forward linkage indices; (3) the Netherlands has a revealed comparative advantage in all services sectors, except for other market services, while only a few Dutch non-services sectors show a revealed comparative advantage; (4) the RCA index depends positively on the backward linkage index but negatively on the forward linkage index. Moreover, it depends negatively on the dependency ratio on domestic services; (5) Dutch FDI has shifted from the manufacturing sector in the 1970s and mid-1980s towards the services sectors in the early 1990s; in particular to

Table 5.9 FDI and the Netherlands, inward and outward position by sector (percentage)

	FDI by the Netherlands					*FDI in the Netherlands*				
	1975	*1980*	*1985*	*1990*	*1995*	*1975*	*1980*	*1985*	*1990*	*1995*
Agriculture and fisheries	0.26	0.49	0.13	0.11	0.06	0.13	0.74	0.45	0.20	0.04
Industry	85.10	80.50	66.00	56.40	50.60	72.50	59.80	53.30	54.20	44.80
Construction	1.56	1.33	0.47	0.32	0.70	0.88	0.76	0.84	0.85	0.72
Services	13.10	17.70	33.40	43.20	48.60	26.50	38.70	45.40	44.70	54.50

Source: Van Nieuwkerk and Sparling (1985) and the quarterly reports of De Nederlandsche Bank. Data for 1995 are provisional.

Table 5.10 Services FDI and the Netherlands, inward and outward positions by region and sector (percentage)

	Services FDI by the Netherlands					*Services FDI in the Netherlands*				
	1975	*1980*	*1985*	*1990*	*1995*	*1975*	*1980*	*1985*	*1990*	*1995*
Sectoral distribution										
Wholesale and retail trade	41.23	41.31	21.51	16.10	21.39	44.62	46.35	34.38	31.74	32.70
Transport, storage and communication	23.65	9.40	3.19	3.40	3.43	8.24	4.76	2.49	3.67	3.28
Banking and Insurance	18.86	20.90	34.69	34.32	34.68	23.38	17.94	18.56	19.98	14.39
Other services	16.26	28.38	40.61	46.18	40.50	23.86	30.94	44.57	44.61	49.63
Regional distribution										
EC	49.24	39.33	41.51	51.99	56.74	44.94	36.51	39.01	45.58	60.41
Germany	16.55	10.63	11.37	11.25	9.69	7.36	8.83	10.50	12.54	15.95
France	9.00	7.16	7.87	8.75	8.16	6.90	4.34	6.96	6.07	5.12
Italy	1.55	2.79	0.79	1.11	0.94	0.41	0.32	0.47	0.42	0.51
Belgium/Luxembourg	13.75	10.77	11.23	13.51	14.05	5.83	4.10	5.75	8.75	7.95
Denmark	0.41	0.18	0.25	0.28	1.24	0.01	0.09	0.45	0.88	1.10
United States	6.38	17.18	29.46	28.30	22.11	22.84	12.10	18.76	16.23	13.39
Other DCs	14.82	18.00	12.22	10.99	21.15	19.45	20.52	19.14	22.34	26.19
LDCs	29.56	25.49	16.81	8.72	n.a.	12.77	30.87	23.10	15.86	n.a.

Source: M. van Nieuwkerk and R.P. Sparling (1985) and the quarterly reports of De Nederlandsche Bank. The data for 1995 are provisional.

banking and insurance. The primary target of Dutch FDI in services is the European Union, and vice versa; (6) it is a reasonable conjecture that the Netherlands is also among the leading countries in services FDI, which may serve as further evidence for our claim that the Netherlands has a revealed comparative advantage in services sectors.

Future prospects of Dutch services

During the 1980s many industrialised countries witnessed a general shift towards 'lean' management, implying among other things a widespread outsourcing of formerly in-house performed intermediate activities. As reported in Table 5.3 (the dependency ratio table), however, this trend has mainly been restricted to national markets. In theory, the process of outsourcing should positively influence the comparative advantage of a country's final goods, whereas at the same time it should benefit consumers by leading to lower prices; see for instance van Marrewijk *et al.* (1997). However, as is also acknowledged there, it is mainly the extent of the market that determines whether outsourcing leads to these advantageous effects. Government regulations, general quantitative restrictions and prohibition, which have been in place during the 1980s, may all work in the opposite direction, as they primarily reduce the extent of the market. Possible evidence for this assertion, covering the years 1970, 1975, 1980, and 1985 is given in this chapter. We saw that the RCA index is negatively influenced by the dependency ratio on services of the primary and secondary sector.

National restrictions on reaping the efficiency gains from outsourcing are one side of the problem; the other side is determined by international hindrances that prevent services firms from entering (new) foreign markets. By the mid-1980s this led to the inclusion of services as a separate item on several trade liberalisation agendas—the Uruguay round of GATT negotiations (1986–95) and the European Union 'Single Market Programme'.

The main result of the Uruguay Round has been the creation of the General Agreement on Trade in Services (GATS), the separate charter under which all negotiations on services trade are to take place. The final agreement of GATS consists of several elements including a set of general concepts and rules affecting trade in services, specific commitments on national treatment and market access, be it subject to qualifications, and a set of attachments allowing for sectoral specificities.[16] The agreement applies to the four modes of supply that we discussed. Next to traditional GATT stipulations such as the most-favoured-nation rule and the national treatment provision, it is the newly created market access obligation that takes a central place in the GATS agreement. However, market access applies only to services listed in the schedule of each GATS member, and then also subject to the specific condition given (the so-called positive list approach), and may therefore be country- and sector-specific. When taken together, the agreement is full of exemptions, safeguard measures, positive and negative lists and can actually be considered as an agreement that confirms the *status quo,* leaving real liberalisation efforts for future multilateral trade talks. As it turned out, the most disputed sectors of the negotiations were financial services, basic telecommunications and maritime transport. For instance, in 1995 the EU fixed an interim financial-services agreement, which the US did not join. Likewise, talks on maritime services collapsed, and negotiations on information technology and telecommunication did succeed but are sectoral in nature. Most air transportation services have not been included in the negotiations.

The Single Market Programme can be considered as an attempt to revive the main liberalisation principles of the Treaty of Rome, of which for instance the national treatment principle proved insufficient to boost trade in services. Under the Single Market Programme the EC Council adopted qualified majority voting on issues related to the establishment and functioning of the internal market and initiated the notion of minimum standards, mutual recognition and ‘home country control’ for regulatory regimes. As a corner stone in the programme can be considered the liberalisation efforts on financial services, the so-called second Coordinating Banking Directive. The directive covers issues like prudential supervision of home countries and governs the establishment of banking houses. Thus, any credit institution that is authorised in one EC member country is also allowed to operate in any other EC country subject to local business practices (Hoekman 1992).

This two track strategy of liberalising services trade via the GATT/WTO framework and within the confines of the European unification can be interpreted in the following way. As the liberalisation efforts in the multilateral trade talks are more or less left for future negotiations, regional liberalisation efforts might give the countries of the region a first mover advantage for future multilateral negotiations. Our analysis showed that the six European countries included in our sample exhibit different patterns of specialisation in their services sectors, which might facilitate negotiations within the European Single Market Programme. More liberalised European markets provide the required extent of the market for services in order to exploit scale economies. This argument has been stressed in van Marrewijk *et al.* (1996, 1997), where it is shown that the country/region with the liberalised services market always gains in trade in goods and services if the foreign country/ region’s services market is still facing internal barriers.

This assertion is of particular interest if we consider the emergence of new markets in Eastern European countries due to the collapse of the former communist regimes. In a number of Association Agreements between the EU and the transition countries Czech and Slovak Republics, Hungary, Poland, Romania and Bulgaria (the so-called Central and Eastern European countries (CEECs)), relations on trade, commercial practice and law, and financial cooperation are defined. Agreements on air and inland transportation are pending. In principle, the Europe Agreements try to foster the establishment of firms in each other’s territories, granting national treatment, free mobility of capital, and the repatriation of earnings. Also this agreement contains elements of a 'safeguard' nature, including the possibility that CEECs may prohibit the establishment of EU firms if this causes severe economic damage to the recipient country. There are also temporary exemptions given for various sectors and activities. In the Czech Republic and Poland, for instance, these sectors consist of among others the defence sector and financial services. In addition, Western firms fall under a special treaty in the process of privatisation. It also remains unclear how the objective of improving tradable services can be achieved. As of now no new rights of services have been established and the provision of services requiring labour movements have to take place within existing migration and labour laws.

How should these developments and insights affect the policy stance taken by the Dutch government regarding the (further) deregulation of services sectors? From the empirical analysis in the previous section it appeared that although the overall picture is quite similar for the six European countries we considered, the Netherlands stands out in terms of the revealed comparative advantage it has in many of its services sectors. Moreover, it is reasonable to expect that FDI will play a more crucial role in international services transactions than it does in international goods transactions and that with most countries turning into 'services economies', services trade is bound to become more important in determining the overall gains from trade. When taken together this suggests that the Netherlands has a vested interest in the further liberalisation of international services transactions, irrespective of whether these take place in the form of separated services trade or by means of FDI. This stand is strengthened by our observation that even though in their essence the motives to engage in FDI are quite similar for manufacturing and services multinationals, it is especially government regulations that seem to play an important role in the extent to which FDI in services, and therefore international trade in services, can take place. As a consequence, and in light of the comparative advantage the Netherlands seems to have in several services sectors, harmonisation of government rules in the framework of European integration, the multinational negotiation on liberalising services trade that takes place in the WTO, and the further deregulation of services sectors should be regarded as opportunities for the Dutch economy, rather than as threats.

Notes

1 We thank Alex Hoen and the Section of Spatial Economics of the University of Groningen for kindly providing us with the data necessary to conduct the empirical part of our analysis. Moreover, we owe much gratitude to Marcia Schafgans for her extremely valuable comments concerning the applied part of this chapter. The usual disclaimer applies. The first author gratefully acknowledges financial support from the EC (Grant no. ERBFMBICT961104).

2 See in particular chapter 2 of Stibora and de Vaal (1995).

3 The categorisation of Sampson and Snape is also used by institutions like the

World Bank and UNCTAD. Moreover, it served as the basis for Article I of the Draft GATS. See Hoekman (1993, 1996).

4 See also Ascher and Whichard (1991) who, in assessing the problems with setting up a data system for international services transactions, treat the sales by foreign services affiliates on an equal basis to services trade in a goods like sense.

5 In some instances governments may simply require establishment, even if separated services trade is feasible. See Hoekman (1996).

6 Note that the table disregards the production of government services, and therefore underestimates the contribution of services in total GDP.

7 In fact, until 1993 services did not show up in their own right in international trade statistics, but were comprised in either of the categories mentioned in the note to Table 5.2. Only at the appearance of the fifth edition of the Balance of Payments Manual in 1993, were services named explicitly and catalogued under the following headings: transportation; travel; communication services; construction services; insurance services; financial services; computer and information services; royalties and licence fees; other business services; personnel, cultural and recreational services; and government services not included elsewhere.

8 Likewise, the current account misrepresents trade in goods, as it also excludes domestic production of foreign-owned goods producing firms. However, whereas goods producers have other options to sell their products abroad, services producers have not. It is therefore reasonable to claim that the extent to which the current account underestimates international services transactions is far more than it underestimates international goods transactions. Circumstantial evidence in this respect is given by a comparison of Table 5.2 and Table 5.3. Whereas services account for less than 20 per cent of all Current Account transactions, the share of services in FDI is 40–60 per cent for most countries.

9 Ideally, one would like to see the share of services in total subsidiaries sales, but such data are not available on a broad basis. See Hoekman (1996). We therefore use the share of services in the total FDI position of a country as a proxy for the relative importance of services in 'FDI trade'.

10 See Appendix 5.1 for more precise mathematical definitions of inter-country I/O tables and of the various intersectoral linkage measures used in this chapter.

11 Denmark joined the EC in 1972 and, therefore, data are only available from 1972 onwards. Data for the United Kingdom and Ireland were impossible to obtain.

12 Space limitation does not allow us to dwell on the limitations on the general analysis of input—output techniques. The interested reader is referred to UNIDO (1992).

13 The inconsistency can be explained mainly by differences in prices. In the exporting country, trade and transportation services are allocated according to these sectors, as exports are measured in producer prices (FOB). In contrast, the importing country allocates these services to the goods using the services even though they are transactions of the transport and trade sector.

14 The original RAS approach, developed by Stone (1961), is a procedure for updating the direct input coefficients table of a previous year, given a limited amount of information available. See e.g. Miller and Blair (1985) chapter 8, section 4.

15 In general, there exist no systematic relations between backward and forward linkages. Calculating, however, the Spearman coefficient of rank correlation

between backward and forward linkages for the Netherlands shows a weak positive correlation, ranging between 0.22 and 0.34.

16 For a critical discussion and assessment of the results of the Uruguay Round see, for example, Hoekman (1996).

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APPENDIX 5.1

Mathematical notes on inter-country input-output tables

This appendix draws upon the more elaborate discussion of input-output tables in Miller and Blair (1985), to which we refer the reader. Because inter-country I/O tables are not commonly used, we will give a short description, and then derive the indices discussed in the main text.

An inter-country I/O table is best discussed by giving an example. The following figure depicts the structure of an inter-country I/O table for three countries:

$$\begin{bmatrix} Z^{11} & Z^{12} & Z^{13} \\ Z^{21} & Z^{22} & Z^{23} \\ Z^{31} & Z^{32} & Z^{33} \\ IM^{1} & IM^{2} & IM^{3} \\ VA^{1} & VA^{2} & VA^{3} \\ X^{1} & X^{2} & X^{3} \end{bmatrix} \begin{bmatrix} FD^{11} & FD^{12} & FD^{13} & EX^{1} \\ FD^{21} & FD^{22} & FD^{23} & EX^{2} \\ FD^{31} & FD^{32} & FD^{33} & EX^{3} \end{bmatrix} \begin{bmatrix} X^{1} \\ X^{2} \\ X^{3} \end{bmatrix}$$

where: Z^{ij} = $[z_{ij}^{ks}]$ is a (nxn) matrix containing all intermediate transactions in output from sector i in country k to sector j in country s;

Fd^{il} = $[fd_{il}^{ks}]$ is a matrix containing sales to final demand by sector i in country k from final demand category l in country s;

Ex^{i} = $[ex_{i}^{k}]$ is a (nx1) vector containing the exports of sector i in country k to third countries;

X^{i} = $[x_{i}^{k}]$ is a (nx1) vector containing the total output of sector i in country k;

Im^{i} = $[im_{ij}^{ks}]$ is a (nxn) matrix containing imports of sector i in country k from sector j in country s; and

V^{i} = $[v_{il}^{k}]$ is the value added produced in sector i by category l and country k.

For the sake of notation let the matrix Z^{ij} be Z, FD^{il} be FD, X^{i} be X, and EX^{i} be EX. As usual, total gross outputs, X, are found as $X=Z^{i}+Fd^{i}+EX$. The direct input coefficients are found as $a_{ij}=z_{ij}/X_{j}$; the matrix of these coefficients, A, is $A=Z(\hat{X})^{-1}$, where $\hat{X}$ represents the diagonalised matrix of the X vector. Each element in the jth column of the Z matrix is divided by the total output for that sector, X_{j}. In our case, total output is equal to inter-industry sales and sales to final demand plus exports:

$$\begin{bmatrix} X^1 \\ X^2 \\ X^3 \end{bmatrix} = \begin{bmatrix} A^{11} & A^{12} & A^{13} \\ A^{21} & A^{22} & A^{23} \\ A^{31} & A^{32} & A^{33} \end{bmatrix} \begin{bmatrix} X^1 \\ X^2 \\ X^3 \end{bmatrix} + \begin{bmatrix} FD^{11} & FD^{12} & FD^{13} \\ FD^{21} & FD^{22} & FD^{23} \\ FD^{31} & FD^{32} & FD^{33} \end{bmatrix} \begin{bmatrix} i \\ i \\ i \end{bmatrix} + \begin{bmatrix} EX^1 \\ EX^2 \\ EX^3 \end{bmatrix}$$

Aggregating final demand and exports into one final demand vector F, we can express this in compact matrix notation as X=AX+F, from which $X=(I-A)^{-1}$ F=l F is easily derived, with l denoting the Leontief inverse.

An alternative view can be taken when considering the transaction matrix Z. Instead of dividing each column of Z by its corresponding sectoral total output, we now divide each row of Z by the total output of the sector associated with that row. The new input coefficients are found as $b_{ij}=z_{ij}/X_i$; the matrix of this coefficients, B, is $B=(X)^{-1}$ Z. Doing the same substitutions as we have done before, we calculate a new Leontief inverse, say g, $X=(1-B)^{-1}$ F=g F.

These two versions of the Leontief inverse, l and g, are the basis for the calculation of the backward and forward linkage indices.

Sectoral dependency ratio

The domestic dependency ratio of primary and secondary sectors on services is calculated by

$$d_{ij}^k = \frac{\sum_{i=17}^{25} a_{ij}^k}{\sum_{k=l}^{6}\sum_{i=l}^{25} a_{ij}^k}$$

where a_{ij} denotes the domestic input coefficient and $\Sigma_k \Sigma_i a_{ij}^k$ is the column sum of sector j of all countries. The summation over k runs from 1 to 6 (5) and the summation over i from 17 to 25, as the latter nine sectors of a country denote the services sectors. Note, in 1970 we have only five countries in our sample and later on six. This ratio measures the degree of importance of all services in relation to the total inputs required in the production of sector j.

Revealed Comparative Advantage

The RCA for sector j is given by $\{X_{ij}/\Sigma_i X_{ij}\}/\{\Sigma_j X_{ij}/\Sigma\Sigma_{ij} X_{ij}\}$, where X_{ij} denotes exports of sector i by country j, and $\Sigma_i X_{ij}$ total exports of goods and services by country j. Correspondingly, $\Sigma_j X_{ij}$ are the exports of sector i by the total sample, and $\Sigma\Sigma_{ij} X_{ij}$ total export of goods and services by the total sample.

Backward and forward linkage

A normalised measure of backward linkage can be derived from the Leontief inverse, l F. As explained, the backward linkage measures the effect of a unit output increase by sector j in relation to the overall average:

$$b_j = \frac{\sum_j l_{ij}}{\left(\sum_i \sum_j l_{ij}\right) / n}$$

where n is the number of sectors. The denominator captures the average effect on the economy if all final demand increases by one unit; the nominator captures the average effect to other sectors when the demand for output of sector j increases by one unit. If $b_j > 1$, a sector exhibits an above average backward linkage, and the opposite is true if $b_j < 1$.

In an analogous fashion, we can define the forward linkage. In this case we use the inverse Leontief matrix, g F. In this way, total output is related to primary inputs.

$$f_i = \frac{\sum_j g_{ij}}{\left(\sum_i \sum_j g_{ij}\right) / n}$$

Note, in calculating the backward and forward linkage we make use only of the domestic part of the inverse Leontief matrix, rather than the total Leontief inverse matrix.

APPENDIX 5.2

Sector classification

1 Agriculture, forestry and fishery products
2 Fuel and power products
3 Ferrous and non-ferrous ores and metals
4 Non-metallic mineral products
5 Chemical products
6 Metal products except machinery and transport equipment
7 Agricultural and industrial machines
8 Office and data processing machines
9 Electrical goods
10 Transport equipment
11 Food, beverages, tobacco

12 Textiles and clothing, leather, footwear
13 Paper and printing products
14 Rubber and plastic products
15 Other manufacturing products
16 Building and constructing
17 Recovery, repair services, wholesale and retail trade
18 Lodging and catering services
19 Inland transport services
20 Maritime and air transport services
21 Auxiliary transport services
22 Communication services
23 Credit and insurance
24 Other market services
25 Non-market services

Final demand categories

1 Final consumption of households on the economic territory
2 Collective consumption of general government
3 Collective consumption of private non-profit institutions serving households
4 Gross fixed capital formation
5 Change in stocks
6 Exports of goods and services to EC countries
7 Exports and services to third countries

6 Entry modes and location decisions

John Bell

Introduction

Foreign entry is an issue high on the agenda of many firms. At the same time, it is a complex phenomenon which requires a lot of attention. Especially, the decisions which country or region to enter and which mode to use are crucial. These decisions have a major bearing on the long-term performance of firms. Hence, it is vital that the where (i.e. location) and the how (i.e. mode) of foreign expansion need to be prepared conscientiously to improve the likelihood that the expansion will become successful.

In this chapter, a conceptual framework will be presented for analysing the choice between a joint venture (JV) and a wholly-owned subsidiary (WOS) as possible modes of foreign entry. A JV is defined as a cooperative relationship between at least two firms which contribute resources to a newly formed joint subsidiary in exchange for shares in the control over, and the equity of, the new entity. A WOS is defined as a fully controlled affiliate, set up from scratch. Hence, acquisitions do not fall within this definition. After presenting the conceptual framework, an overview will be given of the countries that were entered by Dutch firms. Based on the above-mentioned framework, it will be investigated whether differences exist between JVs and WOSs that may be caused by location choices.

Conceptual framework

The conceptual framework that will be presented here is an eclectic one. Using an eclectic framework is in line with real-world practice. The firm's business environment is affected by a great many different developments. The real world is so complex that it cannot be described adequately by one discipline alone. One-sided views are inappropriate for selecting the foreign entry mode, as this important strategic decision is influenced by many factors. Looking at this topic only with, for example, 'transaction cost eyes' may or will lead to neglecting other important (e.g. strategic) influences. Hence, a multidisciplinary or eclectic approach is required to obtain the most realistic descriptions.

The starting point for the framework of this study is the eclectic theory on the choice of foreign entry modes developed by Hill, Hwang, and Kim (1990). This eclectic framework is an adequate, well-accepted attempt to visualise the elements which may be relevant for selecting a mode of foreign entry. Dunning's well-known eclectic paradigm is not embraced here, since it focuses on explaining why the *whole* population of multinational enterprises (MNEs) has developed cross-border activities (Dunning 1988, 1993). In contrast, the present study is oriented at choices *individual* firms make.

Hill, Hwang, and Kim (1990) combined elements of the strategic behaviour approach, transaction cost economics, and internalisation theory. Each of these approaches is concerned with different issues. The strategic behaviour approach concentrates on the competitive position of the firm as a whole, including both benefits and costs in the analysis (see, e.g., Contractor and Lorange 1988; Harrigan 1985; Porter 1980). Transaction cost economics focuses on the transactional variables which determine the most efficient structure (in terms of costs) for governing individual transactions (see, e.g., Anderson and Gatignon 1986; Hennart 1988; Williamson 1985). Internalisation theory uses the firm as the level of analysis, and adds the relevance of locational variables (see, e.g., Buckley and Casson 1976; Rugman and Verbeke 1993).

Each of these approaches provides a partial explanation of the foreign entry mode selection, but they complement one another. Together they cover a broad range of topics which are important in foreign entry mode decisions. For instance, the characteristics of the host country, the transaction and the investing firm's strategy are explicitly taken into account. Firms which contemplate foreign expansion are confronted with the constraints these topics pose on foreign investment. That is why all three should be incorporated in a framework on foreign entry mode choices. Additional justification for this conjecture is the empirical support for the relevance of each of these theories concerning foreign entry mode choices. (For an overview, see Bell 1996).

Despite its attractiveness and the empirical support received, Hill, Hwang, and Kim's eclectic theory will not be taken for granted in its original shape in this chapter. The main reason is that it has one important shortcoming—it ignores the resource-based theory. This theory is focused on ownership-specific advantages like the utilisation and enlargement of the firm's stock of resources and capabilities (see, e.g. Collis 1991, Mahoney and Pandian 1992, Tallman 1991, Wernerfelt 1984). In fact, it is oriented at the internal organisation. Given its focus and level of analysis (i.e., the organisational unit), this approach is complementary to the other three approaches incorporated in the eclectic framework referred to in the above: strategic behaviour approach, internalisation theory, and transaction cost economics. Consequently, the resource-based theory provides valuable supplementary insights for issues regarding foreign entry mode choices. Furthermore, empirical research corroborates the relevance of the resource-based theory for the choice between a JV and a WOS (see for an overview Bell 1996).

Given the relevance of the resource-based theory, it will be incorporated in Hill, Hwang, and Kim's framework. This leads to a new unifying framework which consists of four theoretical approaches, each of which is oriented at a separate group of variables. This conceptual framework is presented in Figure 6.1. The group of strategic variables incorporates the firm's strategy, the intensity of the competition and the growth of the industry. Ownership-specific variables include the relative size of the investment and the firm's international experience, host country experience, and product experience. The transactional variables concern the specificity of the assets transferred and the firm's reputation. The last group (locational variables) consists of the cultural dissimilarity of the host country, the riskiness of the host country, the host government policy and the level of welfare in the host country.

The framework relates each approach to one group of variables. In this way, the main distinctive elements of each theory are made explicit. This, however, does not mean that the other three approaches have nothing to say about that particular group of variables. For example, the ownership-specific variable *host country experience* should not only be considered from a resource-based perspective, but can also be approached from a transaction cost point of view (see, e.g., Anderson and Gatignon 1986). The resource-based view would argue that if a firm gained experience in operating in a certain host

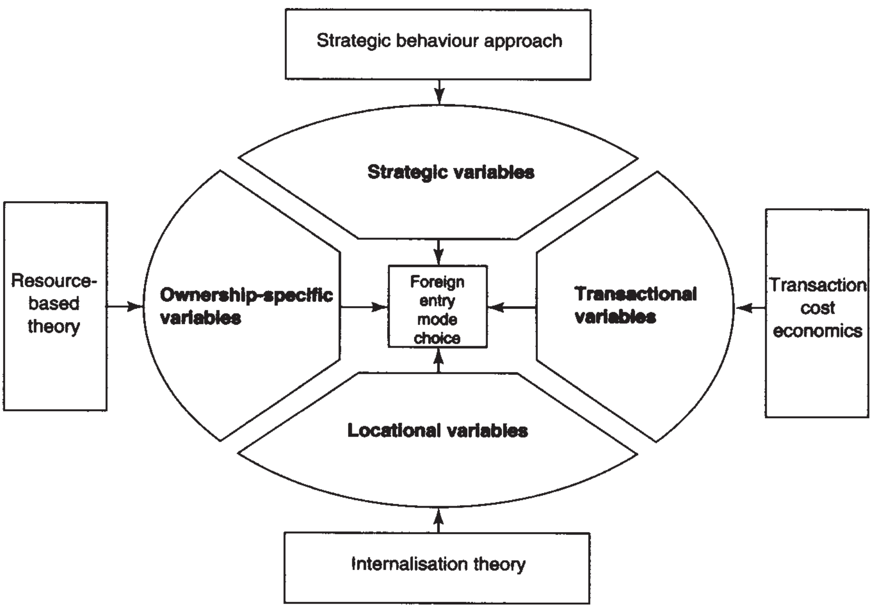

Figure 6.1 The conceptual framework of the foreign entry mode choice as proposed in this study

country, it does not need a local firm any more to get acquainted with the local peculiarities. Hence, a WOS would be an appropriate alternative. In transaction cost reasoning, host country experience would decrease the uncertainty inherent in executing transactions in a certain context, making a fully-controlled subsidiary unnecessary.

This framework is used to create a questionnaire to obtain information on the mode choices firms make when they contemplate foreign expansions. In the next section, the procedure followed to come to results will be described.

Methodology

In contrast to most previous empirical studies on foreign entry mode choices which used existing (i.e. secondary) data, in this study primary data are collected and combined with secondary data. The main reason for conducting a survey, despite all the inherent problems, was to gain insight in the opinions and perceptions of (top)managers. Decisions are, especially from an economic point of view, expected to be taken rationally, which means that all the pros and cons are considered and evaluated before a choice is made. This rational idea of decision making may be less relevant in practice, where many changes occur and the boundedness of human rationality becomes more and more a restricting factor. Therefore, it is expected that the perception of managers will be very important when these managers are contemplating far-reaching decisions such as expansion into a foreign country.

The survey was used to obtain data both at the level of the firm and at the level of the individual entry. Many questions required the respondent to score on a 7-point Likert-type scale. Most variables are measured psychometrically: the proxies are based on multiple items instead of on only one (Nunnally 1978). In this way, it is more likely that the variables are really covered by the questions (see, e.g., Agarwal and Ramaswami 1992, Kim and Hwang 1992). The survey data were—if possible—combined with archival data on, for example, host country risk, cultural distance, and the level of education of the host country's inhabitants. The reason is that the combination of these two types of data allows a better measurement of variables. For instance, the variable 'host country risk' is measured by: (1) political stability in the host country as perceived by the respondent; (2) the perceived economic situation of the host country; (3) the perceived risks of the host country other than political and economic risks (e.g. the risks of natural disasters); and (4) the country risk score in the year of entry as calculated annually by the business journal *Euromoney*. These four indicators together indicate how risky the host country was just before the entry. A second example is the variable 'international experience', which consists of three indicators: (1) the international experience of the firm as perceived by the respondent; (2) the number of foreign JVs and WOSs the firm had established according to the respondent; and (3) the year in which the firm had established its first foreign JV or WOS. A specific technique, confirmatory factor analysis, was used to test whether the indicators were good proxies for the variable they should measure (see Bell 1996).

Since there are no listings available which contain all Dutch firms with one or more foreign JVs or WOSs, we created a list of 458 Dutch firms, divisions and business units from different industries (e.g. banking, chemicals, services, electronics, food) which were expected to have foreign JVs and/or WOSs. We contacted these firms (by phone) to establish whether they indeed possessed foreign JVs or WOSs. If so, a person who had been closely involved in one or more *recent*[1] foreign entries (e.g. a member of the Executive Board, the CEO, a strategic planner, the head of the international division) of each firm was asked to participate in the survey. The questions had to be answered for that recently established foreign JV or WOS. In total, 303 questionnaires were distributed by mail of which 136 (45 per cent) were returned. This response rate is much higher than in earlier foreign entry-mode studies, in which response rates of 20–30 per cent were achieved (see Agarwal and Ramaswami 1992, Kim and Hwang 1992, Larimo 1993, Madhok 1994). The respondents were asked to fill in the questions for either a recent JV or a recent WOS or for both, which led to 168 usable observations (75 JVs and 93 WOSs). Non-response analysis did not reveal any significant differences (in terms of firm size, etc.) between responding firms and non-responding firms.

As the aim of this chapter is to give insight into the differences in the four groups of variables caused by the variation in location and mode, some statistical analyses were done. In order to trace these differences, T-tests (using SPSS) are executed on some distinctive characteristics of the location and the mode. For instance, a T-test is done to compare entry into developed countries with entry into developing countries. In this example, the T-test calculates whether the mean values of the independent variables in the group ‘entry in developed countries’ are significantly different from those in the group ‘entry in developing countries’. The T-test is designed to compare the differences between two groups, making it a specific version of the technique variance analysis with which multiple groups can be compared.

Results

In this section, an overview will be provided of the results of the survey. Specifically, the focus will be on the ‘where issue’ (locational choice) and the ‘how issue’ (mode choice). However, first more detailed information about the characteristics of the firms involved is given.

The average sales of the respondents’ firms is about 5.6 billion Dutch guilders, ranging from 15 million to 260 billion guilders. Firms that have established a JV are larger than firms that set up a WOS on average (6.5 billion vs 4.9 billion). The average age of the foreign subsidiary is 5.3 years, the average age of JVs is 4.5 years while that of WOSs is 6.0 years. It seems that WOSs live longer than JVs. However, this may be due to the fact that JVs are only more recently accepted as valuable means of entering foreign countries. This suggestion can be validated by the data, as the mean starting date of WOSs is October 1986, while JVs are set up on average in July 1988.

Most of the respondents (61.2 per cent) indicated that their firm a priori prefers to set up a WOS in all situations, as opposed to a small group of the respondents (19 per cent) who always favour JVs. The explanation for the preference of WOSs over JVs is by far the urge to control the subsidiary (49.1 per cent), so that the firm is able to influence the foreign operations. The most frequently mentioned argument for the preference of JVs is the use of existing know-how (10.7 per cent). In addition, many different arguments are given for the preference of one entry mode over another, e.g., risk reduction, familiarity with host country, fast market entry, keeping their own identity and so on. Most of the respondents (61.9 per cent) are satisfied with the performance of the foreign subsidiary, while only 7.1 per cent are dissatisfied. For the remaining entries no judgement could be given yet, mostly because of the fact that the foreign entries were still in the initial phase. When we distinguish between JVs and WOSs, it appears that 53.3 per cent of the respondents are satisfied with the established JV, 9–3 per cent dissatisfied and 36 per cent could not yet judge their satisfaction regarding the JV. The outcomes for WOSs are rather different, as 68.8 per cent of the respondents are satisfied with the WOS, only 5.4 per cent dissatisfied and 25.8 per cent indecisive yet. The reason most frequently mentioned with regard to satisfaction with the foreign entry modes is the achievement of good results (overall 53.3 per cent).

In Figure 6.2, an overview is presented of the location of the foreign expansions that were included in the survey.[2] As can be seen, most expansions were established in Western Europe. No less than approximately 52 per cent of all entries were headed in Western Europe. If we separate between JVs and WOSs, it must be concluded that compared with the JVs a relatively high percentage of the WOSs are located in Western Europe. In fact, 65 per cent of the WOSs are in this area which is closest to the Netherlands, whereas 37 per cent of the JVs are set up in Western Europe. These results are in line with what would be expected from dynamic approaches on internationalisation. The Uppsala stage model, for instance, argues that firms start close to their homebase when they want to internationalise (see, e.g. Barkema, Bell and Pennings 1996, Johanson and Vahlne 1977, 1990, Johanson and Wiedersheim-Paul 1975). Hence, it seems quite logical that Dutch companies decided to set up affiliates in the countries that are more or less in their neighbourhood.

A second main element of dynamic approaches on internationalisation is that firms are expected to enter a country first with a mode which does not require a high level of commitment. In this way, the risk inherent in getting involved in a new and uncertain environment is limited. Over time, firms will increase their involvement as they get more experienced and are better able to deal with uncertainty. Given that Dutch firms are, in general,

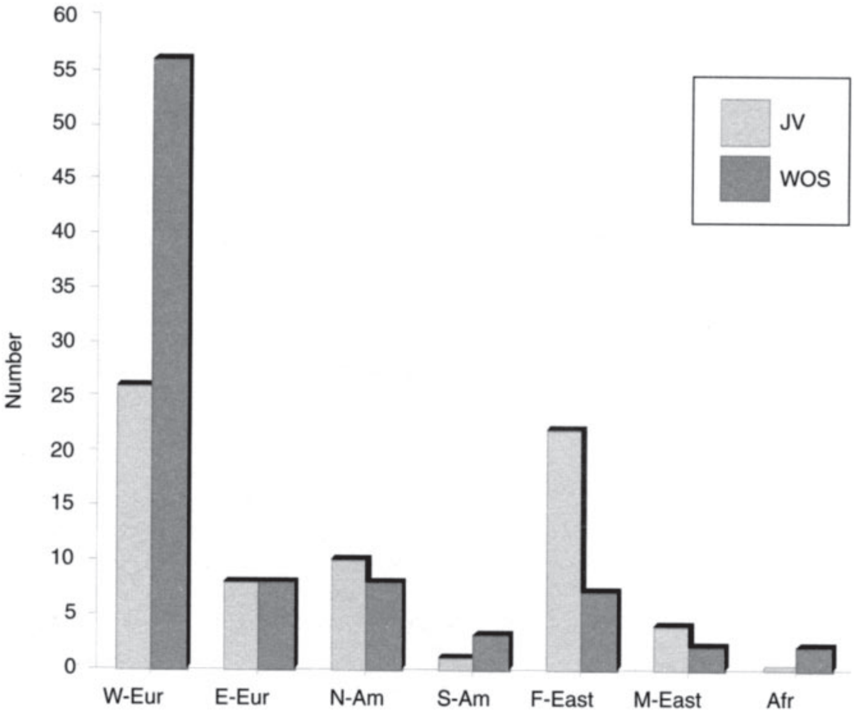

Figure 6.2 Overview of the locations (by region) entered by Dutch firms in the late 1980s and early 1990s
Source: Based on Bell 1996.

involved in international operations for several decades already, it can be explained why there are more WOSs in Western Europe than JVs.

If we take a further look at Figure 6.2, it can be observed that South America, the Middle East and Africa are not so actively entered as the more emerging markets in East Asia and Eastern Europe. East Asia is, next to Western Europe, the region where the Dutch firms that participated in this study recently established WOSs and mainly JVs. This region has a background which is totally different from the context in the Netherlands. JVs are appropriate vehicles to learn about new settings, since a local firm's knowledge and assistance can be utilised.

As mentioned earlier, the entries incorporated in Figure 6.2 were established in the late 1980s and early 1990s. For each firm that participated in the survey, one JV and/or one WOS were investigated. This implies that the overview presented in Figure 6.2 gives, by no means, a complete picture of all foreign entries made by Dutch firms in this time frame. It is more a cross-section of all JVs and WOSs set up by Dutch MNEs abroad.

In a previous study (see Bell and Jagersma 1996), data were collected on all international JVs established by Dutch MNEs that were reported in *'Het Financieele Dagblad'* (i.e., the Dutch equivalent of the *Financial Times)*

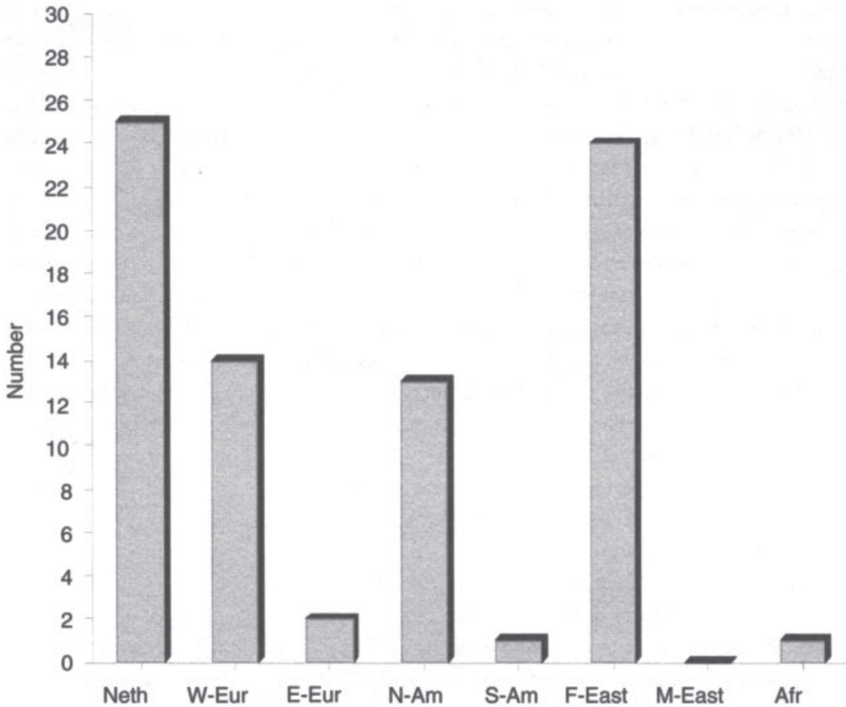

Figure 6.3 Overview of the locations (by region) entered by Dutch firms with a JV in the period 1985–9
Source: Based on Bell and Jagersma 1996.

between 1985 and 1989.[3] In total, 80 international JVs were found, of which 25 were located in the Netherlands (see Figure 6.3). These JVs are not taken into consideration in the comparison with the results of Figure 6.2.

If we compare Figure 6.3 with Figure 6.2, we see some remarkable differences.[4] In the period 1985–9, Dutch MNEs were especially involved in the Far East. No less than 44 per cent of all JVs established outside the Netherlands were in this region. In itself, this finding is rather logical, as the Far East is and was (at that time) an attractive region with many growth opportunities. Given the lack of knowledge of operating in Asia and the large cultural differences with their home country, it is very likely that Dutch MNEs use JVs to enter this region. However, if we compare this result with the number of JVs set up in the late 1980s and the early 1990s (see Figure 6.2), then a striking difference can be observed. In this latter period of time, 'only' 31 per cent of all JVs were located in the Far East, which is significantly less than in the period 1985–9. A possible explanation is the observation that, according to Figure 6.2, Eastern Europe has become a more attractive area to invest in since the opening up of these markets. In addition there may have been a relative increase in the number of WOSs that were established to enter the Asian markets. This would fit well in the dynamic approach on internationalisation (see Johanson and Vahlne 1977, 1990, Johanson and Wiedersheim-Paul 1975), since firms are expected to increase their level of commitment over time, and, therefore, select WOSs over JVs.

A second striking difference which comes out of the comparison of Figures 6.2 and 6.3 is a diminished interest in setting up JVs in North America and an increase in the number of JVs established in Western Europe. From 1985 to 1989, approximately 24 per cent of the JVs were situated in North America, as opposed to only 14 per cent in the late 1980s and early 1990s. This may also be interpreted in terms of the internationalisation approach where experiential learning decreases the need for a partnership. At the same time, there seems to be more preference nowadays for acquisitions (which are excluded in this study) in North America, according to publications in the newspapers. In Western Europe, a reverse tendency can be recognised: in the period 1985–9 about 25 per cent of the JVs were located in Western Europe and afterwards this percentage amounted to about 37 per cent. This pattern cannot be explained from the dynamic internationalisation perspective. An alternative explanation is the influence of the European unification process which may have renewed the interests of Dutch firms in cooperating with other European firms. In line with this, firms may have had the intention of being actively involved in many Western European countries simultaneously. Given limited resources, a JV can be seen as a good alternative to WOSs.

Of course, one should be careful in drawing conclusions, since the data collected in the survey show only a cross-section of all JVs established abroad by Dutch MNEs. Nevertheless, it is interesting to make some preliminary comparisons to attempt to untangle potential discrepancies.

To complete the overview of location choices, a diagram is created of the most frequently entered host countries (see Figures 6.4 and 6.5). Figure 6.4 contains the ten host countries that seem to be the most popular ones according to the survey. The respondents especially had entries in these countries in mind when they answered the questions for a JV and/or WOS. Figure 6.4 clearly shows that Western European countries and the USA are entered by many of the firms which participated in the survey. In general, the preferred entry mode in Western Europe (except for Spain) is, by far, a WOS. In the USA, both entry modes are in balance. It is difficult to draw conclusions from this observation, since only a part of all entries in this period are included here. China, Hong Kong and two of the emerging Eastern European countries (Hungary and Poland) are also within the group of most frequently entered countries. This is not so surprising given the increased interest of MNEs in investing and being active in promising, fast-growing markets. What is remarkable, however, is that in both Hungary and Poland the number of JVs is about the same as the number of WOSs. This suggests that Dutch firms perceive the problems and differences inherent in entering these countries as relatively low or at least as manageable. An

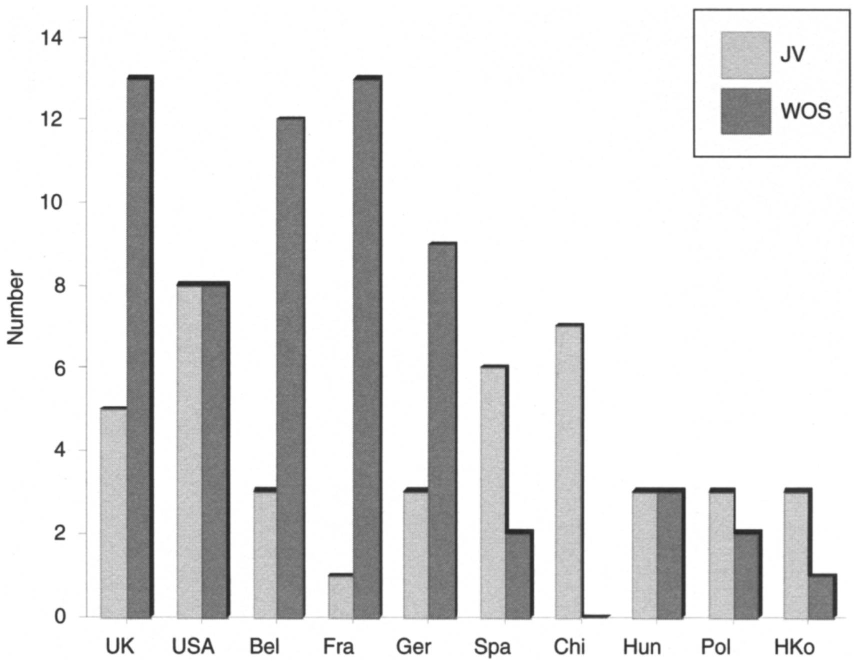

Figure 6.4 Overview of the ten most frequently entered countries by Dutch firms in the late 1980s and early 1990s
Source: Based on Bell 1996.

alternative explanation can be that the Dutch firms are not able to assess the (quality of the) contributions of potential local partners correctly. If we focus only on the countries where JVs are set up most frequently, then the sequence of host countries changes a bit. China would be the second country after the USA, and Spain the third one just before the UK. The other countries (except France) were all entered three times with a JV.

In Figure 6.5, the eight host countries most frequently entered with a JV in the period 1985–9 are depicted. This picture reveals some interesting differences if compared with Figure 6.4. Especially, the fact that four of the top eight host countries are East Asian (Japan, China, Korea, Taiwan). In that period, countries like Japan, South Korea and Taiwan were attractive countries to enter given their growth opportunities. China was, even at that time, already a country high on the list of interesting, promising countries, despite the difficulties firms still experience in making their investments profitable there. The relatively low number of JVs established in Western European countries as compared to Figure 6.4, may have to do with an increased interest in Western Europe because of Europe 1992. The process of deeper European unification started somewhere in the late 1980s and may have caused renewed interest for Dutch firms in some of their neighbouring countries.

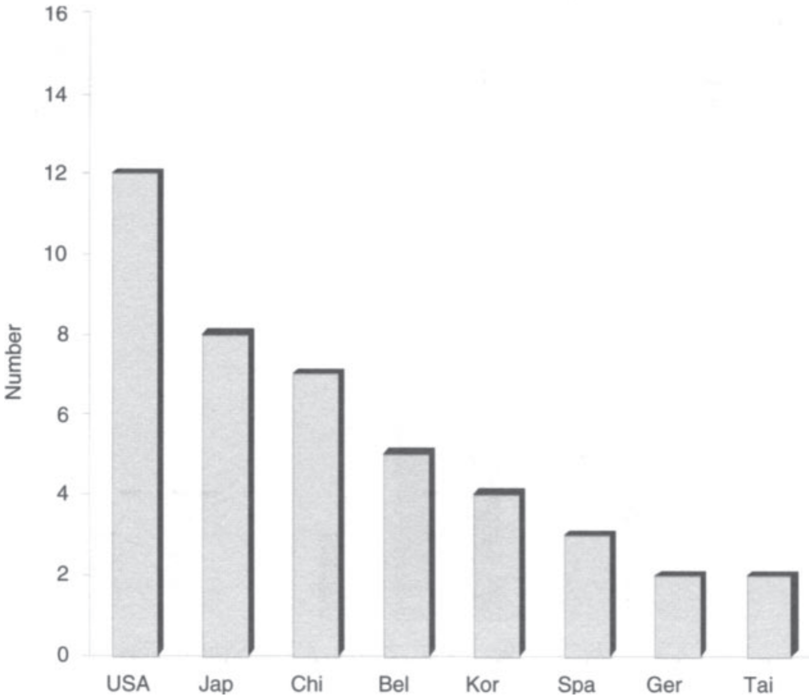

Figure 6.5 Overview of the eight most frequently entered countries by Dutch firms with a JV in the period 1985–9
Source: Based on Bell and Jagersma 1996.

In addition to these results on the location of the foreign entries made by Dutch MNEs, the outcomes of the statistical analyses that have been done will be presented. More precisely, a number of T-tests were executed to reveal possible differences between the variables incorporated in our conceptual framework (see Figure 6.1). These differences are found by comparing three subsamples: (1) entry in countries with a large cultural distance vs entry in countries with a small cultural distance; (2) entry in developed countries vs entry in developing countries; (3) entry by means of a JV vs entry via a WOS. Table 6.1 contains the results of these group comparisons. For example, in the first column the mean values of the independent variables are listed for all entries that were made in countries with a large cultural distance from the Netherlands. The second column contains the mean values of the variables for all entries made in countries which are culturally closer to the Netherlands. The third column indicates whether the differences between those mean values are significant.

In the first T-test, entries made in countries with a cultural background which deviates substantially from the Dutch culture are compared with entries made in countries with a smaller cultural distance from the Netherlands. The cultural distance is determined by combining the cultural

Table 6.1 T-test comparison of subsamples to gain insight into the effects on the variables as proposed in the conceptual framework

Independent variables	Large cultural distance (n = 75)	Small cultural distance (n = 93)	Level of sign[a]	Developed countries (n = 102)	Developing countries (n = 66)	Level of sign	JV (n = 75)	WOS (n = 93)	Level of sign
Global strategy	1.3277	1.6552	0.1	1.5980	1.3715	n.s.	1.3270	1.6558	0.1
Level of competition	3.7820	3.9071	n.s.	4.0152	3.5977	0.05	3.6575	4.0075	0.1
Industry growth	−1.0274	−1.1829	n.s.	−1.1709	−1.0248	n.s.	−0.9399	−1.2535	0.1
International experience	0.9096	1.1390	0.01	1.1481	0.8641	0.01	0.9648	1.0944	0.05
Host country experience	0.9463	0.6475	0.01	0.6727	0.9481	0.01	0.9175	0.6708	0.05
Product experience	6.2667	6.2151	n.s.	6.1078	6.4394	n.s.	6.2667	6.2151	n.s.
Relative size	1.9333	2.3226	n.s.	2.4020	1.7576	0.05	1.8667	2.3763	0.05
Asset specificity	0.2533	0.3118	n.s.	0.2647	0.3182	n.s.	0.1733	0.3763	0.01
Reputation	2.3359	2.8639	0.05	2.9250	2.1694	0.01	2.3277	2.8705	0.05
Cultural difference	–	–	–	1.7620	2.9835	0.01	2.4224	2.0963	0.05
Host country risk	7.0110	3.3910	0.01	3.0368	8.0520	0.01	5.5494	4.5697	0.1
Host government policy	1.2523	0.6033	0.05	0.9760	0.7649	n.s.	1.1202	0.7098	n.s.
Level of welfare	1.4509	2.7100	0.01	2.9224	0.9510	0.01	2.0200	2.2511	n.s.
Firm size	5.5821	5.3413	n.s.	5.5630	5.2724	n.s.	5.6237	5.3078	n.s.
Advertising-intensive ind.	0.1867	0.3011	0.1	0.3333	0.1212	0.01	0.2133	0.2796	n.s.
Know-how intensive ind.	0.2933	0.2581	n.s.	0.2353	0.3333	n.s.	0.3067	0.2473	n.s.
Resource-intensive ind.	0.2400	0.1505	n.s.	0.1569	0.2424	n.s.	0.1467	0.2258	n.s.
Type of activity	4.2800	4.0430	n.s.	4.1373	4.1667	n.s.	4.3067	4.0215	n.s.
Entry mode (JV = 1)	0.5333	0.3763	0.05	0.3824	0.5455	0.05	–	–	–

Note
a The levels of significance are two-tailed.

differences between the host country and the home country as perceived by the respondents and the 'Kogut and Singh'-index (see Kogut and Singh 1988). This index is a composite measure of cultural distance based on the country scores on the cultural dimensions of Hofstede (see Hofstede 1980, 1991). The results reveal that if the cultural distance between the host country and the Netherlands is high, the host country is much more risky and has a more strict policy against foreign investments than if the cultural distance is smaller. At the same time, firms which invest in culturally dissimilar countries appear to have more host country experience. This finding suggests that Dutch firms have more experience in host countries which are, in a cultural sense, further away than in countries which are close by. This is a strange result, as one would expect (in line with the dynamic approach on the internationalisation process) that firms first expand to countries which have a more or less comparable cultural background and then to countries which differ more. The explanation behind this expectation is that cultural differences between the home country and the host country may entail many difficulties for MNEs, as they are unfamiliar with local norms, values and traditions. In these circumstances MNEs will probably encounter many misunderstandings, because of their lack of knowledge of the precise cultural backgrounds. For example, an MNE may unintentionally offend local authorities or clients by acting and behaving in a way different from what is expected. This may cause frustration and irritation on the side of the local parties, which may eventually lead to an overt opposition to entry and the MNE's presence in the local market. As a consequence, the MNE may fail to achieve its goals, and may have to consider premature withdrawal from the market. Therefore, a gradual learning path which is directed at getting acquainted step-by-step with unknown cultures is to be preferred. A greater host country experience, however, does not mean that Dutch MNEs learnt enough to operate alone (by means of a WOS) in countries with a large cultural distance. Table 6.1 shows that JVs are the most favoured modes for entering such countries. This finding is in contrast with the results of previous studies which found that WOSs are more likely if a firm has more experience in a certain host country (see Gomes-Casseres 1989, 1990, Hennart 1991, Padmanabhan and Cho 1994).

The first T-test also shows that the level of welfare is higher if the cultural distance is small, and that Dutch firms which invest in such countries follow a global strategy, have more general international experience, have a good reputation and are more actively involved in advertising-intensive industries (such as food, tobacco refining and clothing). Especially, if a firm is operating in advertising-intensive industries, it is important that the firm has a very good understanding of the preferences, norms, language, and peculiarities of the incumbent population. If it lacks that insight, it will likely make blunders which may reduce the value of its investments dramatically. Analogously, a good reputation is easier to communicate to potential clients if the expectations and norms which underlie a perception of a good reputation are more or less the same. For example, a particular type of behaviour (e.g. dismissing many employees) may be appreciated in certain cultures, but be disliked in other cultures. The finding that firms with a global strategy are especially present in countries with cultures similar to their own seems to indicate that those firms are still not operating on a really global scale. The drive to become a global firm definitely appears to be hampered by cultural barriers, as might be expected.

The second T-test compares entry into developed countries with entry in developing countries. The definition of developed countries used here is in line with the definition used by the United Nations. Developed countries are the countries in Western Europe, Canada, USA, Israel, and Japan. All other countries were (in the early 1990s) considered to be developing countries. The time frame of our study (late 1980s and early 1990s) allows us to apply this United Nations definition.

The results of the T-test reveal that if developed countries are entered the intensity of competition is higher, the size of the investments relative to the firm size is higher, and (of course) the level of welfare is higher than if developing countries were entered. Moreover, Dutch firms that invest in rich countries have more general international experience and are especially involved in advertising-intensive industries. The higher intensity of competition in developed countries can be explained rather easily. It is in general more attractive for firms to attempt to sell their products and services in countries where the population has sufficient income to be able to buy those products and services. Hence, many firms will aim for a share of the total market sales, which will most likely increase the intensity of competition. The investments in developed countries are relatively higher, since the risk of being unable to recoup (high) investments in developing countries is not inconsiderable.

Developing countries, in contrast, are characterised by a larger cultural distance and a much higher risk than developed countries. Dutch firms which enter developing countries have more experience in operating in those countries than in developed countries. This finding is atypical as one would presume that more experience would have been built up in rich countries.

Furthermore, if a developed country is entered, the investing firm appears to have a better reputation than in the case where a developing country is entered. Firms with a good reputation may be reluctant to risk their reputation by investing in a developing country where its reputation may be harmed. Such damage is difficult and, in general, costly to repair. Some factors that may cause the damage are free-riding behaviour of agents and partners, bad storage conditions and infrastructural problems which hamper a smooth supply and delivery.

Finally, the propensity to use JVs rather than WOSs is higher if a developing country is entered. This finding indicates that the attributes of developing countries encourage firms to set up JVs instead of establishing a WOS. Some of these characteristics are the risk involved in operating in such countries and the cultural background, which typically differs substantially from the Dutch one.

The last T-test indicates that if JVs are selected as the mode of entry, the cultural distance is larger and the host country is considered to be a risky country. Obviously, JVs are utilised in these countries to reduce the risk of losing the invested money, because of the uncertainty inherent in being active in culturally different environments and/or risky contexts. Dutch firms which chose a JV have more host country experience and were investing in industries where the industry growth was faster than for firms who preferred a WOS. The issue of host country experience has been discussed before. It appears that Dutch firms have more experience in culturally dissimilar, poor or developing countries, but still need a JV to be able to operate adequately in these countries.

If WOSs are chosen, the intensity of the competition is higher. Firms need full control over their activities to react directly on the actions of competitors. The Dutch firms which selected a WOS have more general international experience, have a better reputation, follow a more global strategy, transfer more transaction-specific assets, and are involved in relatively higher investments. If a firm has a good reputation or wants to transact transaction-specific assets, it would like to have as much control as possible to prevent opportunistic behaviour (Anderson and Gatignon 1986; Williamson 1985). A similar reasoning applies to firms that have a global strategy. A global strategy implies a world-wide coordination of all activities and subsidiaries to achieve economies of scale. Full control is necessary to prevent suboptimisation if individual subsidiaries attempt to achieve their own goals (Hill, Hwang, and Kim 1990; Hout, Porter, and Rudden 1982). The larger size of the investments can be explained by the supposition that firms do not want to risk losing control over large—thus important—affiliates. Finally, firms which opted for a WOS have more general international experience than firms which opted for a JV. This finding illustrates that firms which operated across the world had learnt how to establish subsidiaries in unknown and uncertain environments. Hence, they no longer need a local partner to assist them. However, as we have seen above, if the host country is very different from the Netherlands a local firm is required even if the Dutch firm has much experience in that country.

Remarkably, the mean value of the variable 'host government policy' is not significantly higher for the group JVs than the mean value for the group WOSs. This variable is measured by: (1) the restrictiveness of the host country's government with regard to the firm's investment as perceived by the respondent; (2) the extent to which the host government stimulated cooperation with local firms as perceived by the respondent; and (3) data on the restrictiveness of host governments in the year of entry as published by the Dutch Ministry of Economic Affairs, the IMF, the OECD, the United Nations and the World Bank. One would have expected that a strict host government policy would stimulate firms to establish JVs rather than WOSs. However, no such effect is found. This finding is in line with the increasing relaxation of restrictive policies that can be observed since the mid-1980s (see, e.g. Contractor, 1990). Thus, in the time frame of this study (i.e. late 1980s and early 1990s) restrictive policies are no longer a decisive factor for the formation of JVs.

Conclusions

In this chapter, an eclectic conceptual framework is presented that is used to assess potential differences among four groups of variables caused by the location and the mode of foreign entry. The Dutch firms which participated in the survey entered, in the late 1980s and early 1990s, mainly Western European countries through WOSs and, to a somewhat lesser extent, JVs. East Asia is the second most entered region. Here, in this booming area, JVs are the preferred option. Eastern Europe, which has been expanded into only since 1990, is the fourth most frequently entered region, just after North America. A comparison with data on international JVs set up by Dutch firms between 1985 and 1989 (see Bell and Jagersma 1996), uncovers some interesting discrepancies. In this period, Dutch firms were primarily investing with their JVs in the Far East and, to a lesser extent, in Western Europe and North America.

The four groups of variables incorporated in the conceptual framework (strategic, ownership-specific, transactional, and locational variables) play an important role in comparing some subsamples. The subsamples (large vs small cultural distance, developed vs developing countries, and JV vs WOS) are compared with the T-test technique. The overall conclusions from the first two T-tests, which focused on the location of the investment, demonstrate that Dutch firms have definitely specific preferences for where and how to invest. For instance, if they gained experience in operating internationally or if they have a good reputation, they will invest in developed countries or more culturally familiar countries. Analogously, if they invest in developing countries or less culturally familiar countries, which are characterised by a lower level of welfare and a higher risk, they turn out to have more experience in these host countries. Interestingly, irrespective of their higher level of experience in these countries, they still prefer to use JVs to enter these countries. Apparently, the characteristics of these countries are so peculiar that Dutch firms need a local firm to be able to operate effectively in the local context.

Another interesting finding is that the Dutch firms which indicated that they follow a more or less global strategy, were mainly present in countries with a culture that resembles their own cultural background. A lack of activities in culturally ‘strange’ countries, by definition, means that the strategy should not be labelled global. Cultural barriers appear to play an important role—impeding the process of becoming a really global company.

As with all other studies, this study has some limitations. A first limitation is that only a cross-section of all JVs and WOSs established in the period under study was available. The conclusions presented above should be interpreted carefully if generalisation of the results is strived for. A second limitation is that we only looked at mean values for various subsamples. More sophisticated techniques may be used to elaborate on the differences that were found. A last limitation is that we only focused on JVs and greenfield WOSs, leaving out acquisitions, export, and many other possible modes of foreign entry.

Notes

1 This survey was held in 1993, so recent expansions were primarily actualised in the late 1980s or early 1990s.
2 For 11 entries, no data were available on the host country.
3 Using the announcements as published in *'Het Financieele Dagblad'* will probably not lead to a complete overview of all international JVs Dutch firms launched between 1985 and 1989. For instance, relatively small JVs of relatively small Dutch firms may not have been observed by the financial press and, as a consequence, not included in *'Het Financieele Dagblad'*. Information on WOSs was ignored as it was beyond the scope of that study.
4 Please observe that both studies only focus on the number of JVs established internationally. The number of JVs per region gives no indication of the size of the capital flows that go to certain regions. For example, the capital outflow from the Netherlands to North America is and has been much higher than the one that goes to the Far East.

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7 The external technology acquisition by Dutch MNEs

Geert Duysters and Bert Sadowski

Introduction

In the global race for new technologies spreading across all industrial sectors, multinational companies (MNEs) have become more and more aware of the strategic potential of external sources of technology. In the 1980s and 1990s, they became increasingly engaged in strategic technology alliances and mergers and acquisitions (M&A) in order to complement internal technological development and to acquire technology from partnering firms. Many MNEs began to use strategic technology alliances not just as an alternative but also as a complementary means to M&A to acquire technological knowledge (Doz and Hamel 1997, Pisano 1991). In the global automobile industry, for example, this new feature of MNE activity became obvious in the past few years. Car manufacturers were quite intensely using both forms of cooperation to acquire knowledge externally (Doz and Hamel 1997, Womack, Jones and Roos, 1990). The involvement in cooperative agreements to develop key technologies became a major factor for the survival and the success of MNEs.

In this chapter, we focus on two alternative forms of cooperative agreements that MNEs utilise to acquire technology externally i.e., strategic technology alliances and mergers and acquisitions.[1] In order to examine these cooperative agreements in detail, we use the concept of core competences, i.e. firm attributes that enable managers to conceive of and implement cooperative agreements (Prahalad and Hamel 1990).[2] Our focus is on the extent to which Dutch MNEs utilise M&A and strategic technology alliances in order to leverage these competences. Strategic technology alliances are defined as cooperative agreements in which independent (industrial) partners that are not connected through (majority) ownership share a common interest. Although production and marketing agreements are widely discussed in the literature, we will restrict our attention to technology-related agreements.[3] M&A are similarly defined as cooperative agreements in which two separate firms are combined into one company, either by means of a combination of the economic interest of equals, or through an acquisition where one company obtains majority ownership over another company (Hagedoorn and Sadowski 1998).

In order to examine the pattern of external technology acquisition of Dutch MNEs, we first characterise the global trends in M&A and strategic technology alliance activity and compare them with those by Dutch companies. Second, we more closely investigate the technological sectors and the country of origin of the partnering firms of M&A and strategic technology alliances in which Dutch MNEs have been involved. Third, we focus on the contribution of large Dutch MNEs to the overall pattern of external technology acquisition by Dutch companies.

In examining different trends and factors in strategic technology alliances and M&A, we will argue that the involvement of Dutch MNEs in key technological sectors has been critical to their future development. Due to massive amounts of research and development (R&D) in these sectors, even large Dutch MNEs have rarely been able to provide all in-house capabilities required to compete globally. The emphasis of Dutch MNEs on strategic technology alliances and M&As showed, on the one hand, that they were actively searching for partnering firms in technology areas where they needed complementary assets. On the other hand, it demonstrated their attractiveness to foreign companies especially in technology-intensive industries.

Patterns of external technology acquisition of Dutch MNEs in the 1990s

Global trends in external technology acquisition

In the past twenty years, the necessity to acquire technology externally has dramatically increased for companies due to rapid rising development costs in combination with shrinking life cycles, as well as the need to monitor a growing number of technological developments. Sharing R&D development costs with a competent partner not only reduces the total costs of R&D, but synergy effects also increase the speed with which products are brought to the market. The external acquisition of technology furthermore increases the flexibility to move from one technology to another in rapidly changing competitive and technological settings.

In the literature, the growing importance of strategic technology alliances has been widely heralded (Harrigan 1985, Contractor and Lorange 1988, Haklisch 1989, Hagedoorn 1996, Duysters 1996). In the rapidly changing competitive and technological environment of the 1980s and 1990s, endogenous technological development was not sufficient anymore to satisfy the growing need of most companies for technological know-how. The need to acquire innovative resources externally caused a strong upheaval in the number of newly established strategic technology alliances during the 1980s and early 1990s. As the more flexible option compared to M&A, it seems that companies also increasingly used strategic technology alliances to complement M&A.

Global trends in M&A activity of Dutch MNEs

Merger and acquisition have a long-standing history in business life. The first M&A wave can be traced back to the turn of the century in the United States. Since then, three peaks in prominent M&A waves have been distinguished. The upturn of the second M&A wave was in 1929. In 1968, the third wave reached a peak and the fourth, producing the highest ever level of asset acquisition, took place during the early- and mid-1980s. In the first M&A wave, US companies engaged in M&A activity driven primarily by the motivation to achieve market domination. Throughout the twentieth century this primary motivation for M&A changed. In the late 1920s, M&A motivations aimed at product line extension and vertical integration became prevalent for the first time. In this period, M&A mainly benefited emerging competitors *vis-à-vis* existing dominant companies in the industry. Tougher US antitrust laws against vertical and horizontal mergers in the 1950s again changed the direction of M&A activity, notably into M&A aimed towards diversification. Encouraged by financial innovations, conglomerate mergers became the prevailing form of M&A activity in the 1960s (Scherer and Ross 1990). Similar processes in M&A activity have also been observed world-wide (Meeks 1977, Mueller 1986). In the 1980s and 1990s, M&A became important strategic options for firms to pursue vertical integration or diversification strategies (Barney 1997:437).

As Figure 7.1 shows, the number of M&As world-wide nearly doubled in the early 1990s in contrast to the late 1980s. In our database,[4] in the late 1980s about 12,000 deals were counted compared to more than 22,000

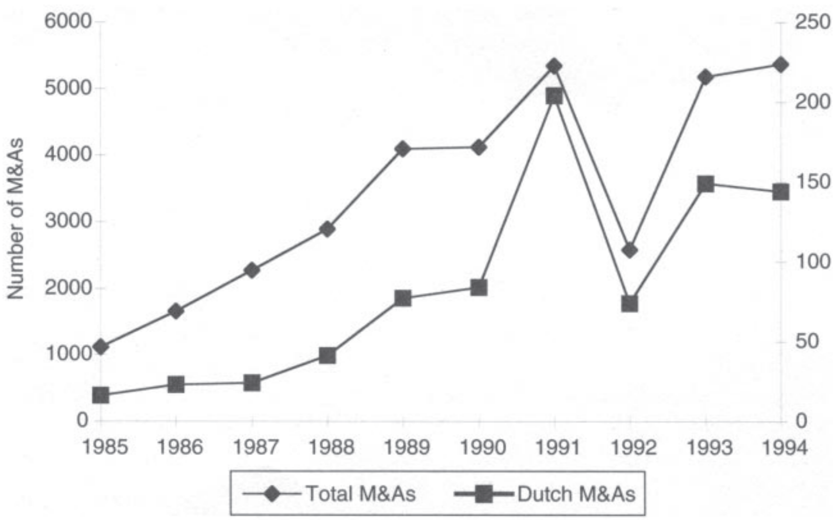

Figure 7.1 Mergers and acquisitions (M&As) in the late 1980s and early 1990s
Source: Securities Data 1995.

M&As in the early 1990s. In other words, the market for corporate control was growing extensively in the late 1980s and early 1990s.

In the 1980s and 1990s, companies engaged in M&A activity because of the perceived high cost of strategic alliance activity or internal development (Porter 1980, Trautwein 1990, Pablo 1994). Increasingly, the choice of managers between these different options became strategic by nature. It seems that the difficulties in predicting positive performance outcomes for companies involved in M&A activity slowed the growth of M&A in the late 1980s (Pablo 1994). In the majority of cases, the intended benefits of M&A were rarely realised (Ravenscroft and Scherer 1989). Sometimes, M&A even had a negative impact on target and bidding firms (Schweiger and Walsh 1990). These negative results of M&A were mostly related to short-term managerial motivations such as increasing efficiency or achieving monopoly power (Trautwein 1990). The increasing M&A activity in the 1990s has apparently been driven by a reorientation of managerial perceptions towards more long-term motivations based on the development of additional competences of their companies (Barney 1997, Trautwein 1990).

The number of Dutch companies that have chosen to get vertically integrated or diversified increased at an enormous pace in the 1980s and 1990s. Dutch companies accounted for about 2.4 per cent of the total M&A activity world-wide. Between 1985 and 1994, they slightly increased their share as a percentage of total M&A activity from about 1.4 to around 2.7 per cent (see Figure 7.1).

A closer look at the number of M&As shows the enormous increase of M&A activity by Dutch companies. Compared to the late 1980s, mergers and acquisitions by Dutch companies more than tripled in the early 1990s. Between 1985 and 1989, Dutch companies made about 180 M&As whereas during the early 1990s about 650 deals were struck. Figure 7.1 also shows that Dutch companies acknowledged the growth potential in the market for corporate control in the 1990s and actively participated especially in the prosperous periods of the market in 1991 and 1993/4. During these years their share was disproportionately growing to about 3 to 4 per cent.

Strategic technology alliances by Dutch MNEs

From a barely known phenomenon that was used in just a few industries at the beginning of the twentieth century, strategic technology alliances have developed to become an important component of a firm's technology strategy decisively effecting its overall competitive position in the industry. Previous research has shown that before the 1980s strategic technology alliances were virtually unknown (Duysters 1996, Hagedoorn 1993, Hagedoorn and Schakenraad 1990, Hladik 1985). Strategic technology alliances have become much more apparent during the 1980s. The growth in the number of newly established strategic technology alliances has been very high, especially in the second half of the 1980s. This high growth coincided with a period of world-wide structural and technological change. Structural changes were associated with the internationalisation and liberalisation of the world economy, whereas technological change had a strong impact on virtually every industrial sector.

At the end of the 1980s, the number of newly established alliances seemed to level off. During this period companies became more aware of the risks and dangers of cooperation. Companies became increasingly aware of the fact that strategic technology alliances did not provide a solution to all their problems (Hagedoorn and Schakenraad 1992). Mortality rates of these cooperative agreements were quite high during this period (*Business Week* 1986, Kogut 1989). Studies by consulting firms (McKinsey and Coopers and Lybrand) showed a 70 per cent failure rate for joint ventures (cited in *Business Week* 1986). The inherent unstable character of alliances (Porter and Fuller 1987, Harrigan 1988, Kogut 1989) in combination with the difficulties associated with the management and control of such strategic alliances induced firms to be particularly careful in undertaking alliances with other companies.

A partial solution to this problem was found in the early 1990s when new management techniques were introduced. A further increase in competitive pressure and the ever rising costs of R&D in conjunction with shrinking technology/product life cycles again accelerated the formation of strategic technology agreements. Since then, they have played a pivotal role in technology strategies of MNEs (Doz and Hamel 1997).

In the 1980s, Dutch companies followed similar patterns in establishing strategic technology alliances (see Figure 7.2). Their alliance activity remained, however, at a rather modest level in the early 1990s. A possible explanation for this phenomenon could be the financial problems and accompanying restructuring of a number of major Dutch multinational corporations such as Philips. These major restructuring efforts require a strong inward directed perspective from (top) management, leaving very little room for externally oriented strategies. The data presented in Figure 7.2 have been taken from the CATI database (see Appendix 7.1).

Another plausible explanation might be found in the effect of the creation of the single European Market in 1992 which called for firms operating on a larger scale. The need to achieve larger economies of scale shifted the attention of many companies away from strategic alliances towards M&As.

In summary, Dutch companies are actively engaged in external acquisition of technology. They are increasingly using various forms of external acquisition of technology to compete globally. It seems that they focused more on M&A activity than on strategic technology alliances in their external acquisition activity during the 1990s.

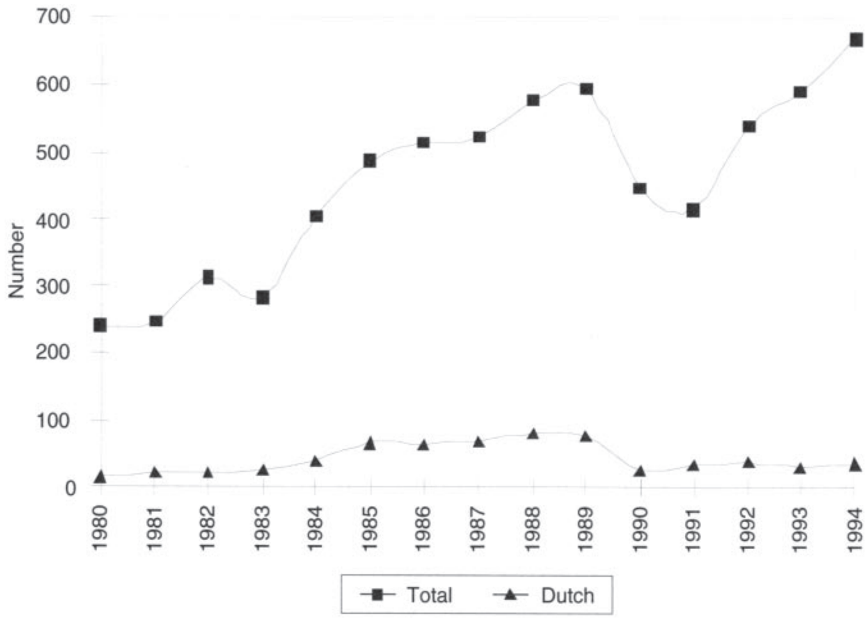

Figure 7.2 The number of newly established strategic technology alliances, 1980–94
Source: MERIT-CATI Database 1997.

The international character of external technology acquisition of Dutch MNEs in the 1990s

Many articles have been devoted to the internationalisation of the world economy. Especially, the internationalisation of production and marketing has received widespread attention in the literature. In spite of the fact that strategic technology alliances and M&As have been used to gain access to foreign markets or to bypass government regulations, the internationalisation through strategic alliances has received less attention in the literature (Porter and Fueller 1986, Contractor and Lorange 1988, Haklisch 1989).

Today, strategic alliances are often considered to be essential to international corporate strategies (de Woot 1990, Ohmae 1990). Hagedoorn and Duysters (1996:5) however argued that there is a clear tension between international partnering, benefiting from foreign capabilities, and a larger degree of control through alliances that are closer to the domestic span of control. They found that internationalisation through strategic technology partnering would still be at a moderate level compared to market entry arrangements and joint production agreements. M&As, in contrast, seem to accelerate the internationalisation of companies much more than strategic alliances due to factors such as full control over financing and technology transfer.

The international M&A activity of Dutch companies

As Figure 7.3 shows a growing number of M&As in the 1990s took place between companies with different country of origin. Similarly, the disproportionate growth of M&A activity of Dutch firms was mainly due to their participation in international markets for corporate control. About 65 per cent of all M&As were undertaken on international markets, although the relative importance of these markets declined during the 1990s. Compared to the period between 1985 and 1989 when just 14 per cent of M&A activity took place in the Dutch capital market, the share of domestic M&A increased dramatically in the early 1990s to around 40 per cent (see Figure 7.3).

Figure 7.4 shows that despite the decline in the importance of the international market for corporate control in the 1990s, the participation of Dutch firms in this market was still very high. In 1990, they realised about 80 per cent of M&A in the international capital markets—way above the average. In the succeeding years, the focus of Dutch MNEs apparently changed towards an increasing engagement in domestic capital markets.

The increase in M&A activity of Dutch firms in the early 1990s has been considered as part of their growing internationalisation strategies especially in the US and European markets (see Figure 7.4). Presence in the US market became an important factor not just for exporting but also for access to new technologies. Apart from participating in the booming market for corporate control in the US in the early 1990s, M&A—as a tighter form of corporate governance than strategic alliances—allowed Dutch firms to fully capture the benefits of technological development. In addition, the event of further integration after 1992 as laid down in the Maastricht Treaty triggered cross-border M&A activity in Europe. In order to achieve scale economies necessary to compete effectively on the European market and to achieve

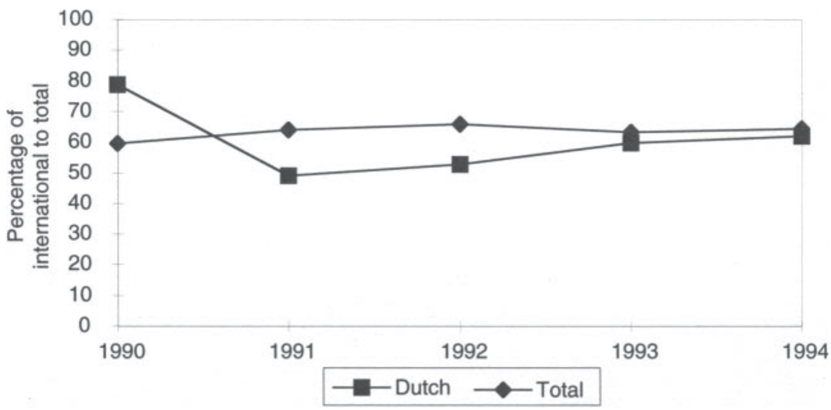

Figure 7.3 Relative Internationalisation Index, mergers and acquisitions, 1990–4
Source: Securities Data 1995.

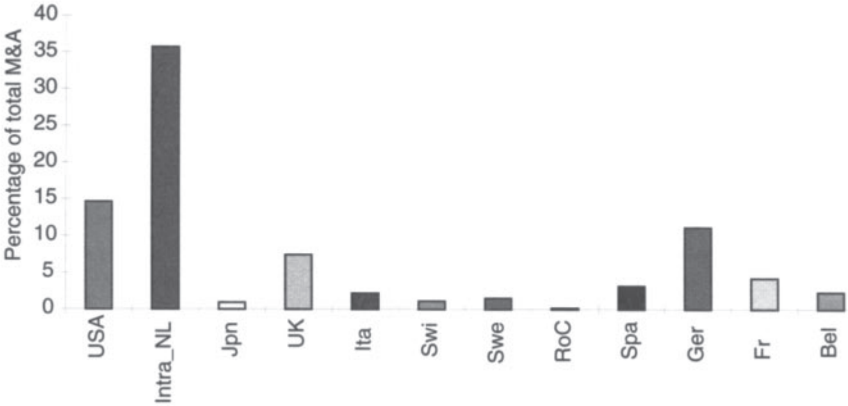

Figure 7.4 Mergers and acquisitions of Dutch MNEs by home country of targets, 1985–94
Source: Securities Data 1995.

presence in the different geographical areas in Europe, Dutch companies engaged in cross-border M&A activity. Last but not least, the opening up of Eastern Europe in conjunction with privatisation of enterprises and liberalisation of their economies put a number of highly rated Eastern European firms on the regional capital markets. In acknowledging the potential of these enterprises, Dutch companies actively engaged in M&A activity throughout the region.

Apart from a growing engagement in cross-border M&A, in the early 1990s Dutch firms disproportionately increased their M&A activity in their home market. This has been attributed to their striving to gain sufficient scale to meet challenges posed by increasing foreign entry and intensification of European competition.

International strategic technology alliances of Dutch companies

Figure 7.5 shows that the international content of strategic technology alliances has traditionally been very high. Internationally oriented strategic technology alliances averaged about 50 per cent of all alliances in the 1980s. After a short increase to about 60 per cent in the early 1990s, in 1994 the percentage decreased again to about 50 per cent. In terms of international alliances, Dutch firms have been much more internationally oriented. Between 75 and 90 per cent of all the alliances of Dutch companies were undertaken with international partners. This percentage was significantly lower for US firms (22 per cent), for example, and is somewhat above the percentage for Japan (70 per cent). Other major European countries have reached an average of about 60–80 per cent.

If we look closer at the country of origin of the international alliance partner of Dutch firms we find a dominant position of US firms as major

Figure 7.5 Relative Internationalisation Index, strategic technology alliances, 1980–94
Source: MERIT-CATI Database 1997.

alliance partner. More than 40 per cent of all strategic technology alliances in which at least one Dutch partner was involved was undertaken with a partnering firm from the US. Compared to the striking dominance of companies from the US, strategic technology alliance between Dutch firms accounted for just 23 per cent of the total number of alliances of Dutch companies in the period 1980–94. The role of companies from other countries has been rather limited, except for companies from Japan and the United Kingdom. They account separately for approximately 10 per cent of all partnering activity (see Figure 7.6).

In summary, compared to their international counterparts, Dutch MNEs have been characterised by a higher degree of internationalisation especially in the 1990s. This has been attributed to the small size and the restricted character of the technology infrastructure in the Netherlands. It has been argued that in small countries like the Netherlands it is impossible to find all technological and other resources that are necessary to compete in today's global marketplace (Duysters and Verspagen 1994). In contrast to the M&A activities of Dutch firms, geographic distance (proximity) does not seem to play a predominant role in the choice of a partnering firm for undertaking strategic technology alliances. The figures suggest that Dutch companies preferred strategic technology alliances if there was a close proximity to the potential international partner—whereas they were more inclined to use M&A-strategies if this proximity was low. M&A with Dutch partners accounted for about 35 per cent of all M&A of Dutch companies, while alliances with other Dutch firms accounted for only 23 per cent of all alliances. Countries which are more remote from the Netherlands, such as Japan and the US, account for a much higher proportion of the total number

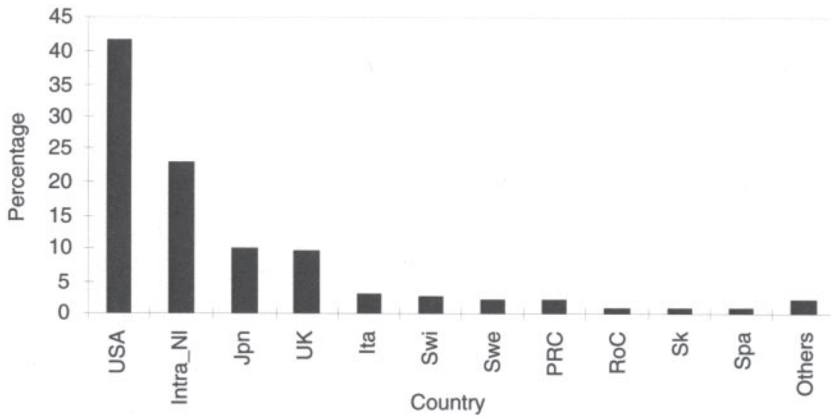

Figure 7.6 Strategic technology alliances of Dutch MNEs by country, 1985–94
Source: Securities Data 1995.

of alliances than in the case of M&A. Unlike the case of alliances, in M&As companies from Germany, France and Belgium seem be preferred partners.

Proximity was important because of its effect on the degree of competition. The risk of losing market share because of the transfer of technological know-how to a competitor is much higher domestically than internationally (see e.g. Kay 1991); M&As would be a more viable alternative domestically if this were not the case. Strategic alliances were often also preferred internationally because of the synergetic effects that were often stronger in international alliances than in domestic alliances (Aiken and Hage 1968).

The sectoral distribution of external technology acquisition by Dutch MNEs in the 1990s

The sectoral distribution of external technology acquisition

By looking at the growing number of external forms of technology acquisition, MNEs have chosen between M&A and strategic technology alliances because of specific advantages. Although M&A and strategic technology alliances have conventionally been considered as close substitutes, some recent contributions (Arora and Gambardella 1990, Pisano 1991) have argued that M&A and strategic technology alliances were essentially complementary forms of external technology acquisition. Alliances have been characterised as an important monitoring device to detect new technological opportunities in areas that cannot be easily monitored internally. The flexibility of these types of alliances allowed firms to monitor a broad range of non-critical technologies at the same time. M&As seem to play a more important role in situations that require strong control, especially in the development of core technologies (Hagedoorn and Duysters 1996).

It is often assumed (Harrigan 1985, Link and Bauer 1989, Mahoney 1992) that in this era of rapid technological change firms have a preference for more flexible forms of external technology acquisition such as strategic technology alliances. Especially in high technology markets, no single organisation seemed to be able to monitor a broad range of technologies by itself. In seeking additional capabilities in the face of growing, often technology-based, global competition, companies increasingly used strategic technology alliances and M&A to access and internalise these capabilities (Doz and Hamel 1997).

The sectoral distribution of M&A activity by Dutch MNEs

During the 1980s and 1990s, Dutch multinational companies were quite active in high technology sectors such as chemicals or electronics. In chemicals, their engagement was with around 17 per cent of the total number of M&As of Dutch firms—much higher than the world average of 11 per cent. The major firms involved in these M&As were AKZO Nobel, DSM, Unilever and Royal Dutch Shell. In electronics, the M&A activity of Dutch MNEs was with 8.7 per cent of all Dutch M&As—just slightly below the world average in M&A. With the exception of a number of small companies like Delft Instruments NV, the thrust of M&A activity in this sector was undertaken by Philips NV. In computer technology and machinery, Dutch MNEs have, to a lesser extent, been involved in M&A.

In some low technology sectors like food and printing, the engagement of Dutch MNEs such as Unilever (food) and Wolters Kluwer NV (printing) was much higher than comparative figures for the world M&A activity. Surprisingly low has been the small number of M&As in the oil and gas industry (around 5 per cent) despite the presence of Royal Dutch Shell, one of the world's largest conglomerates. (Figure 7.7).

The sectoral distribution of strategic technology alliances of Dutch MNEs

As Figure 7.8 shows, strategic technology alliances of Dutch MNEs have predominately been in three major sectors:[5] information technology; biotechnology; and chemicals. Dutch MNEs seemed to have significantly more alliances than their competitors in other countries in sectors such as software, chemicals, consumer electronics and instruments as well as in medical technology.

Dutch firms were clearly lagging behind companies from other countries in terms of strategic technology alliances in sectors such as automotive, new materials and aerospace/defence. The bankruptcy of Fokker, as the major company in the aerospace/defence industry, will lower the number of alliances in this sector even more. This will make it rather difficult for Dutch firms to maintain technological know-how in this strategic sector. The

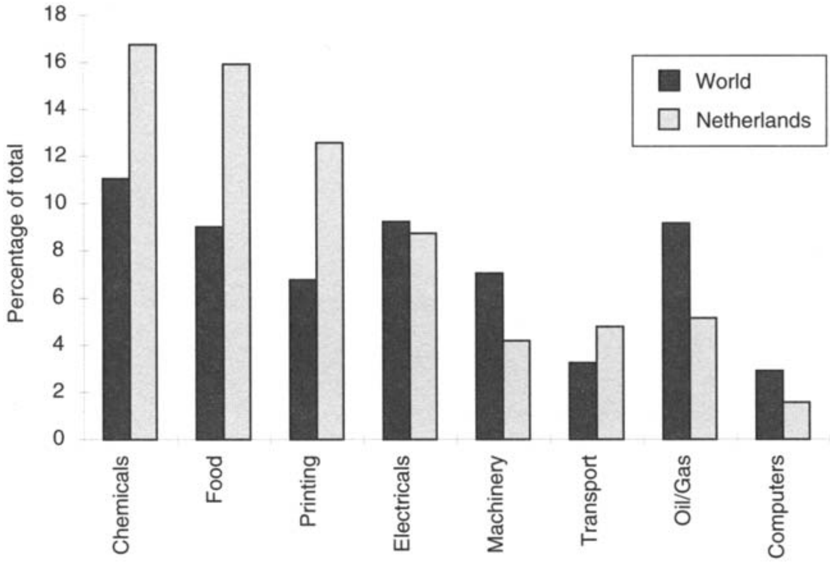

Figure 7.7 The sectoral distribution of M&As by Dutch MNEs, 1985–94
Source: Securities Data 1995.

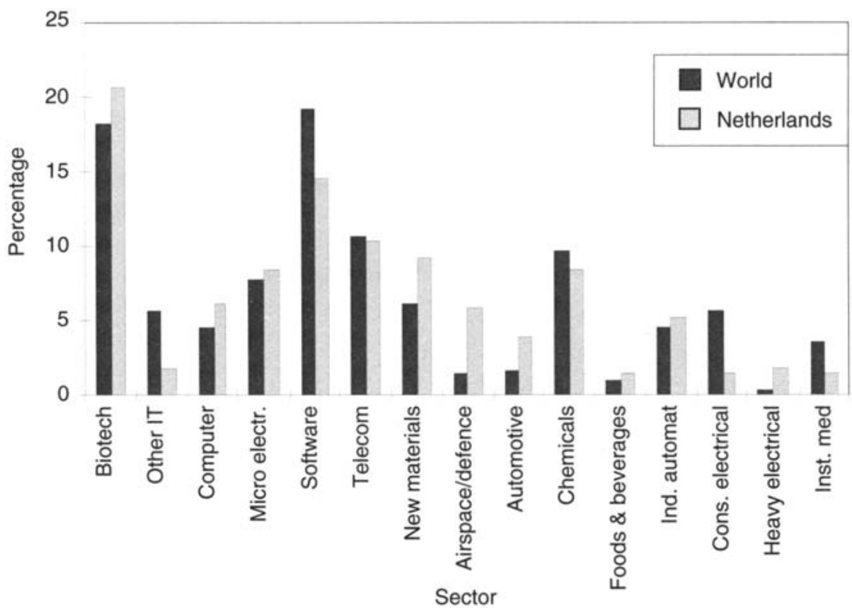

Figure 7.8 The sectoral distribution of strategic technology alliances by Dutch MNEs, 1985–94
Source: MERIT-CATI Database 1997.

dominance of the five leading Dutch multinationals: AKZO, DSM and Shell in chemicals, Philips in consumer electronics and Unilever in food and beverages (and with a particular interest in biotechnology) seems to account for a large part of the sectoral differences.

In summary, there has been a high number of technology-intensive firms that got engaged in strategic technology alliances or M&A. This underlines the conclusion about the limited size of the technology infrastructure in the Netherlands. This apparently forced technology-intensive firms especially to direct their attention to other countries.

External technology acquisition by large Dutch MNEs in the 1990s

The specifics of external technology acquisition in the Netherlands

In the 1980s and 1990s, the economy in the Netherlands has been dominated by a relatively small group of large multinational corporations: Philips, Shell, DSM, AKZO and Unilever. These leading multinational firms in the Netherlands accounted in the 1990s of more than half of all corporate R&D expenses. Duysters and Verspagen (1994) note that these companies have also overproportionally been active in the external acquisition of technology compared to other companies in the Netherlands.

The M&A activity of major Dutch multinationals

Dutch MNEs actively pursued M&A in order to change their level of vertical integration or to modify their existing diversification strategies. Looking at the effects of major Dutch multinationals (Unilever, Shell, Philips, DSM and AKZO Nobel) on the overall M&A activity of Dutch firms shows that their contribution was quite substantial during the late 1980s. During this time, every second M&A by Dutch companies was undertaken by one of these major firms. The importance of these major firms for total Dutch M&A activity declined, however, during the 1990s to about 17 per cent (see Figure 7.9).

A major factor that explained the changing pattern of M&A activity of Dutch companies during the 1980s and 1990s was the striving of especially smaller firms to achieve sufficient scale to compete at the European level.

Strategic technology alliances of major Dutch multinationals

To illustrate the importance of the five leading multinational firms in the Netherlands we calculated the percentage of strategic technology alliances that were accounted for by the multinationals Shell, Philips, Unilever, DSM and AKZO. Our calculations showed that about 75 per cent of all strategic

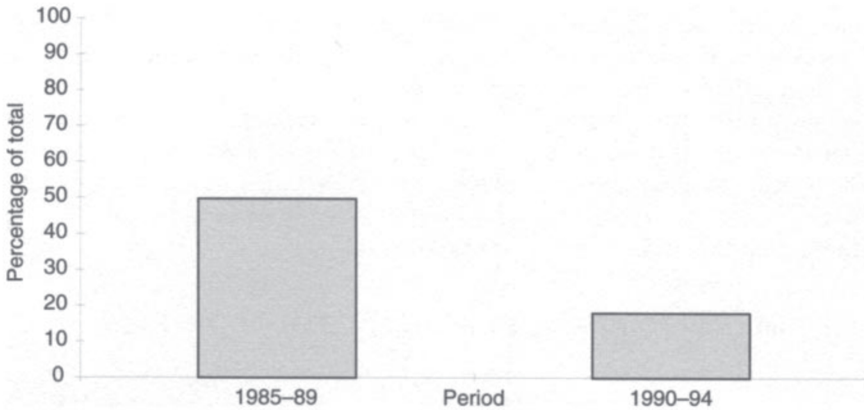

Figure 7.9 Share of major Dutch companies of total M&A activity in the late 1980s and early 1990s

Source: Securities Data 1995.

Note

1 Major Dutch MNEs are DSM, Philips, Akzo, Unilever and Shell.

technology alliances that involved at least one Dutch partner were undertaken by one of these multinationals. Philips stood out in terms of the international orientation of its strategic technology alliances. Only 7.3 per cent of its alliances were undertaken with a domestic partner. Philips was particularly active in countries with a strong electronics industry such as the US and Japan. Unilever was in relative terms the most inward directed organisation with an average of 17.4 per cent of its alliances with a domestic partner

The contribution of these five major Dutch multinationals to M&A activity is, however, much lower, averaging about 20 per cent. Dutch firms used cross-border M&A in the late 1980s and early 1990s as a major tool to acquire technology on world markets. Despite their declining importance in the early 1990s, the top five companies still significantly contributed to the overall M&A activity of Dutch companies giving, in addition, an indication about the importance of this activity for the development of their core sectors.

Conclusions

In this chapter, we explored recent trends in the external acquisition of technology by Dutch companies. In comparing these trends with overall patterns, we focused on two forms of external technology acquisitions: strategic technology alliances and M&As. A major finding of this study was that, especially during the 1990s, Dutch MNEs reached a higher degree of internationalisation than firms from other countries—measured in terms of their strategic technology alliances as well as M&A activity. Surely the limited size of the technological infrastructure in the Netherlands was one important factor explaining this high degree of internationalisation. However, it was the lack of sufficient government funds for technological development that forced Dutch MNEs rather quickly to internationalise via M&A and strategic technology alliances.

As illustrated above, during the 1980s and early 1990s, Dutch MNEs used both forms more extensively than their international competitors. Besides their perceptions about higher costs associated with strategic alliances and internal development, Dutch firms used cross-border M&A in the late 1980s as a major tool to acquire technology on world markets. In the early 1990s, however, Dutch companies began increasingly to engage in M&As in their home market. This can be explained by the efforts of Dutch firms to gain sufficient economies of scale to meet the challenges posed by growing foreign market entry and the intensification of European competition.

In this chapter, M&A and strategic technology alliances have been viewed as complementary vehicles of technological know-how. In core technologies, Dutch MNEs seem to have a preference for M&A, whereas they monitored non-critical technologies in using strategic technology alliances. M&A enabled them not only to exert a tighter degree of control over the process of technology accumulation within the firm than strategic alliances, but also induced incentives to search for and acquire firms in the international capital market in core sectors. The process perspective we took suggested that core competences acted as a catalyst for external technology acquisition by Dutch companies. Similar to other Dutch companies, the majority of strategic technology alliances of the leading five Dutch MNEs were undertaken in non-core sectors, whereas a much higher percentage of the mergers and acquisitions were related to core sectors.

Overall, this study suggests that M&A and strategic technology alliances have become major vehicles for the external acquisition of technological know-how. Furthermore, Dutch companies seem to play a small but increasingly significant role in the world market for technological knowledge.

Notes

1 For a detailed study of the choice between mergers and acquisitions and strategic technology alliances as modes of external technology appropriation we refer to Hagedoorn and Duysters (1996) and Vanhaverbeke and Duysters (1997).

2 As principal modes of cooperation, we are referring to equity joint ventures, joint R&D projects, technology exchange agreements, minority and cross-holdings, particular customer-supplier relations and one-directional technology flows. Each mode of cooperation has a number of particular categories.

3 Because of our preoccupation with corporate strategies we will study only those alliances that are undertaken for strategic reasons. Alliances between government or academic institutions and private companies are often undertaken for different reasons than the alliances between two or more private companies (see e.g.

Haklish, 1989). Therefore, we will restrict our attention to those alliances that are established between private companies. For the same reasons we do not pay attention to government initiated or EC-wide R&D cost-sharing programmes such as ESPRIT, EUREKA or JESSI.

4 In order to analyse M&A activity, we used data provided on-line by the firm Securities Data (see Appendix 7.1).

5 The most important fields in terms of frequency are information technology (computers, industrial automation, telecommunications, software and microelectronics), biotechnology (with fields such as pharmaceuticals and agro-biotechnology), new materials technology, chemicals, automotive, defence, consumer electronics, heavy electrical equipment, food and beverages, etc. All fields have important sub-fields.

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APPENDIX 7.1 The Cooperative And Technology Indicators (CATI) information system and the M&A database

The CATI data bank is a relational database which contains separate data files that can be linked to each other and provide (dis-)aggregate and combined information from several files. The CATI database contains information on over 13,000 cooperative agreements involving some 6,000 different parent companies. The data bank contains information on each agreement and some information on companies participating in these agreements. We define cooperative agreements as common interests between independent (industrial) partners which are not connected through (majority) ownership. In the CATI database only those inter-firm agreements are being collected that contain some arrangements for transferring technology or joint research. Joint research pacts, second-sourcing and licensing agreements are clear-cut examples. We also collect information on joint ventures in which new technology is received from at least one of the partners, or joint ventures having some R&D programme.

The data on M&A used in this chapter are a sample taken from the Securities Data database. This database contains information on about 125,000 M&As world-wide for the period 1985–94. The information is arranged in different data files. For a limited period of time this database has been accessed and a specific data sample has been extracted. The relational form of the database facilitates the linking of the data files to each other. Within the database there is information on the year the M&A has been established. In addition, it contains company information on the bidding (acquirer) firm, the target, the parent acquirer and the parent target firms. The industry information is provided in SIC classification format for the bidding and target firm. Unfortunately the distinction between a merger, an acquisition and a takeover as made by Securities Data does not always correspond to the real background of the M&A. This is partly due to the real background of the M&A in the trade literature. For example, some cases have been classified as mergers despite obvious mismatches in firm-size pointing more towards an acquisition. Because of the negative publicity that acquisitions receive, especially when there are foreign partners involved, acquisitions are quite frequently presented to the public as mergers. Moreover, due to different official classification systems and dissimilar legal definitions of both modes of firm integration across countries, a clear distinction between these modes is rather difficult to make (Milgrom and Roberts 1992). As both mergers and acquisition lead to the integration of firms, both categories have been taken together and considered as a single category.

8 Dutch manufacturing MNEs in the United States, 1950–95

Rajneesh Narula and Annelies Hogenbirk

Introduction

Although the Netherlands, as with most small open economies, is highly internationalised, its multinational enterprises (MNEs) are spread across a greater variety of sectors and are engaged in a greater extent of foreign value-adding activities than most other small economies. The Netherlands accounted for 5.8 per cent of the total world-wide stock of foreign direct investment (FDI) in 1995, while MNEs from Sweden and Switzerland, two other small economies that are also highly internationalised, accounted for about 2.3 per cent and 4.0 per cent respectively (UN 1996). Furthermore, the activities of Dutch firms are considerably more internationalised than those of firms from most other countries, in terms of the geographic distribution of their subsidiaries, with overseas markets in some instances accounting for well over 70 per cent of their sales. In addition, they are engaged in much 'deeper' overseas investments in terms of types of value-adding activity: while most MNEs concentrate their high value-adding activity (such as R&D) at home, Dutch MNEs conduct half their total R&D activities outside their home country (Patel 1995).

The process of globalisation—here defined as the increasing convergence of income levels, consumption patterns and technological levels of the industrial countries—has been associated with an increase in the preference for MNEs from the industrial countries to concentrate their overseas value-adding activities in other converging economies (Dunning and Narula 1997). In line with this, Dutch MNEs have been increasing their presence in the rest of the Triad, and away from developing countries. One of the primary destinations of Dutch FDI has been the United States (US), which, apart from purely historical factors, has also, due both to its market size as well as by being a source for natural and technological assets, continued to attract a large share of Dutch FDI. Indeed, the US accounted for approximately 25.9 per cent of its total outward FDI stock in 1994 (OECD 1996). Dutch MNEs share this interest in the US with many other advanced industrial economies, as the US is the largest single destination for inward FDI. What is perhaps more interesting is that Dutch MNEs are among the largest inward investors in the US, far exceeding all other countries of equivalent size. At its peak in 1980, Dutch FDI represented almost a quarter of all inward stock in the US. In manufacturing investment, Dutch FDI in the US reached its peak as the largest inward investor in the manufacturing sector in 1984, with 24.1 per cent of all inward manufacturing stock.

These almost incomprehensibly large figures notwithstanding, there have been considerable dynamic changes taking place within the activities of Dutch MNEs on a sectorally desegregated level, as well as relative to the activities of its international competitors that deserve deeper analysis and further comment, some of which sheds light on the changing competitiveness of Dutch MNEs. For instance, although the share of the Dutch FDI stocks in 1995 was 12.1 per cent and was exceeded only by the United Kingdom (UK) and Japan, and was in fact almost equal to that of France and Switzerland combined, on the other hand, this share was less than half of its level in 1981 (24.7 per cent). Since 1981 the shares of the UK, Germany, France and Japan had continued to rise steadily. Furthermore, the Dutch position in the manufacturing sector, while not unimpressive, has also declined. Some of this change could be attributable to socioeconomic developments associated with the European Union causing an increased preference for intra-European FDI and therefore a reorientation of Dutch investments towards Europe and away from the US. Naturally, these same changes should have affected firms from other European economies as well. However, there is some evidence that Dutch firms have responded differently from the other European countries. Despite their significant share of manufacturing FDI, relative to German, Swiss and UK MNEs, Dutch firms have not expanded their US activities, and may even be said to have a much weaker position than previously.

It should be noted that the phenomenon of Dutch MNE activity is dominated by a relatively small number of very large firms. As such, any analysis of Dutch FDI and its use as a measure of Dutch industrial competitiveness must be made with caution, since the weak performance of two or three of these large firms can adversely affect the performance indicators used here, much more so than say, the UK or Germany, although the situation is somewhat similar in the case of Switzerland. As such our analyses continually draw on comparisons between several countries.

We start with a discussion of the changing motivations of inward FDI into the US. Sequentially, an overview of MNE activity in the US is presented. After that, we evaluate how Dutch FDI has changed over the period 1950–95, focusing on understanding the changes in the Locational (L) advantages of the US relative to those of the Netherlands, and the Ownership (O) advantages of Dutch MNEs. Throughout comparison is made with MNEs from other European countries. Conclusions are given in the final section.

FDI in the US: understanding changing motivations

During most of the postwar era, the US has played host to a large share of total world-wide stock of inward FDI. Indeed, statistics indicate that it has been the largest single host country throughout most of this century (Wilkins 1989, Dunning 1988). This is not altogether surprising, given its large market size, both in per capita and in absolute terms. Indeed, what is peculiar is that on a per capita basis, the US has received a relatively lower level of FDI than other countries at a similar level of development, and of more limited market potential (Dunning 1993b). Numerous studies have been undertaken on understanding the determinants of FDI in the US, both empirical and qualitative (see e.g. Grosse and Trevino 1996, Graham and Krugman 1991, Dunning and Narula 1994) and we will not attempt to summarise these here except to observe that these determinants indicate that changes in FDI in the US have been driven by economic imperatives, as well as what might best be described as strategic factors.

The economic factors are both push and pull. The 'pull' factors represent those identified in the traditional economics literature, such as market access, reduction of risk, access to immobile resources, overcoming trade and non-trade barriers, etc., and are well-documented in the literature. The literature on internationalisation has explained that firms tend to first enter overseas markets through trade-supportive investments, in the situation and where barriers to imports prevail, through, import-substituting investment, where immobile assets need to be utilised through natural-resource seeking investment. As has been demonstrated elsewhere (e.g. Dunning 1993b, Dunning and Narula 1994) much of the inward FDI into the US in the postwar period was initially of these types. Although European (and particularly Dutch) firms have been present in the US market for a considerable while longer, the majority of such investment was also of these types. It was only much more recently that inward FDI activity expanded towards high-value-adding activity and gradually became increasingly embedded in the US economy, and that firms have moved towards efficiency-seeking FDI in the US. This has much to do with the tendency towards rationalisation and globalisation of production among the Triad and by firms from the Triad occurring over the postwar period. This has made it possible for firms to achieve economies of scale and scope on a Triad-wide basis.

Despite the increasing similarities across countries, there remains distinct sectoral and technological specialisation in terms of competitive advantage by firms in particular regions and countries (Archibugi and Pianta 1992). Firms seeking access to complementary assets and competitive advantages that are associated either with the competitiveness of the location or with the competitive advantages of the firms located there, have been 'pushed' to engage in outward FDI in order to do so. This in turn has led to a concentration of value-adding activities on a world-wide basis in particular locations which reflects the advantages of each region or location. This dynamic has been further enhanced by the declining barriers to trade and investment among and between the Triad economies, and a corresponding relative decline in trade and investment with much of the developing world. Inward FDI in the US has, since the late 1970s, seen considerable investment by MNEs seeking to achieve such efficiency, and MNEs have gradually increased the extent and range of their value-adding activities in the US.

At the same time as this increasing rationalisation along economic lines, there has also been a growing use of strategic asset-seeking activity by MNEs.[1] By 'strategic' we mean activities which affect the long-term product-market positioning of firms such that they improve the firm's value without necessarily reducing net costs in the short term. Investments are made by firms to acquire assets which are specific to other firms or locations. Strategic asset-seeking activity has been noted to be a phenomenon also closely associated with globalisation, and is increasingly prevalent over the last decade or so (Dunning and Narula 1995, 1996). Strategic asset-seeking MNE activity has occurred through new modes of investment, such as through the use of strategic alliances and mergers and acquisitions (M&A). Over the period 1989 to 1995, 80 per cent of investment outlays in the US have been through acquisitions rather than greenfield investment, the majority of which (72.8 per cent) were conducted through existing US affiliates.

It is important to note that the changing structure of FDI activities of foreign firms reflects the evolving economic structure of the US and that of the various home countries, and that these changes represent 'exogenous' factors. In particular, the shifting focus of MNE activities over the past 50 years from manufacturing to services represents a gradual evolution, over time typical of most advanced industrial economies.[2]

Role of FDI in the US

Although prior to 1980 no figures were provided regarding the share of foreign affiliates in the US economy, successive surveys published by the Department of Commerce during the postwar period indicate that foreign-owned establishments have played a relatively insignificant role in the US economy with the exception of the chemicals sector, where by 1974 12 per cent of the US gross product in that sector was accounted for by foreign-owned affiliates (McClain 1983:284). By 1977 inward investors accounted for no more than about 2 per cent of total non-bank employees. However, foreign MNEs did have a larger influence on US exports and imports. Foreign MNEs accounted for 20 per cent of US exports, and 28 per cent of US imports in that same year. The high share of exports was attributed to large grain exports by foreign-owned firms. A substantial portion of US imports consisted of motor vehicles and metals and minerals, and affiliates were relatively highly concentrated in those two wholesale trade industries (Howenstine 1980).

By 1980, foreign affiliates employed 1.1 million employees, just 5.5 per cent of the total manufacturing employment in the US. Overall, FDI activities of foreign firms in the US experienced a sudden surge of inward investment activities in the early 1980s, which has continued since then. Graham and Krugman (1991) argue that when the ratio of FDI flows to GNP is examined, there is little evidence of a sudden surge, but rather of a long-term trend of an expanding role of foreign firms in the US economy, similar to that typical of other advanced industrial economies. By 1990 foreign firms accounted for 10.6 per cent of total employment and their importance as employers continues to rise both in absolute and relative terms. By 1994, foreign affiliates employed 2.1 million people which was 11.8 per cent of the US workforce in that year (Fahim-Nadir and Zeile 1996, OECD 1994).

The most recent attempt to evaluate the significance of foreign-owned firms to the US economy on an aggregate basis has been summarised in two articles published in the Survey of Current Business.[3] Table 8.1 summarises some of the most salient facts from these surveys, extended by some more general information of FDI activity in the US around the same time.

In 1990, foreign-owned firms accounted for 13.4 per cent of the total value added by US manufacturing industry. The analysis by the Department of Commerce suggests that foreign affiliates are relatively more efficient than US based firms—foreign-owned firms utilise larger plant scale, their employees are paid better and are more productive than the average US firm (Table 8.1). However, they are also concentrated in just a few sectors. Foreign-owned MNEs are particularly dominant in food and kindred products, printing and publishing, chemicals, stone, clay and glass products, electronics and electrical equipment and transportation equipment. In only the chemicals and stone, clay and glass products sectors is the foreign share over a quarter of total value added in the US.

In terms of country differences, although Dutch firms have a considerable share of the activities of foreign-owned affiliates in the US, these are concentrated in even fewer sectors, namely food and kindred products, chemicals, and electronic and electrical equipment (Table 8.2). It is interesting to note, however, that the majority of Dutch FDI activity is not in the manufacturing sector. In 1990, the share of manufacturing in total FDI stock was only 38.6 per cent compared to 58.6 per cent, 46.0 per cent, 55.4 per cent, and 73.2 per cent for Switzerland, the UK, Germany and France, respectively. It is also pertinent to note that although Dutch total investments in the mentioned manufacturing sectors are relatively large, their contribution to the US economy is not equally important. For example in the chemical sector, the Swiss investment position was only a third of that of the UK and the Netherlands, yet its contribution to total foreign value added in the US was 4.2 per cent, compared to 3.3 per cent for the Netherlands and 5.7 per cent for the UK in 1991. Germany's 1990 FDI stock in chemicals was comparable to that of the Netherlands, but its contribution to total foreign value added in that same year was almost twice as large. While the Netherlands has had a large influence based on historical investments, in most sectors other countries like the UK and Japan, and even other small open economies like Switzerland, now have a larger influence on the US economy. Further details are set out in Table 8.1.

Dutch MNE activity in the US

This section gives an overview of Dutch FDI activity in the US. The analysis is divided over three time periods. The first period, 1950–72, covers the time after World War II up to the termination of the Bretton Woods agreement. The second period covers the years 1973–9, when there was a large increase in investment activity in the US due to the increased liquidity position of European countries after the abolition of the gold standard. The last period covered is 1980 to 1994, when investments in the US have come to maturity.

Dutch MNEs in the US: 1950–72[4]

At the end of World War II, the US was at the height of its technological and economic hegemony. The war had left most European and Japanese firms with limited financial resources that were primarily devoted to the process of reconstructing their domestic production capacity. Moreover, their O advantages were severely depleted, particularly their technological assets, and they were in no position to compete with the US MNEs who were expanding into Europe after the war, much less invest in US production facilities, where costs were among the highest in the world (Dunning and Narula 1994). The shortage of capital also led to home government regulations that severely limited capital exports. Despite this, outward FDI stocks[5] in the US had exceeded their prewar level of US$1.8 billion in 1937, to US$3.4 billion in 1950. Much of this investment was dominated by the UK, Canada and the Netherlands which controlled 34.4 per cent, 30.3 per cent, and 9.8 per cent of the total inward FDI stock in 1950 (Table 8.2). In terms of manufacturing FDI share, Canadian firms accounted for 41.1 per cent of all inward manufacturing FDI stock, while the UK and the Netherlands accounted for 29.6 per cent and 3.9 per cent respectively (Table 8.2). Most of the Dutch FDI stake was in the petroleum sector, where Dutch FDI represented 55.8 per cent of the total inward FDI in that sector in 1950. Data for 1950 is relatively sparse, but the evidence indicates that Dutch manufacturing firms had a very small presence in the US, compared to MNEs in other countries. Although these figures are in current terms the changing significance can be gauged from the fact that Swiss firms' manufacturing FDI stocks were five times that of Dutch firms in that year, although in terms of total FDI stocks they had almost exactly the same value.

Although inward FDI into the US continued to grow at a rapid rate through much of the 1950s and 1960s, reaching US$6.9 billion in 1960 and US$13.3 billion by 1970, the situation remained much the same. In terms

Table 8.1 Evidence on the role of foreign affiliates in the US economy

Indicator	*All countries*	*France*	*Germany*	*Netherlands*	*Switzerland*	*UK*
Number of Industries (SIC, four digit), 1991	410	160	174	98	NA	272
FDI position year end 1990 historical cost basis (dollar)	396,702	18,665	28,309	63,938	17,745	102,790
Manufacturing (all dollars)	157,431	13,669	15,695	24,717	10,393	47,304
Share in total investment, %						
Manufacturing	39.7	3.4	4.0	6.2	2.6	11.9
Food and kindred		0.4	0.0	1.9	D	2.2
Chemicals		9.6	2.1	2.1	0.8	3.4
Primary and fabricated metals		D	0.3	0.4	D	0.8
Machinery		D	0.8	1.0	0.7	1.2
Other manufacturing		1.0	0.7	0.9	0.4	4.3
Share in country total %						
Manufacturing	39.7	73.2	55.4	38.7	58.6	46.0
Food and kindred	5.8	8.0	0.4	11.6	D	8.4
Chemicals	11.6	21.8	29.3	12.7	18.4	13.1
Primary and fabricated metals	3.9	D	4.2	2.2	D	3.2
Machinery	6.9	D	11.7	6.2	16.0	4.7
Other manufacturing	11.5	20.8	9.7	5.9	7.9	16.6
Plant scale, 1991 (thousands of dollars)						
US owned establishments	3,373	3,977	2,914	3,811	NA	3,342
Foreign owned establishments	19,209	15,957	24,053	25,753	NA	14,336

Table 8.1 continued

Production worker wages per hour (dollars), 1991						
US owned establishments	11.37	11.66	11.43	11.61	NA	11.53
Foreign owned establishments	12.87	13.36	13.30	12.00	NA	11.87
Number of establishments, 1990	11,934	1,217	1,045	618	697	3,291
Share in all countries	100	10.2	8.8	5.2	5.8	27.6
Number of employees,1990	2,004,235	178,324	229,007	123,424	133,934	456,618
Share of all manufacturing employment US	10.64	0.95	1.22	0.66	0.71	2.42
Output per production worker per hour, 1991, US$						
US owned establishments	115	133	100	122	NA	120
Foreign owned establishments	182	160	165	210	NA	168
Value added in foreign establishments (mn US$) 1990	177,360.7	15,390.3	20,442.5	11,648.1	14,829.4	40,325.9
Share per industry in US total, 1990, %						
All manufacturing	13.4	1.2	1.5	0.9	1.1	3.0
Food and kindred products	13.8	0.8	0.3	2.1	2.8	4.1
Printing and publishing	10.1	0.5	1.2	0.5*	D	2.8
Chemicals and allied products	31.9	1.9	6.1	3.3	4.2	5.7
Stone, clay, and glass products	24.8	6.6	1.8	0.5	1.5	5.1
Electronic and other electric equipment	15.6	0.8	2.1	2–3*	0.7	2.4
Transportation equipment	4.9	0.5	0.2	<0.05*	D	0.8

Sources: Howenstine and Shannon, 1996; Howenstine and Zeile, 1994; US Department of Commerce, various years.

Notes
* authors' estimate; # Survey of Current Business, August 1992; D: data suppressed to avoid disclosure of data of individual companies.

Table 8.2 Stock and share of inward FDI in the US, 1950–79 (millions US $ and percentage shares)

	1950	*1955*	*1960*	*1965*	*1967*	*1970*	*1972*	*1979*
All areas								
Total investment	3,391	5,079	6,910	8,797	9,923	13,270	14,868	54,462
Canada								
Total investment	1,029	1,541	1,934	2,388	2,575	3,117	3,466	7,154
Share in total inward FDI in US	30.3	30.3	28.0	27.1	25.9	23.5	23.3	13.1
SMTI*	45.5	46.1	48.2	51.0	54.3	58.9	63.5	50.5
SMDMI**	41.1	40.4	35.7	35.0	33.4	29.9	30.3	17.3
Netherlands								
Total investment	334	613	947	1,304	1,508	2,151	2,357	12,672
Share in total inward FDI in US	9.8	12.1	13.7	14.8	15.2	16.2	15.9	23.3
SMTI	13.2	20.7	22.5	25.2	25.7	30.3	32.6	27.6
SMDMI	3.9	7.2	8.2	9.4	9.3	10.6	10.6	16.7
Switzerland								
Total investment	348	522	773	940	1,096	1,545	1,675	3,449
Share in total inward FDI in US	10.3	10.3	11.2	10.7	11.0	11.6	11.3	6.3
SMTI	58.6	54.0	55.2	62.8	67.9	74.2	71.3	66.1
SMDMI	17.9	16.0	16.4	17.0	17.8	18.7	16.4	10.9

Table 8.2 continued

UK								
Total investment	1,168	1,749	2,248	2,852	3,156	4,127	4,987	9,796
Share in total inward FDI in US	34.4	34.4	32.5	32.4	31.8	31.1	33.5	18.0
SMTI	28.9	29.2	32.1	29.4	32.0	33.7	34.5	36.2
SMDMI	29.6	29.0	27.7	24.1	24.1	22.7	23.7	17.0
Japan								
Total investment	na	na	88	118	108	229	–154	3,493
Share in total inward FDI in US	na	na	1.3	1.3	1.1	1.7	–1.0	6.4
SMTI	na	na	na	47.5	59.3	30.6	–46.8	19.9
SMDMI	na	na	na	1.6	1.5	1.1	1.0	3.3

Sources: US Department of Commerce, Selected data on Foreign Direct Investment in the United States1950–79; Foreign Direct Investment in the United States: Balance of Payments and Direct Investment Position Estimates, 1980–86; Foreign Direct in the United States, Operations of US Affiliates of Foreign Companies, revised estimates for several years.

Notes

* Share manufacturing in total investment (SMTI);

** Share of manufacturing in total direct manufacturing investment in the US (SMDMI).

of relative share of total FDI, the Netherlands was still the third largest investor overall, following the UK and Canada. However, Dutch investment continued to be concentrated in the petroleum sector, particularly given the continued expansion of Shell into the US market after the war.

In the first survey of postwar assets of foreign investments in 1959 (US Department of Commerce 1962), FDI in the manufacturing sector represented 22.1 per cent of the outstanding Dutch FDI stock in the US in that year, compared with 47.8 per cent for Canada, 55.2 per cent for Switzerland, and 32.2 per cent for UK. In absolute terms, Dutch stocks were still much lower than those from other MNE home countries. The manufacturing stock of the UK was 3.5 times that of the Netherlands, though UK firms' manufacturing sales were only 1.6 times higher. A similar comparison for Switzerland gives corresponding ratios 2.0 for stocks and 0.7 for manufacturing sales. Although some of this discrepancy can be attributed to the use of historical cost basis for estimating stocks, thereby causing investments of earlier vintage to be understated, both the UK and Switzerland had been significant investors at about the same level of the Netherlands for about as long. This would indicate that either the O advantages of Dutch manufacturing MNEs were much superior to those of Swiss and UK MNEs, particularly with regard to utilising a much higher scale of production, or they were involved in a much higher level of intra-firm trade.

Dutch FDI in manufacturing had begun to grow quite rapidly during the latter half of the 1960s (Table 8.2). Between 1965 and 1970, Dutch manufacturing FDI grew at an average annual rate of 19.7 per cent. While this partly reflects its low base, it would indicate that the O advantages of these MNEs were improving *vis-à-vis* those of their European competitors. This was the largest growth rate among the significant inward investors to the US—the next highest growth rate was exhibited by Swiss FDI at 18.8 per cent over the same period. This evidence would seem to indicate that the O advantages of Dutch MNEs were in the ascendancy, relative to those of UK, Swiss and Canadian firms. By 1971 the share of manufacturing in the total inward FDI stocks of the Netherlands, Canada, Switzerland and the UK were 31.3 per cent, 60.3 per cent, 71.3 per cent and 35.2 per cent respectively. It is not the objective of the current chapter to delve into the reasons for this growth. Suffice to say this recovery represents the effect of several different factors. First, there was a return of investors who had had investments prior to the war but which had either been sold off, sequestered, or neglected, and this growth simply represented a reinstatement of these activities (US Department of Commerce 1962). Second, the importance of the US as a destination for exports of Japanese and European firms led to trade-supportive investments—the GDP of the US was 1.8 times that of the six founding members of the EEC[6] in 1960.

Third, the US represented an important source of various sorts of natural resources, particularly petroleum and various agricultural products[7] such as soy beans, and investment undertaken in the primary sector often led to upstream vertical investments in the manufacturing sector. In the 1959 benchmark survey, 44.8 per cent of total sales of foreign affiliates in manufacturing were in the food and beverages industry. Fourth, there had been a recovery of the O advantages of European MNEs in sectors in which they had traditional strengths such as pharmaceuticals, chemicals and non-electrical machinery. The last two sectors tend to involve high transportation and shipping costs, and significant economies existed through local production, and accounted for 25.8 per cent of manufacturing sales in 1959. In general, though, the US market was served by non-US firms through exports rather than through hierarchies, with exports to the US growing at an average annual rate of more than 85 per cent between 1948 and 1960 for the Netherlands,[8] 4.7 times the growth rate of FDI stock. The volume of Dutch exports (US$ 208.0 million) to the US was almost equal to Dutch FDI stock in manufacturing in the US (US$ 213.0 million) in 1960.

Unfortunately, data on subsectors in manufacturing are not available on a country-by-country basis for the years after 1959. Basing our analysis on a comparison between data for 1959 and 1973,[9] however, the evidence would indicate that the most important sectors for Dutch MNEs were food and kindred products, chemicals and electrical machinery. Indeed, these were the same sectors in which the Netherlands had a comparative advantage in exporting.

Nonetheless, the importance of FDI remained relatively insignificant compared to the US economy, relative to its market potential *and* relative to the overall FDI outflows of their home countries. The general liquidity problem, and the shortage of dollars meant that FDI in the US was primarily supported through reinvested earnings. For instance, between 1960 and 1970, 55.2 per cent of change in total FDI stocks occurred through reinvested earnings, and 51.0 per cent in manufacturing. The ratio for the Netherlands was 74.1 per cent and 53.0 per cent, respectively (US Department of Commerce 1984). In terms of FDI stock as a percentage of US GDP, Dutch FDI grew from 0.07 per cent in 1960 to 0.10 per cent in 1970. Overall, much of Dutch FDI was of a trade-supportive nature, given the advantages of Dutch firms.

Dutch MNE activity in the US: 1972–80

The termination of the Bretton Woods agreement, which led to the abolition of the gold standard and the subsequent introduction of floating exchange rates boosted the liquidity position of the major investing economies. There was a subsequent explosion of FDI activity on a global basis, with worldwide total outward FDI stocks increasing from US$211.1 billion in 1973 to US$551.0 billion in 1980. This represented an average annual growth rate of 15 per cent, outstripping world-wide GDP and world trade growths during this period (Dunning 1993). Outward FDI from the Netherlands grew at approximately this rate, although its relative share in the US increased only marginally from 7.5 per cent to 7.6 per cent.

Although the US was no longer the largest host country in terms of inward FDI stock by the early 1970s—inward FDI stock in the US in 1973 was US$20.6 billion, while that in the UK was US$24.1 billion—it was still pre-eminent since it was still the single largest homogeneous market. With the exogenous shocks of the early 1970s, particularly due to the change in the exchange rate mechanism,[10] FDI flows to the US increased dramatically.

As such, in contrast to the previous decades, during the period 1972 to 1980 reinvested earnings accounted for only 33.3 per cent of the increase in inward FDI stock. In manufacturing, only 32.4 per cent of growth in FDI stock was through reinvested earnings. Dutch manufacturing FDI into the US grew at twice the rate of total outward Dutch and world-wide FDI stocks (Narula 1996),[11] but still slower than Dutch petroleum inward FDI into the US.

The cost of production in most of the home countries (which, with the exception of Canada, were all European) also began to rise considerably, as productivity growth of most Northern European economies began to slow (van Ark and de Jong 1996), 'pushing' out European MNEs, particularly towards the US. The Netherlands was no exception to this process, with manufacturing GDP increasing by less than 0.2 per cent between 1973 and 1979 (van Ark 1995). However, using a basis of value added per person employed in manufacturing, van Ark and de Jong (1996) illustrate that between 1973 and 1979, Dutch productivity relative to that of the UK, France and Germany was 16–23 per cent higher, but relative to the United States, it was 13–18 per cent lower. This would indicate that the Dutch MNEs were relatively more efficient than their main European rivals, but much less so than US firms.

In terms of sectoral specialisation, Dutch manufacturing FDI in 1979 continued to be concentrated in food and kindred (31.4 per cent of total foreign investment in food and kindred in the US), chemicals (12.2 per cent of total investment in that sector) and machinery (20.0 per cent of total investment in that sector). However, in both the chemical and the machinery sectors, Dutch MNEs were slowly losing their prominent position by the end of the 1970s. In the same sectors the importance of the UK was increasing. Both the UK and Germany were rapidly increasing their position with primary and fabricated metals. Swiss MNEs, though making a small contribution to total investment, were rapidly catching up, with new investments growing at a much faster rate than most other countries in both the primary and fabricated metals and the machinery sectors.

FDI stock to export ratios for the end of this period reveal that the Netherlands were serving the US market mainly from their US affiliates (ratio equals 2.8) and not through exports. The ratio was particularly high in the chemical (6.1) and machinery (2.2) sectors. For most other countries the pattern was exactly the opposite. Exports are more than twice as large as total stock for Germany and France, and about 25 per cent larger than stock for the UK. However, Switzerland shows a pattern similar to that of the Netherlands—the stock to exports ratio equals 1.5 with a similarly high ratio across all sectors except machinery. Overall, total investments in the US increased rapidly, suggesting that the relative L advantages of supplying goods made by EC firms from a US location increased substantially over this period (Dunning 1993b).

Coming to maturity: 1980–94

With the rising O advantages of non-US firms, the improving L advantages of the US as a manufacturing base for these firms led to a swell of foreign investments in the US. By 1983, the share of manufacturing value added of the US economy accounted for by foreign affiliates had risen to 7 per cent. There were two aspects to this growth. First, the US continued to represent an important market for most firms from industrialised countries. Indeed, Rosenzweig (1994) estimates that at least 20 per cent of the revenues of most European and Japanese MNEs derive from their North American operations. This is particularly true in the case of Dutch MNEs, which, like MNEs from other small countries, tend to be much more internationalised than firms from countries with larger home markets (Narula 1996). Furthermore, Dutch FDI tends to be dominated by a relatively small group of large MNEs. Firms such as Philips and Akzo are among the most internationalised MNEs, with over 90 per cent of their sales, and well over 80 per cent of their production being undertaken abroad (UN 1996). Table 8.3 shows that between 1980 and 1986 the Netherlands' overall investment position in the US increased, though its share in total is declining from 23.1 per cent in 1980 to 18.5 per cent in 1986. Large new investments are made in the food and kindred sector (share of food and kindred in all Dutch manufacturing FDI in the US increases to over 36.8 per cent in this period). However, the relative shares of both the chemical and the machinery sectors are declining. Over the same period, the UK rapidly increased its share in total investment.

However, while it is true that the US remains an important market, European integration and the overall economic catch-up of European economies had meant that European MNEs in particular were now faced with a choice of investing and rationalising their production activities in an integrating Europe or expanding their US presence. Not surprisingly, many firms preferred to focus on Europe, given that it represented an increasingly homogeneous market about the same size as the US. Furthermore, these firms were already considerably more familiar with Europe, and this presented a potentially more profitable option for these firms. As Table 8.4 shows, the share of outward FDI stocks to the US accounted for by the total outward stock outstanding of some major European home countries declined during the second half of the 1980s, and this decrease has been mirrored by a

Table 8.3 FDI positon of major European home countries, stock, share per sector and share of sector in total FDI, 1980 and 1986

Year	Country		All industries	Petroleum	Manufacturing	Food and kindred	Chemicals	Primary and fabricated metals	Machinery	Other manufacturing	Finance, insurance, real estate	Other
1980	France	Total stock	3,731	42	2,291	111	633	555	61	932	119	1,279
		SAAFDI*	4.49	0.34	6.94	2.28	6.06	15.52	0.87	13.07	0.88	5.26
		ICTOTAL**				4.85	27.63	24.23	2.66	40.68		
1986		Total stock	7,709	D	7,195	372	4,287	652	242	1,643	1,501	D
		SAAFDI*	3.50	D	10.00	3.06	18.68	8.95	2.10	9.11	3.33	D
		ICTOTAL**				5.17	59.58	9.06	3.36	22.84		
1980	Germany	Total stock	7,596	95	3,887	43	1,815	333	832	864	1,216	2,398
		SAAFDI*	9.15	0.78	11.77	0.88	17.39	9.31	11.89	12.11	8.99	9.87
		ICTOTAL**				1.11	46.69	8.57	21.40	22.23		
1986		Total stock	17,250	45	7,426	36	3,961	161	2,035	1,232	1,633	8,146
		SAAFDI*	7.83	0.15	10.32	0.30	17.26	2.21	17.62	6.83	3.62	10.97
		ICTOTAL**				0.48	53.34	2.17	27.40	16.59		
1980	The Netherlands	Total stock	19,140	9,265	4,777	225	2,002	170	1,094	1,287	2,164	2,934
		SAAFDI*	23.05	75.94	14.47	4.62	19.18	4.75	15.64	18.04	15.99	12.07
		ICTOTAL**				4.71	41.91	3.56	22.90	26.94		
1986		Total stock	40,717	*11,481*	13,293	4,890	3,457	493	1,732	2,722	7,449	6,151
		SAAFDI*	18.47	40.61	18.47	40.26	15.06	6.77	15.00	15.09	16.52	10.03
		ICTOTAL**				36.79	26.01	3.71	13.03	20.48		
1980	Switzerland	Total stock	5,070	43	3,116	586	1,154	264	681	430	907	1,004
		SAAFDI*	6.11	0.35	9.44	12.04	11.05	7.38	9.74	6.03	6.70	4.13
		ICTOTAL**				18.81	37.03	8.47	21.85	13.80		
1986		Total stock	12,058	39	7,520	D	2,137	D	941	1,401	2,455	2,044
		SAAFDI*	5.47	0.13	10.45	D	9.31	D	8.15	7.77	5.44	2.75
		ICTOTAL**				D	28.42	D	12.51	18.63		
1980	United Kingdom	Total stock	14,105	–257	6,166	1,098	2,301	524	1,103	1,140	3,834	7,273
		SAAFDI*	16.98	–2.11	18.68	22.55	22.04	14.65	15.77	15.98	22.34	20.33
		ICTOTAL**				17.81	37.32	8.50	17.89	18.49		
1986		Total stock	55,935	11,758	16,500	2,899	5,906	782	2,338	4,575	13,218	14,459
		SAAFDI*	25.38	*40.41*	22.93	23.87	25.73	10.74	20.25	25.37	29.31	19.47
		ICTOTAL**				17.57	35.79	4.74	14.17	27.73		

Source: US Department of Commerce; italics are 1985 data.
underlined are data for 1981

Notes

*Share in All Areas FDI per industry; **Share of industry in country total.

Table 8.4 Share of outward FDI stock from major home countries to Europe and the US

	Percentage of stock in US		*Percentage of stock in Europe*	
Country	*1985*	*1994*	*1985*	*1994*
Netherlands	41.0	25.9	32.8	45.9
Germany	30.3	21.1	43.8	60.6
Switzerland	29.0	24.5	50.5	49.6
United Kingdom	36.6	31.5	27.8	38.0
France	26.3	20.8	58.4	62.8

Source: OECD International Direct Investment Statistics, Table 8, various countries.

Note
For Switzerland, North America = US

corresponding increase in the share of Europe, with the exception of Switzerland, which was already heavily involved in European markets.

Overall, FDI activities of foreign firms in the US experienced a sudden surge of investment activities in the early 1980s, which has continued until the mid-1990s. This sudden surge of investment, as well as a chronic (and huge) balance of payments problem prompted considerable concern among policy makers and the general public alike, leading to, among other things, various legislative actions including the Exxon-Florio amendment and the increased monitoring of foreign-owned affiliate activity by government agencies (Graham and Krugman 1991).

Indeed, the increased protectionism (and in many instances, the threat of protectionism) displayed by the US led to even further investment by foreign firms, who wanted to avoid being discriminated against, relative to domestic firms. They did so in order to pre-empt attempts to limit manufacturing imports (through *inter alia,* voluntary export restrictions) as well as attempts to regulate and increase local-content requirements for foreign (but especially Japanese) firms. This situation was not improved by an overvalued US dollar. In other words, the L advantages of the US were artificially enhanced in the early- and mid-1980s by non-tariff barriers and changing macroeconomic factors. Dutch investments continued to grow, although in terms of total share of inward FDI from all countries it reached its peak at 24.1 per cent in 1981, gradually declining ever since then. In the manufacturing sector, Dutch MNEs became the largest single foreign direct investor in the US in 1981, with a share of 22.2 per cent of total inward FDI stocks,[12] overtaking the UK in that year. Dutch FDI maintained its pole position in the manufacturing sector until 1985. In fact, Dutch inward FDI stock grew at almost the same rate between 1980 and 1985 (26.0 per cent) as it had between 1975 and 1980 (29.6 per cent). However, in terms of overall growth rates, Dutch FDI was clearly overshadowed by the growth of Japanese FDI in the US, which experienced growth rates twice those of most other countries, albeit from a low base.

The Plaza accord in 1985, which led to a devaluation of the US dollar against the currencies of its major trading partners, improved the competitiveness of US firms relative to the exports of its major international competitors. In 1985 and 1986 the yen, the pound and the German mark rose by 29.4 per cent, 26.2 per cent and 12.5 per cent respectively against the US dollar. This had the effect of raising the costs of exports to the US, and spurred further investment into the US by most European firms. Indeed, manufacturing sales of foreign affiliates grew at 6.7 per cent between 1981 and 1983, and increased to 10.6 per cent between 1983 and 1987. However, it is interesting to note that Dutch sales grew at a negative rate between 1981 and 1983, but grew at 11.6 per cent between 1983 and 1987. Between 1983 and 1987, Swiss and UK manufacturing sales exhibited growth rates of 15.9 per cent and 19.2 per cent, respectively.

Growth of the US economy had stalled, relative to that of much of Europe during the period 1979 to 1987. GDP per capita growth of 'Northwest' Europe[13] during this period was 1.7 per cent compared to 1.5 per cent for the US. This implied that the relative attraction of the US had decreased with the development of the single market, encouraging European firms to invest in the EC rather than in the US. Indeed, manufacturing exports to the US from the five major European home countries—Netherlands, UK, Germany, France, and Switzerland increased at 13.1 per cent, 22.0 per cent, 29.8 per cent, 21.0 per cent and 20.6 per cent respectively between 1983 and 1987, higher than the growth rates of manufacturing sales of US affiliates over the same period.

For several European countries the ratio of the sales of US affiliates to US imports from the home economy (hereafter sales to imports ratio)[14] has been calculated and is reported in Table 8.5. The ratio is used as a proxy for the propensity to supply the US market with sales from the affiliates that are located in the US, rather than by exports from the home country. Although the sales to imports ratio of most EU countries did in fact decline between 1983 and 1987, it is important to realise that these figures mask important differences between industries. For instance, this sales to imports ratio in the food and kindred products and chemicals sector increased between 1983 and 1987, while electrical machinery declined. These are three of the most important sectors for Dutch MNEs, which together accounted for 75.8 of total investment in manufacturing in 1986. It is important to note the magnitude of the sales to imports ratio as well as the direction of change. For instance, in 1987, Dutch firms revenues in chemicals were 10.7 times those of the total imports from the Netherlands in that sector, compared to, say, the food sector where the ratio was 1.5. This indicates that given the relatively high levels of imports and sales, and the vintage of the investments, chemical firms were relatively decentralised in their production activities across countries, and that their US operations were 'stand-alone'. In other words, these firms were engaged in a much higher level of value-adding activities in the US, than say German and French MNEs. Also, across sectors, the low ratio for food and kindred sector for Dutch firms relative to the UK indicates that Dutch firms rely on intra-firm trade much more to supply the US market, indicating a much stronger interdependency within these firms. This probably indicates that Dutch firms were much more rationalised on a world-wide basis, while the Swiss and UK firms were utilising more of a multi-domestic strategy.[15]

The sales to imports ratio also indicates that there were considerable attractions of the US as a production site relative to other locations in the chemicals industry of Dutch MNEs. However, this is not entirely true for chemical firms of all nationalities. The sales to imports ratio in chemicals fell for Swiss and German firms, both relatively large players in the chemicals sector. It did, however, rise for UK firms, and given that MNEs from the Netherlands and the UK were the most internationalised in terms of geographical spread and overseas value-added activity, it might indicate the presence of certain O advantages, particularly those associated with the economies of common governance, as well as what is sometimes referred to as the experience effect (Yu 1990). In other words, the decline of the sales to imports ratio for foreign owned firms in the US for manufacturing represented a decline in both the L advantages of the US and the strength of the O advantages of foreign firms.[16] The ratios of the other sectors tell a similar story.

It would seem that Dutch MNEs were undertaking a change in their interdependence between their US affiliates and their parent organisations—the ratio of manufacturing affiliate exports to imports increased from 39.4 per cent in 1985 to about 81.9 per cent in 1992 (US Dept of Commerce 1990a, 1995). The propensity of Dutch affiliates to import from the Netherlands did not change very much, but we see an increasing propensity to export to the parent organisation. This clearly indicates that an increasing integration was taking place between the US affiliates and the rest of the MNE organisation. It is also worth noting that imports have exceeded exports since 1977 (the year in which data on this variable has been systematically collected), but that the ratio of imports to exports has consistently declined for Dutch MNEs, while this ratio for the UK has tended to be about equal and has not substantially changed over time (Zeile 1993).

After reaching its peak in terms of share of total inward FDI in the US, Dutch FDI began to slowly decline in terms of relative manufacturing share from 16.6 per cent to 10.2 per cent between 1987 and 1995. Although this in part represents the growing importance of Japanese FDI, it is significant to note that the Dutch position in manufacturing FDI had already been surpassed in terms of stock (on a historical cost basis) by the UK in 1986 and Germany and France were rapidly catching up. In terms of sales, the Dutch position had been surpassed by most other European countries by then as well. By 1994, the share of manufacturing sales of Germany, France, Switzerland and the UK are 2.7, 2.0, 1.6, and 3.9 times larger than Dutch manufacturing sales respectively. Japanese MNEs were also catching up with total manufacturing stock being slightly (6.0 per cent) smaller than Dutch manufacturing stock in 1994, although total FDI stock was 46.0 per cent larger than that of Dutch MNEs. It is also important to note that in terms of growth rates, Dutch FDI manufacturing sales grew at 13.9 per cent between 1987 and 1992, but displayed negative growth of 0.7 per cent between 1992 and 1994, the latest year for which sales data are available.

In the period 1992–4, the lack-lustre performance of Dutch MNEs relative to all MNEs, which displayed corresponding growth rates of 18.3 per cent and 10.2 per cent, has partly to do with the high concentration ratio of Dutch manufacturing firms (Table 8.1). Much of FDI is accounted for by a small group of parent firms, Philips, Akzo-Nobel, Unilever and Shell, who are heavily involved in large mergers and acquisitions (M&A).[17] It also, to some extent, reflects the restructuring of Dutch firms in response to increased competition by other European firms and the increasing presence of Japanese competitors in their principal markets.[18] However, such pressures also affected MNEs from Switzerland, Germany, UK and France. The sales to imports ratio of the Netherlands' manufacturing (Table 8.5) increased from 4.2 to 6.2 between 1987 and 1992, but fell to 5.2 by 1994. Although the same ratio also decreased for the UK and Switzerland during this last period, the drop was relatively insignificant, indicating that for Dutch firms the L advantages of a US production base had initially risen, but had fallen again, and those of the US relative to the UK and Switzerland had been almost unaffected. This is partly reflected in the higher growth of GDP per capita of the Netherlands (2.1 per cent) compared to the US (1.6 per cent) between 1987 and 1994,[19] whereas that of Switzerland and the UK grew at a much lower rate of 0.3 per cent and 1.3 per cent respectively. It is to be noted that the countries with relatively 'new' MNEs—Germany and France—have much lower sales to export ratios for manufacturing—the extent of local production was less than twice that of exports in most cases, and indicates that these firms were undertaking a lower extent of value added in the US. For instance, although German manufacturing sales in 1989 were about 2.0 times that of Dutch firms, the ratio of value added was 1.8 in 1990. These 'new' MNEs are at a much earlier stage of internationalisation, and as such tend to depend more on their parent groups than more established MNEs, who also tend to be more embedded in the host country's domestic economy. The imports from the parent companies of German firms were worth about 29.8 per cent of sales as opposed to 17.1 per cent for Dutch firms, and 7.9 per cent for UK firms in 1992. As such, it might be argued that these firms were at an early stage of import-substituting investment and had not fully rationalised their US activity.

On a disaggregated level, much of the decline in sales of US affiliates of Dutch firms is associated with the food products sector and reflects strong competition in the US market, resulting in low prices as well as the sale of a plant by Koninklijke Gist Brocades N.V. to the Canadian firm Lallamand in 1994,[20] while electrical machinery and chemicals both increased their sales to export ratio, albeit relatively slowly during the most recent period, while the ratio of non-electrical machinery experienced a sudden decline. This is probably the result of Philips' disposal of the Blockbuster video chain in 1993.[21] What does contrast with this is the behaviour of the other countries (Table 8.5) where, with a few exceptions, such as the continuous decline of electrical machinery in the UK, and the decline of electrical machinery during the most recent period for France, all the rest of the sectors in all the other countries have shown consistent growth. This would imply that either the L advantages of most of the other European countries had been declining relative to the US while that of the Netherlands had been improving, or that the competitiveness of Dutch manufacturing MNEs had reduced relative to those of their (US and European) competitors. There is clearly some truth in both of these factors. Evidence on the growth of real gross hourly wages indicates that as a location, the Netherlands was a much more competitive location to engage in production relative to other Northwest European locations, since wages increased at 0.2 per cent between 1987 and 1994, while that of North-western Europe as a whole increased at 1.4 per cent (van Ark and de Jong 1996). Data on relative productivity also confirms this, and the fact that Dutch productivity in manufacturing, albeit lower than US productivity was showing signs of catching up, compared to its European competitors.

On the other hand, the declining share of Dutch manufacturing FDI, as well as the slow growth rates of Dutch manufacturing sales in the US indicate that there was also a decline in their O advantages. Although, given the highly rationalised nature of Dutch MNEs, it might be expected that Dutch MNEs were now supplying their US market with cheaper substitutes produced in Eastern Europe, less than 1.3 per cent of the Dutch outward FDI stock in Europe was located in Eastern Europe (OECD 1996). Furthermore, were this the case, we would expect to see a rise in intra-firms imports from 'other affiliated firms', which excludes those from the parent of the MNE. Although the share of such imports as a percentage of total intra-firm imports by Dutch affiliates increased from 1.8 per cent in 1987 to 10.5 per cent in 1992, this also includes intra-firm imports by firms in the petroleum sector (Table 8.6a).

Furthermore, there has been a gradual decline in the expenditures on manufacturing plant and equipment expenditures. As a percentage of total plant and equipment expenditures by foreign affiliates, the Netherlands has fallen from 4.6 per cent in 1983 to 3.5 per cent in 1994, while that of the UK has gone up from 15.3 per cent to 19.2 per cent over the same period. In fact, in 1994 only 16.1 per cent of all plant and equipment expenditures were made in manufacturing, compared to 41.7 per cent for the UK (Table 8.6b).

Table 8.5 Sales over imports,[a] several years, several countries

Country	Year	*All industries*	*Total manufacturing*	*Food and kindred*	*Chemicals*	*Primary and fabricated metals*[#]	*Machinery*			*Other manufacturing*
							Non-electrical	*Electrical*	*Total*	
France	1983	6.7	2.2	1.2	1.2	1.5	1.0	0.5	0.8	3.8
	1987	4.2	1.7	1.1	1.5	0.7	*	*	1.9	1.9
	1992	6.1	2.8	2.0	4.9	7.5	0.5	5.0	1.6	2.5
	1994	6.8	3.2	2.4	5.5	5.1	1.2	2.7	1.7	2.6
Germany	1983	4.0	1.9	0.4	10.4	1.1	0.9	1.8	1.3	0.7
	1987	2.7	1.1	0.2	6.6	1.7	0.3	1.9	0.7	0.5
	1992	4.4	1.9	0.7	6.3	2.6	0.7	1.9	1.1	1.1
	1994	4.6	2.0	0.7	6.3	2.7	0.9	2.8	1.5	1.1
Netherlands	1983	15.9	4.4	1.3	8.9	*	0.5	*	*	2.0
	1987	11.8	3.9	1.6	10.7	0.3	0.3	*	*	1.1
	1992	17.2	6.2	4.8	15.4	1.3	*	*	5.3	1.9
	1994	16.6	5.2	2.4	17.9	0.8	0.4	8.9	5.2	1.2
Switzerland	1983	13.6	5.1	*	14.0	*	1.2	2.8	1.5	1.2
	1987	9.7	4.6	*	9.8	4.3	*	*	1.0	*
	1992	13.3	6.5	90.0	9.9	8.0	*	*	5.3	1.3
	1994	11.9	6.2	71.8	10.3	6.9	*	*	4.1	1.7
United Kingdom	1983	8.1	3.4	12.6	6.0	1.6	2.0	2.6	2.2	2.3
	1987	7.3	3.2	11.3	9.3	3.4	0.8	1.5	1.0	2.7
	1992	10.3	5.0	15.9	10.3	5.3	1.2	1.3	1.2	5.8
	1994	10.5	4.6	17.9	11.3	5.1	1.6	0.9	1.3	4.1

Sources: US Department of Commerce, Benchmark Surveys; Foreign Direct Investment in the United States, operations of US affiliates of foreign companies, various issues; UN Commodity Trade Statistics, various years.

Notes

[#] Primary and fabricated Metals: data 1986 used instead of 1987 for the Netherlands; [a] Ratios are calculated by dividing the sales of the foreign affiliates in the US by US commodity imports from the home country of the affiliate.

Table 8.6a Intra-firm imports, several countries, 1982, 1987 and 1992

Country	*Year*	*All industries*	*Manufacturing*	*Share of mfg in total*	*By foreign parent group*	*%*	*By other foreigners*	*%*	*By foreign affiliates*	*%*
France	1983	3,575	1,838	51.4	2,657	74.3	918	25.7		
	1987	4,330	1,773	40.9	3,264	75.4	1,066	24.6	365	8.4
	1992	8,275	5,391	65.1	4,673	56.5	3,602	43.5	1,104	13.3
Germany	1983	8,722	2,289	26.2	7,073	81.1	1,649	18.9		
	1987	17,264	4,312	25.0	14,999	86.9	2,265	13.1	360	2.1
	1992	19,029	8,054	42.3	15,422	81.0	3,608	19.0	591	3.1
Netherlands	1983	4,309	884	20.5	1,237	28.7	3,072	71.3		
	1987	4,268	1,443	33.8	1,687	39.5	2,580	60.4	77	1.8
	1992	7,968	2,891	36.3	4,297	53.9	3,671	46.1	837	10.5
Switzerland	1983	2,125	719	33.8	1,184	55.7	941	44.3		
	1987	4,269	1,632	38.2	3,258	76.3	1,011	23.7	27	0.6
	1992	5,290	2,914	55.1	3,877	73.3	1,413	26.7	98	1.9
UK	1983	7,961	1,861	23.4	3,236	40.6	4,725	59.4		
	1987	10,622	3,339	31.4	4,980	46.9	5,643	53.1	110	1.0
	1992	12,241	6,042	49.4	6,804	55.6	5,437	44.4	514	4.2

Sources: US Department of Commerce; Benchmark Surveys, various issues; Foreign Direct Investment in the United States, operations of US affiliates of foreign firms, revised 1982 estimates.

Table 8.6b Property, plant and equipment

Country	*Year*	*Gross property plant and equipment*	*Manufacturing*	*Percentage of manufacturing in total expenditure*
France	1983	14,682	5,810	39.6
	1987	17,945	8,942	49.8
	1992	42,986	26,114	55.5
	1994	47,189	28,078	54.9
Germany	1983	22,042	13,787	62.5
	1987	25,342	15,845	62.5
	1992	52,182	29,154	52.2
	1994	64,679	34,834	51.2
Netherlands	1983	38,250	4,267	11.2
	1987	45,954	5,617	12.2
	1992	58,913	10,262	16.5
	1994	63,229	10,663	16.1
Switzerland	1983	10,110	6,235	61.7
	1987	13,202	9,325	70.6
	1992	24,330	18,088	69.8
	1994	24,988	20,399	77.0
UK	1983	47,187	14,122	29.9
	1987	62,056	21,897	35.3
	1992	99,863	48,205	41.9
	1994	125,271	58,341	41.7

Sources: US Department of Commerce; Benchmark Surveys, various issues; Foreign Direct Investment in the United States, operations of US affiliates of foreign companies, revised 1983 estimates; preliminary 1994 estimates.

What of the argument that Dutch FDI activity has been in the process of global rationalisation and gradually moved towards sectors and activities which are technology intensive? In fact, Dunning and Narula (1995) show that overall, Dutch R&D intensity, when measured as a ratio of R&D expenditures to sales,[22] after having risen from 0.9 per cent in 1977 to a peak of 1.1 per cent in 1985, has fallen consistently every year, and in 1994 stood at 0.8 per cent. While figures for manufacturing are not available across all years, even in the sectors in which the Netherlands has traditionally held competitive advantages, food products, chemicals and electrical machinery, the R&D intensities in 1994 (Table 8.7) were 0.1 per cent, 2.2 per cent and 2.5 per cent while those for the UK were 0.7 per cent, 4.3 per cent and 3.3 per cent, and for Germany, 0.2 per cent, 4.6 per cent and 6.2 per cent[23] respectively. This is particularly indicative of the O advantages of Dutch MNEs, given the following facts. First, that in terms of patenting activities large Dutch MNEs (which dominate Dutch FDI) undertook 57.8 per cent of their patenting activities in overseas R&D labs, of which 26.1 per cent was undertaken in the US (Patel 1995).[24] Second, data from a cross-European

Table 8.7 R&D intensity, percentage shares, 1994

Industry	*France*	*Germany*	*Netherlands*	*Switzerland*	*United Kingdom*
All industries	1.25	1.61	0.81	3.15	1.02
Manufacturing	2.64	3.27	2.02	5.12	2.26
Food and kindred products	0.40	0.23	0.11	D	0.72
Chemicals	3.51	4.57	2.21	10.76	4.32
Primary and fabricated metals	1.06	0.85	0.88	0.86	0.67
All machinery	3.86	3.53	2.45	2.16	1.64
Non-electrical machinery*	D	1.25	0.71	D	1.00
Electrical machinery	D	6.16	2.51	D	3.34
Other manufacturing	2.06	1.69	0.73	D	1.22

Sources: US Department of Commerce, Foreign Direct Investment in the United States, operations of US affiliates of foreign companies, preliminary 1994 estimates.

Note
* Germany's R&D intensity in electrical and non-electrical machinery given for 1992.

survey indicate that in general firms located in the Netherlands are less innovative, in terms of 'new' innovations than their counterparts in five other European countries[25] (Kleinknecht 1995).

In general, therefore, it can be said that much of Dutch FDI in manufacturing was in a market-oriented, efficiency seeking mode. In an age where most global firms are increasingly utilising organisational modes that provide more flexibility, such as networks and strategic alliances, Dutch firms were also increasingly engaged in strategic asset-seeking activity.[26] As has been noted elsewhere (Narula and Dunning 1997), globalised firms increasingly tend to utilise non-majority owned activity—often through strategic alliances—to develop and sustain competitive advantage. There is some indication of a growing tendency among Dutch MNEs to use an increasing amount of non-majority owned affiliates. Although UK firms have also exhibited a similar decline, between 1992 and 1994 MNEs from Germany, Switzerland and France have not changed their preference for wholly owned firms. There has also been a growing propensity to use mergers and acquisitions rather than greenfield investments. In the case of Dutch firms, 73.0 per cent of all investment outlays between 1992 and 1995 had been made to acquire existing US establishments.

Conclusions

The evidence presented here may be summarised succinctly as follows:

1 Dutch FDI activity, though considerable, was primarily concentrated in the petroleum sector until the mid 1970s. In the manufacturing sector, Dutch MNEs, as was the case with MNEs in general, had not played such

a significant role in the US economy until the 1980s. Dutch MNEs reached their apogee during this time, at one point accounting for a quarter of all FDI stocks in the US.

2 Dutch MNEs have gradually expanded their operations in the US, in response to the changing competitiveness of the US relative to the Netherlands. Thus, the extent and structure of their value added had reflected the changing motives for their investment activity and the structure of their technological specialisation. Dutch FDI activity has gone from trade-supportive in the 1950s and 1960s, to import-substituting and market-seeking in the 1970s, and rationalised and efficiency seeking in the 1980s. There are also indications of a simultaneous use of strategic asset-seeking FDI activity in the late 1980s and early 1990s in line with the developments associated with the age of alliance capitalism, whereby firms are increasingly using alliances and networks as a means to develop competitive advantages.

3 The competitiveness of Dutch firms, in terms of their O advantages has also gone through a cycle, where the competitiveness of Dutch MNEs was much superior to those of their major European rivals until the mid 1980s. Since then, however, the O advantages of Dutch firms have not developed relative to those of these competitors, and this has been reflected in the declining role of Dutch manufacturing MNEs in the US economy relative to those of Switzerland, UK and Germany. Nonetheless, it is difficult to separate the effects of a reorientation of Dutch activities towards Europe in response to increasing economic integration, from those due to the slowing down of Dutch MNEs' growth in the US due to declining competitive advantage of these firms. However, it is reasonable to expect that the pressures and attractions of the single European market would have had an equally powerful L advantage for its European competitors of other nationalities, and as such we can assume that much of the decline reflects weakening O advantages.

The analysis conducted here must be interpreted with caution. First, because we have utilised an aggregation across countries and across sectors to analyse what is essentially a firm-specific, and in the limit, an industry-specific phenomenon. Nonetheless, given that we have made a cross-country comparison, our discussion clearly illustrates some general trends, which are valid and supported by other research, both on an aggregate, cross-country basis (see e.g. Archibugi and Pianta 1992), and on a country basis (Kleinknecht 1995, Slabbers and Verspagen 1995). It should be noted that work on the activities of Dutch MNEs *per se* is under-represented in the literature (for an exception see Barkema, Bell and Pfennings 1996) and as such the current chapter thus represents exploratory research.

Second, and perhaps more importantly, since Dutch MNEs are concentrated in a few sectors, the detailed operating statistics on the sectoral level are limited. For reasons of confidentiality much of the detail is suppressed, since most of Dutch FDI is dominated by a few very large firms. As a result, the data is highly sensitive to the economic well-being of any one of these firms. In other words, the competitiveness of Dutch firms in many instances represents the competitiveness (or the lack thereof) of a handful of firms, and in some sectors, just one conglomerate. Nonetheless, this state of affairs mirrors that of the Dutch economy, where six firms[27] account for 16.3 per cent of total industrial employment in 1987 (Belderbos 1989).

It should be stressed that the decline of manufacturing content of Dutch FDI activity, and the subsequent growth of investments in services is in itself not surprising. Along with most other developed countries, both the Dutch and the US economy have moved towards a services based economy. The service sector accounted for 70.0 per cent and 72.0 per cent of the GDP of the Netherlands and the US in 1995, compared to 64.0 per cent for both countries in 1980 (World Bank 1997). Indeed, service MNEs such as ING, ABN AMRO, Ahold, and Aegon have been investing aggressively in the US in order to attain market share, particularly through M&A activity. Indeed, between 1990 and 1995, Dutch FDI stock in services has increased by a factor of 1.3, and the sales of these firms accounted for 34.6 per cent of all sales by Dutch affiliates and 4.2 per cent of all service sales by foreign affiliates in the US, up from 30.0 per cent and 3.7 per cent respectively in 1987. In terms of assets, 57.0 per cent of all Dutch assets[28] were in services in 1994, compared with 29.6 per cent in 1987. Less than 36.6 per cent of the total investment outlays between 1987 and 1995 by Dutch firms were in manufacturing. This restructuring does not necessarily represent a negative event, but a logical and long expected outcome as we move into a post-industrial era. Furthermore, manufacturing MNEs from the Triad have gradually been relocating the more labour intensive and lower value-adding aspects of their manufacturing establishments to industrialising and developing economies which still have a comparative advantage in these activities. However, there is some reason for concern when the high value-adding activity and skills-intensive aspects of manufacturing such as R&D and computer aided manufacturing are relocated to other Triad countries rather than remaining in the Netherlands.

As recently evaluated by a survey produced by IMD (the world competitiveness yearbook 1997), the Netherlands ranks sixth in the world, fourth among OECD countries, and third in Europe, following Finland and Norway. It is difficult to make any statements about the future of Dutch MNEs on the basis of these data because the yearbook evaluates the competitive strength of the whole economy. It measures, among other things, several aspects of the domestic economy, government activity, finance and science and technology indicators, but no company specific information is given in the report. Therefore the survey must be interpreted with caution. However, at the present time there is insufficient evidence for alarm, as the Netherlands remains one of the most competitive economies in Europe.

Notes

1 Strategic asset seeking MNE activity is originally hinted at in the work of Knickerbocker (1973).
2 For an in-depth discussion of the tertiarisation of industrial economies, see Bellak (1993). This line of thought derives itself from the work of Chenery and Taylor (1968).
3 Howenstine and Shannon (1996) and Howenstine and Zeile (1994).
4 Data in this chapter are based on the various publications of the US Department of Commerce, rather than De Nederlandsche Bank, unless otherwise stated.
5 All FDI stock figures used here are in current US dollars, based on historical cost estimates.
6 Prior to 1972, the EEC consisted of Germany, France, Netherlands, Belgium, Luxembourg and Italy.
7 Exports in the primary sector from the US were over 30 per cent of total US exports in 1960 (Statistical Abstract of the United States, 1982–1983, US Department of Commerce).
8 Secretariaat-Generaal van de Benelux Economische Unie (1981) Benelux 1948–1979 Statistieken—Tijdreeksen.
9 The first year for which the US Department of Commerce published sectoral data for a considerable number of countries again.
10 Due to the abolition of the gold standard, exchange rate movements were large, leading to large depreciations of the US$ against other currencies. For example, in June 1973 the mark appreciated more than 11 per cent against the US dollar.
11 It is to be noted that from 1974, inward FDI was reclassified from a threshold of 25 per cent of foreign ownership to 10 per cent ownership. However, this does not severely affect the comparison, as the change led to a 5 per cent increase in the direct investment stock position in 1974.
12 There was a sudden increase in Dutch manufacturing stock in 1981, when it doubled its 1980 value. It is interesting to note that although investments expanded, most Dutch firms reported difficulties with sales in the US in 1981, due to the recession, in their annual reports.
13 Northwest Europe, based on the usage of van Ark and de Jong (1996:20) implies the following countries: Austria, Denmark, Finland, Germany, Netherlands, Norway, Sweden, Switzerland and UK. Figures are annual compound growth rates.
14 For example the sales of Dutch affiliates in the US (based on the US Department of Commerce, Benchmark Survey and FDI data) are divided by total US commodity imports from the Netherlands (based on the UN commodity trade statistics). In specific sectors, we divided the sales of the Dutch affiliate in that particular sector by total US imports of commodities in this sector.
15 The low sales to imports ratio is not a typical characteristic of the industry—this same ratio for the UK was 12 times that of the Dutch ratio (Table 8.5), indicating that it represents a firm- or country-specific difference.

16 Although for Dutch and UK firms in the chemicals sector there was a continuing improvement in the L advantages of the US. However, these countries do not reveal any competitive strength in this specific sector. The Netherlands started off having a revealed comparative advantage (RCA) in chemicals at the beginning of the 1980s, but over the decade it declined. Its strength in primary and fabricated metals and transportation remains and has grown larger. The non-electrical machinery and the electrical machinery sectors both show a relatively large RCA, but it is declining over time.
17 For a discussion, see Chapter 7 of this volume.
18 For instance, Japanese firms accounted for 11 per cent of the European automobile market in 1990 (Narula and Gugler 1991).
19 Analysis is based on van Ark and de Jong (1996) who used GDP per capita data in constant 1990 prices. To make a country comparison, we used World Bank GDP data in constant 1987 prices.
20 Quite surprisingly, Unilever actually expanded its food and kindred activities by acquiring ice-cream companies that turned out to increase their sales over the next years. At the same time Unilever sales in detergents declined severely all over the world, due to the OMO Power incident. In 1994 CSM also expanded its activities in the US by a takeover of Henry and Henry in New York State. These acquisitions contrast the sales data, although one should realise that most acquisitions are finalised at the end of the year and sometimes sales by these new firms are not reported until the next year.
21 Unfortunately the data do not allow a thorough analysis of what happened to Philips. For reasons of confidentiality, the data are suppressed in publications of the US Department of Commerce. However, it is well known that Philips performed massive restructuring of its activities during this period.
22 R&D intensity is just one of the indicators of the innovativeness of a country. One can also consider output indicators such as patents, or productivity growth. There is some debate about the relevance of R&D-statistics as indicators of innovation. One school of thought (see Snijders) emphasises that R&D expenditure is an input indicator, not taking into account other factors like education. Furthermore, R&D intensity is influenced by the size of the country, the sectoral structure, and with increasing globalisation it is common that the fruits of R&D activity occur in a different country from that where the expenditure is made. Another school of thought (see Verspagen) refutes this critique by explaining the economic justification for using R&D intensity, namely the external effects that occur, eventually leading to economic growth.
23 Data for electrical machinery for German MNEs were for 1992.
24 See also Chapter 4 of this volume.
25 The study compared innovations in 'new' products and 'imitative' products. New products are those which were not earlier introduced by competitors. The countries compared are Netherlands, Ireland, Norway, Denmark, West Germany and Austria.
26 For an elaborate discussion see Duysters and Sadowski, Chapter 7 of this volume.
27 Philips, Royal Dutch/Shell, Unilever, Akzo, DSM and Hoogovens.
28 Includes assets in the following sectors: wholesale trade, retail trade, finance except depository institutions, insurance, real estate and other services.

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9 Dutch multinationals in Japan

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Introduction

It is commonly understood that Japan is the outlier among the major industrialised countries in terms of its foreign direct investment (FDI) position. Japanese statistics based on notifications of foreign investments to Japan's Ministry of Finance show a cumulative balance of outward over inward investment of 14 to 1 in 1995 (MOF 1995). This imbalance is due to a low level of inward investment, which has incited much debate about the trade and investment barriers facing foreign firms in Japan and its historical restrictions on inward investment until the late 1970s. This chapter examines the investment position of Dutch multinationals in Japanese industries. It does so by examining in turn aggregate FDI data, survey data among foreign-affiliated firms in Japan by industry, and characteristics of the main subsidiaries of Dutch MNEs in Japan. Comparisons are made with FDI from other countries to highlight strengths and weaknesses of Dutch firms. Since it has been argued that trade and investment barriers have forced foreign firms to rely extensively on licensing to exploit their technological and marketing strengths in Japan, the available information on the number of licences sold by Dutch firms in Japan is examined as well.

The pattern of Dutch firms' involvement in Japan cannot be fully understood without due attention to the particularities of the trade and investment environment in Japan. The next section first establishes the 'stylised facts' concerning inward FDI in Japan. The literature on FDI in Japan is reviewed to seek explanations, and attention is given to the most recent trends of deregulation and decreased hostility to foreign acquisitions providing greater opportunities for foreign firms. We then examine Dutch firms' involvement in Japan by looking at investment flows and stocks, characteristics of Dutch MNEs' operations in Japan by industry, and licensing patterns by industry. Before discussing the conclusions, the last section then takes a micro focus in presenting key data on the main subsidiaries of Dutch MNEs and information on licensing behaviour by Dutch MNEs in Japan.

Japan's low level of inward investment

An often quoted publication by Japan's Ministry of International Trade and Industry (MITI) suggests that foreign-affiliated firms are responsible for a mere 0.9 per cent of total sales of incorporated businesses in Japan (MITI 1995a), which compares to a figure exceeding 10 per cent in the United States (Weinstein 1996a). However, these aggregate figures have to be qualified considerably after more careful examination of the data, while they also hide substantial variation across industries. This section seeks to establish the 'stylised facts' pertaining to inward FDI in Japan before turning to the explanations given for the characteristics of this inward investment. The last part looks at some recent trends in foreign firms' involvement in Japan.

FDI in Japan: stylised facts

How does Japan's FDI imbalance compare with the FDI positions of other industrialised countries? The figures on investment notifications from the Ministry of Finance (MOF) mentioned in the introduction suggest a major investment imbalance. However, it is possible that MOF figures do not provide an accurate picture since MOF registers gross FDI and includes planned investments. Hence, divestments and loan repayments are not recorded (but neither are reinvested earnings or expansions of branches) and the figures may include planned investments which are not implemented. Balance of payments data have the advantage that net figures are recorded (divestments are included) and that comparable data are collected for other countries. Balance of payments data on FDI flows in the period 1990–4 confirm Japan's huge FDI imbalance: with cumulative FDI outflows of 127 billion US$ and inflows of 6.8 billion US$, Japan recorded an outward to inward FDI ratio of 18.6. This compares to ratios of 1.3 for the United States and 1.8 for the Netherlands (Belderbos 1998).

The balance of payments figures on FDI flows also have their limitations. They do not take account of revaluation of assets and, more fundamentally, only measure the share of foreign-affiliated firms' assets which is financed from the investing firms' home country. They underestimate the importance of foreign firms' activities in the local economy since subsidiaries also rely on local as well as international loans and equity to finance their operations.[1] Survey data on foreign-affiliated firms do not have these drawbacks. Data on the number of employees drawn from MITI's surveys among foreign-affiliated firms in Japan (MITI 1995a) and Japanese affiliates abroad (MITI 1995b) suggest an outward to inward investment ratio of about 8 to 1 (Belderbos 1998). Although this is still high, it is considerably below the ratios based on FDI data.[2] There are also major differences across industries. Much lower world-wide investment imbalances are recorded for oil, chemicals and pharmaceuticals, wood and paper, and non-ferrous metals, —all industries in which Japanese firms do not possess clear ownership-specific advantages *vis-à-vis* foreign firms. In contrast, the highest investment imbalances are recorded for industries in which Japanese firms are major competitors on world markets: transport machinery (automobiles, motor cycles, shipbuilding) and steel.[3]

Inward investment in Japan has a particular distribution among the three main modes of entry (wholly owned subsidiaries, joint ventures, and acquisitions). There is an abundance of joint ventures while wholly owned subsidiaries and in particular acquisitions are underrepresented. The 1994 MITI survey indicates that 52 per cent of foreign-affiliated firms responding to the survey were wholly owned, while 36 per cent were minority joint ventures. A similar survey in 1991 shows that in only 7.1 per cent of cases did foreign firms gain control by acquiring a stake in an existing Japanese firm.[4] Encarnation (1993) also shows that US multinationals have entered Japan much more often by way of minority owned joint venture than they did in other industrialised countries. Minority owned ventures were responsible for 63 per cent of all US affiliate sales in Japan, but for only 23 per cent of sales in all developed countries. Figures on mergers and acquisitions involving Japanese firms also show a large discrepancy between the number of foreign acquisitions in Japan (18 in 1990), and both the number of Japanese acquisitions abroad (440) and Japanese acquisitions in Japan (293) (Lawrence 1992).

Another feature of foreign firms' involvement in Japan, and the corollary of their limited direct investment in Japan, is a relatively strong reliance on licensing as a means of exploiting know-how and technological advantages. Balance of payments data for 1994 show that Japan is by far the greatest importer of technology as measured by payments of royalties and licensing fees. Japan paid fees amounting to US$ 8.3 billion, higher than payments by the US (US$ 5.7 billion), Germany (US$ 4.4 billion), and the UK (US$ 2.4 billion) (JETRO 1997). The available data on US multinationals' investment and licensing in Japan suggest that a substantial share of royalty and licensing income is from firms in which they do not have an equity stake rather than from affiliated firms. The ratio of US multinationals' royalty and licensing income from affiliated firms to payments by unaffiliated firms in Japan was 1.37 in 1990, which contrasted with a ratio of 3.63 for the rest of the world (Dunning and Narula 1994, Lawrence 1992).

Explanations

A great number of explanations for the particular characteristics and low level of inward FDI in Japan have been brought forward in a growing body of literature on this issue.[5] Some of these explanations have also been empirically tested in econometrical studies of manufacturing FDI in Japan.[6] It suffices here to review the main arguments in brief. A more detailed discussion of the literature can be found in Belderbos (1998).

The legacy of government regulation of inward investment explains a good deal of the low level of inward investment and the relative importance of licensing, as well as the importance of joint ventures and the scarcity of acquisitions. In the postwar period of rebuilding the economy, the Japanese government saw the regulation of the transfer of technology (licensing) and capital (direct investment) to Japan as an indispensable part of its industrial policy which aimed at fostering indigenous capabilities. Until 1980, both inward FDI and licensing were regulated by restrictive laws. MITI used these laws to ban acquisitions and most wholly owned foreign ventures, and to negotiate instead cost effective licensing deals for Japanese companies (Bailey, Harte and Sugden 1992, Odagiri and Goto 1996). Foreign firms were deprived of investment opportunities exactly at the time when their relative competitive advantage made (wholly owned) investments the preferred way of exploiting these advantages in Japan.

A variety of other factors are responsible for the 'stylised facts' of inward FDI still observed in the 1980s and early 1990s. Non-tariff and private barriers to foreign firms' market entry in Japan are perceived to be of considerable importance. They include idiosyncratic technical and product standards, and health, safety, and sanitary regulations, inadequate access to government contracts and procurement schemes by semi-government institutions, lack of transparency in government regulations (administrative guidance), inadequate access to business and industry associations, and difficulties in winning corporate clients having long standing ties with other Japanese firms in particular within *keiretsu* (industrial groups).[7] An important factor is also Japan's multi-layered distribution system. Japan's electronics, automobile and pharmaceutical firms control large distribution networks of wholesalers and retailers which deal almost exclusively in the manufacturer's brand. Restrictions on entry in the distribution sector have long prohibited large retailers and wholesalers from competing effectively with incumbent retailers and wholesalers linked to manufacturers. This situation often forced foreign firms to negotiate access to distribution channels of established Japanese manufacturers. In sum, the distribution system and other non-tariff barriers have altered foreign firms' perceived trade-off between internalisation (exports or FDI) and licensing in favour of the latter. Where investment occurred, foreign firms had strong incentives to link up with a Japanese partner in a joint venture, since Japanese incumbents had knowledge of idiosyncratic local standards and practices, and access to distribution outlets, corporate clients and government bodies.[8]

FDI has also been impeded by lack of locational advantages in particular in the second half of the 1980s. The 1980s were characterised by rising costs of labour, land and real estate. The latter reached astronomical levels at the height of the 'bubble economy' in 1989. There were also increasing shortages of skilled labour which made it difficult to recruit personnel. Weinstein (1996b) argues that the life time employment system operated by the larger Japanese firms and the strong emphasis on in-company training put foreign firms (in particular new entrants and smaller firms) at a structural disadvantage in Japan. The limited mid-career labour market hampers the recruitment of experienced personnel and managers. Foreign firms also find it difficult to build up a similar reputation among graduates as established Japanese firms in terms of offering long-term job security and career and training opportunities. These various disadvantages of locating in Japan are not offset by financial incentives schemes for (foreign) investors that have become so prevalent in the EU and in most US States.

A number of business practices and regulations have raised barriers to acquisitions of Japanese firms by foreign companies. These barriers are important, as Lawrence (1992) points out, the idiosyncratic characteristics of the Japanese market suggest that foreign firms will have a strong preference for acquisitions to gain access to distribution channels and marketing knowledge. The scarcity of acquisitions must imply that such barriers have reduced the overall level of foreign investment. Cross-shareholdings within horizontal *keiretsu,* in combination with 'stable' shareholdings by (not necessarily group-related) insurance companies and trust banks, impede acquisition by limiting the number of traded shares (Weinstein 1996b, Lawrence 1992). Odagiri (1992:330) argues that cross-shareholdings also reflect a more fundamental feature of Japanese industrial organisation and corporate governance. Stable shareholdings allow managers the independence to pursue the long-term growth of the firm. Growth in turn allows firms to commit to life time employment systems and in-house training programmes which foster employees' identification with, and loyalty to, the firm. Acquisitions are seen as a defeat and only tend to occur when a firm is in such serious difficulties that managers cannot ensure its long-term growth independently.

Recent trends

Recent trends in the 1990s indicate that many of the distinctive features of inward FDI are finally changing. The main driving force has been Japan's most prolonged postwar recession which followed the burst of the 'bubble economy' in late 1989. Many firms faced severe problems with the appreciation of the Yen and the slump in the domestic market in the first half of the 1990s. After several years of severe losses, Mazda Motor in 1996 allowed Ford to increase its stake to a *de facto* controlling share. Ford sent a managing director to lead the firms' reorganisation and integration with Ford's international operations. This was the first time in postwar history that a foreign firm acquired a controlling stake in one of Japan's prominent industrial firms. Earlier, South Korea's Samsung had acquired controlling stakes in optical equipment manufacturer Union Optical (listed at the Tokyo Stock Exchange) in 1995, and in the specialised audio manufacturer Lux (traded at the over the counter market) in 1994.[9] Given the historic rivalry between Korea and Japan, these acquisitions by a South Korean firm were unprecedented and would have been unthinkable in the 1980s. Three more listed electronics firms were acquired by foreign companies. Kodak acquired a controlling stake in Chinon Industries in 1997, a mid-sized optical equipment maker. Audio manufacturer Sansui was acquired by Polly Peck of the UK and later sold to the Canadian/Hong Kong consumer products group Semi Tech. Semi Tech later acquired a second listed audio producer, Akai. Akai (Mitsubishi Electric and Mitsubishi Group), Mazda (Sumitomo Group), and Lux (Alps and Mitsui Group) were or still are members of vertical or horizontal *keiretsu* and not the independent firms which are seen as the typical target of foreign acquisitions. Recent figures on mergers and acquisitions in Japan confirm a rapid rise in foreign takeovers, with the value of foreign acquisitions continuously breaking records. The record in 1994 of US$ 1.83 billion was surpassed by US$ 2.6 billion worth of transactions in 1995 and US$ 3.04 billion (43 cases) in 1996.[10]

Scattered evidence also indicates a trend towards a greater share of majority or wholly owned ventures in inward FDI. This trend was already apparent in the early 1990s as observed by Lawrence (1992). In the 1990s, a number of foreign automobile, chemical and pharmaceutical firms acquired a majority stake in their joint ventures with Japanese firms, or set up separate wholly owned ventures in Japan for the first time. An example is pharmaceutical firm Glaxo (UK) which bought out its joint venture partner in Nippon Glaxo in 1996. The Dutch electronics group Philips has also been active in establishing full ownership of a number of Japanese ventures (see below).

The above suggests that the level of FDI in Japan should be increasing as well. Dunning and Narula (1994) note that already in the late 1980s US multinationals were moving towards internalisation of ownership advantages through FDI and away from reliance on licensing to independent Japanese firms.[11] MOF's FDI notification statistics show a relatively stable value of new FDI inflows of between US$ 3–4 billion in the first half of the 1990s. A major change in FDI trends finally occurred in 1996, in which year a surge in FDI to almost US$ 7 billion occurred, the highest level ever.[12]

FDI has been spurred by the new opportunities for acquisitions and the fall in the costs of stocks, land and real estate in the mid 1990s. The depreciation of the Yen in 1996 appears to have given foreign firms the signal to implement their investments plans. The Japanese government has also slowly but steadily brought standards and regulations in line with international practices and has made some progress in increasing the transparency of regulations and public procurement schemes. The government's deregulation initiatives in a number of areas such as banking and insurance, retailing, energy and telecommunications have provided greater marketing opportunities for foreign firms.[13] In the next two sections it will be seen how Dutch multinationals have adapted their Japanese operations to the specific conditions affecting inward investment and whether they have been able to benefit from more favourable circumstances for foreign firms in recent years.

Characteristics of Dutch FDI and licensing in Japan by industry

The persistent barriers to inward investment in Japan are likely to concentrate FDI more in the larger and most competitive firms, since only these have the necessary financial resources and technological and managerial capabilities to overcome such barriers. Given that the greater share of Dutch FDI is by large MNEs with substantial world-wide operations, the 'big four' Shell, Philips, Unilever and Akzo-Nobel, it would follow that the level and pattern of Dutch FDI is less affected by the specific conditions in Japan than FDI from other countries. This section examines FDI flow and stock data to establish both the weight of Japan in world-wide FDI by Dutch MNEs and the share of Dutch MNEs in total FDI in Japan. MITI survey data on foreign-affiliated firms in Japan are explored as an alternative measure of the inward investment position. The survey also sheds light on the trading behaviour and profitability of Dutch MNEs in Japan. Finally, the last paragraph examines the available statistics on Dutch licensing in Japan.

Dutch FDI in Japan: investment flows and stocks

Figures on FDI stocks published by the Netherlands Central Bank show that out of a total Dutch foreign investment stock of 246 billion guilders an almost negligible share of 0.4 per cent (971 million guilders) was invested in Japan in 1993 (JETRO 1996).[14] The share of Japan had been three times higher five years earlier in 1988, when a 1.1 per cent share equalled 1,691 million guilders (DNB 1990). The main reason for this sharp decline in Dutch FDI stocks in Japan was the divestment by electronics group Philips from its joint venture with Matsushita Electric in 1993. This is illustrated by DNB statistics on Dutch FDI flows to Japan, which show a negative figure of 2,796 million guilders in 1993. Whilst in 1988, 95 per cent of FDI in Japan was concentrated in the electronics industry, by 1993 FDI in electronics was reduced to a few million guilders. Still, even the 1.1 per cent figure for 1988 is puzzling. Although Shell has substantial operations in Japan (as will be seen in the next section), the stock data do not show any substantial investment in the oil and chemical industries. It appears that FDI in Japan by Shell is mostly the responsibility of the UK arm of the group such that no FDI flows are recorded between the Netherlands and Japan.[15]

Another source of data on FDI in Japan, figures on notifications of investments to MOF, give an indication of the share of Dutch firms in total inward investment. MOF data show a substantially stronger Dutch investment position in Japan than DNB data. Dutch FDI reached a cumulative value of 2,800 million US$ over the period 1950 to 1994, which amounted to 8.2 per cent of total inward investment (MOF 1995). Moreover, in the 1990s the Dutch share of new investments has generally been even higher, at around 10 per cent. This may suggest that Dutch firms have been active investors in

Japan in recent years, while large divestments (not included in the cumulative MOF data) have led to low levels of net FDI recorded in Dutch stock figures and balance of payments data. It should however be noted that MOF figures may exaggerate Dutch firms' FDI because the figures include investments by holding companies and financial subsidiaries established in the Netherlands primarily because of its advantageous tax regime for such activities.[16]

Trade data also provide a piece of evidence on the role of Dutch firms in Japanese markets. Here the picture is rather bleak. Only 1.1 per cent of Dutch trade went to Japan in 1995—reason for the Dutch government to initiate an 'export to Japan' campaign with the establishment of a Japan Export Council (JAPTA) (MITI 1996).[17] The Netherlands was responsible for a mere 0.6 per cent of total Japanese imports, a share which should be considered low for the sixth trading nation in the world. By industry, the Dutch import share reached a maximum of 1.6 per cent for chemical products.

In summary, FDI statistics suggest a very limited presence of Dutch firms in Japan, but measurement and definition problems suggest that they hide more than they reveal. The next paragraph examines survey data on foreign MNEs in Japan as an alternative source of information.

Characteristics of Dutch MNEs' operations in Japan: survey data

Survey data on foreign firms in Japan can give an indication of the importance of Dutch FDI across industries and show characteristics of the operations of Dutch affiliates. Table 9.1 presents MITI survey figures on the number of subsidiaries, the value of total assets, the number of employees and sales of Dutch affiliates in 1994. Given the 50 per cent response ratio of the survey and the fact that response rates may differ across industries and countries, due caution should be exercised in interpreting the results. The share of Dutch firms in total inward investment in terms of number of employees and sales is about half the share based on the MOF data: 4 and 3.6 per cent, respectively. The 63 Dutch affiliates responding to the survey had total assets of 288 billion Yen (roughly US$ 2.5 billion at 1994 exchange rates). The affiliates employed 6,724 personnel and had sales of 480 billion Yen. The largest number of employees is recorded in the electrical and electronics industry, which is to be attributed to the presence of Philips. Other manufacturing industries with relatively high employment figures are chemicals and pharmaceuticals, but here US and other European MNEs are large investors as well and Dutch firms are not responsible for an above average share of inward FDI. The high share of Dutch employment in the wood and furniture industry is more likely to be a classification error. It is again clear from the figures that Shell does not report as a Dutch MNE.[18] What does appear a robust finding is a higher than average share reported for the distribution

Table 9.1 Subsidiaries of Dutch MNEs in Japan by industry in 1994

Sector	*Subsidiaries*	*Assets (billion Yen)*	*Employees*	*Percentage of all countries*	*Sales (billion Yen)*	*Percentage of all countries*	*Pre-tax profits (million Yen)*	*Percentage of sales*
Manufacturing	32	169	3,854	2.8	212.6	2.3	6,010	2.8
Food	2	6.5	6	0.2	12.4	5.2	589	4.8
Textiles	0	0	0	0.0	0.0	0.0		
Wood	1	3.7	167	53.0	5.0	46.7	171	3.4
Paper	1	n.a.	3	0.9	n.a.	n.a.	n.a.	
Printing and publishing	0	0	0	0.0	0.0	0.0	n.a.	
Chemicals	10	68.4	723	3.9	47.3	4.3	2,221	4.7
Pharmaceuticals	4	16.3	579	2.8	22.9	2.6	1,851	8.1
Oil	2	1	35	0.4	1.7	0.1	42	2.5
Rubber	0	0	0	0.0	0.0	0.0		
Leather	0	0	0	0.0	0.0	0.0		
Building materials	0	0	0	0.0	0.0	0.0		
Steel	0	0	0	0.0	0.0	0.0		
Non-ferrous metals	0	0	0	0.0	0.0	0.0		
Metal products	0	0	0	0.0	0.0	0.0		
General machinery	2	7.7	95	0.7	7.3	1.5	–673	–9.2
Electrical and electronics	6	49.5	2,093	4.3	92.8	4.1	1,572	1.7
Transport machinery	0	0	0	0.0	0.0	0.0		
Precision machinery and optical	3	15.6	139	2.8	22.9	10.5	242	1.1
Other manufacturing	1	0.3	14	0.9	0.3	0.2	–5	–1.7
Distribution	25	96.8	1,990	8.7	233.0	5.9	–792	–0.3
Services	3	6.4	337	9.3	17.5	9.9	460	2.6
Other non-manufacturing	3	16.2	543	17.9	17.8	15.3	1,091	6.1
All industries	63	288.4	6,724	4.0	480.8	3.6	6,769	1.4

Source: MITI (1995b).

Note
n.a.: not available.

sector (which includes general trading firms as well as trading arms of industrial firms) and a substantial share for 'other non-manufacturing' (including ING and ABN-AMRO in banking and insurance and Nedlloyd in transport).[19]

The survey data also allow for a preliminary analysis of profitability and import and export behaviour. The available information on profits is presented in Table 9.2. Overall, Dutch manufacturing affiliates are profitable: on average they reported a ratio of operating profits to sales of 2.8 per cent in 1994. Most manufacturing industries, with the exception of general machinery and 'other manufacturing' reported profits, with chemicals, pharmaceuticals and electronics responsible for the highest earnings. This finding corresponds well with figures for the whole population of foreign-affiliated firms in Japan, which indicate that foreign firms on average earn higher profits than Japanese firms in the same industry (MITI 1995a). It may be that the difficulties in penetrating the Japanese market have led to a concentration of investments by the world's strongest multinationals, able to exploit their intangible assets profitably in Japan. It may also indicate, however, that there is a reluctance among foreign multinationals to make strategic investments in Japan and incur losses in initial years to build up a market presence in the long term. As for non-manufacturing industries, Dutch affiliates in the 'non-manufacturing' and 'service' sectors were also profitable, but distribution affiliates were on average loss making in 1994.[20]

Table 9.2 also shows export intensities and import intensities (the ratio of imports to sales) and the contribution of Dutch MNEs to Japan's trade balance. Unfortunately, export and import data are no longer recorded separately for Dutch affiliates in the 1994 survey and had to be drawn from the 1991 survey instead. The 1991 survey only included affiliates in which foreign firms had a stake of 50 per cent or more and it had a response rate of 52 per cent. The export intensity figures show that not all manufacturing ventures are set up to serve the Japanese market: Dutch manufacturing affiliates on average exported 23.5 per cent of turnover. This figure is mainly a result of the high export ratio for the electronics and precision machinery industries. In the former industry, Philips has a 50 per cent stake in a publicly quoted audio and video manufacturer, Marantz, which exports a substantial share of its output to Europe and the United States. The export ratio in machinery industries reflects Japan's strength in these sectors. Dutch firms use their manufacturing presence not only to access the Japanese market, but also to learn from Japanese firms' strengths, to establish linkages with components suppliers and the local R&D infrastructure and to develop products for export markets. Perhaps more surprising is the 24 per cent export ratio reported by distribution affiliates. This appears to be due to the presence of distribution arms of manufacturing firms such as Philips Japan, which are also active in procurement of machinery and components for export to subsidiaries worldwide. It is more difficult to explain the high export ratio for the 'non-manufacturing' sector.

Table 9.2 Subsidiaries of Dutch MNEs in Japan by industry in 1991: exports and imports

Sector	*Sales (billion Yen)*	*Export (billion Yen)*	*Export percentage of sales*	*Percentage intra-firm*	*Import (billion Yen)*	*Import percentage of sales*	*Percentage intra-firm*	*Trade balance (billion Yen)*
Manufacturing	261.2	61.4	23.5	34.4	41.1	15.7	33.6	20.3
Food	12.2	0	0.0		0.3	2.2	99.2	–0.3
Wood	4.7	0.5	10.6	0.0	0.3	7.3	0.0	0.2
Printing & publishing	0.1	0	0.0		0.0	0.0		0.0
Chemicals	43.6	2	4.6	5.0	3.3	7.5	57.1	–1.3
Pharmaceuticals	31.0	0	0.0		17.5	56.5	5.2	–17.5
Oil	0.3	0	0.0		0.2	75.7	100.0	–0.2
Non-ferrous metals	1.3	0	0.0		0.3	21.6	80.1	–0.3
General machinery	3.4	0.9	26.5	44.4	0.3	7.6	83.8	0.6
Electrical & electronics	72.0	44.4	61.7	28.4	8.4	11.7	74.7	36.0
Precision machinery & optical	25.1	13.2	52.6	60.6	7.0	28.0	44.1	6.2
Other manufacturing	67.5	0.4	0.6	0.0	3.5	5.3	2.3	–3.1
Distribution	612.4	149	24.3	94.6	120.7	19.7	37.5	28.3
Services	22.2	0.3	1.4	0.0	5.5	24.7	100.0	–5.2
Other non-manufacturing	16.6	14.5	87.3	0.0	0.0	0.2	100.0	14.5
All industries	912.4	225.3	24.7	71.9	167.3	18.3	38.6	58.0

Source: MITI (1992).

The import to sales ratio of Dutch affiliates reached 18 per cent in 1991, 6 per cent points lower than the export ratio. The only industries which relied strongly on imported goods and materials were chemicals and pharmaceuticals. Distribution affiliates reported a surprisingly low import to sales ratio of 20 per cent. The result is that Dutch affiliates contributed to Japan's trade surplus in 1991. All affiliates together exported 58 billion Yen more than they imported. The electronics industry is the main contributor to this surplus (36 billion Yen), but the distribution sector also shows a substantial surplus (28 billion Yen). This trade behaviour of Dutch affiliates differs markedly from the trade behaviour of all responding foreign-affiliated firms. All foreign subsidiaries taken together reported substantially greater import than export figures in 1991 as well as in 1994, both in manufacturing and distribution. In 1994 the trade deficit by foreign affiliates was more than 2 trillion Yen (roughly US$ 16 billion). Dutch MNEs appear uncharacteristic in the sense that they have much less utilised investments in manufacturing and distribution to increase market access and to promote imports of intermediates and final goods into Japan. This finding, it should again be mentioned, would probably have been altered substantially had the affiliates of Shell been included in the figures.

The 1991 survey also contains limited information on the direction of exports and the origin of imports. It can be deduced that Dutch manufacturing affiliates in Japan do import slightly more from Europe as a whole than that they export (the trade surplus of the subsidiaries is mostly due to exports to Asia and the USA). However, in a more detailed classification, it appears that this balance between imports and exports does not hold for a sub-group of European countries which includes the Netherlands. Similar observations are made for the trade behaviour of Dutch distribution affiliates. It is therefore likely that manufacturing and distribution affiliates of Dutch firms contribute to the Dutch trade deficit with Japan.[21]

Dutch licensing in Japan by industry

The distribution of licensing contracts across industries and the share of Dutch firms in foreign firms' licensing activity in Japan are indicators of the technological and marketing strengths of Dutch firms. Licensing contracts with Japanese firms are notified to the Bank of Japan if the value of the contract exceeds 3 million Yen.[22] The Science and Technology Agency (STA) and its affiliated research institute, the National Institute for Science and Technology Policy (NISTEP) publish a yearly report with key statistics based on these notifications. The licensing contracts concern the transfer of rights for using know-how and patented technology, designs, trademarks and technical guidance. Both contracts with independent Japanese firms and foreign-affiliated firms in Japan are included. The statistics can potentially be used to show the extent to which foreign firms exploit intangible assets in Japan internally (in their own subsidiaries) or externally (selling exploitation rights to independent

Japanese firms). A few remarks are necessary for a correct interpretation of the data. First, BOJ's definition of a licensing contract in practice implies that all software, including commodity software packages (e.g. operating software such as UNIX), is included. As a result, more than half of all the licensing contracts in 1994 (1,629 out of 3,161) concern software, and most of these are mass produced software packages sold to large institutions (Yoshimi 1993:31). One could well argue that the sale of such software packages does not constitute the exploitation of know-how, brand name, or technological advantage, but should rather be included on the trade balance as the sale of commodities. Second, only statistics on the number of contracts are published and there are substantial differences in the value represented by individual contracts. Third, contracts apply for a varying number of years and statistics on new contracts and contract renewals do not necessarily reflect total licensing activity. This latter point is not likely to bias the figures much, since both the number of licensing contracts from the Netherlands (about 80) and the share of the Netherlands in total licensing (about 3 per cent) have been remarkably stable throughout the 1990s (NISTEP 1996).

With the above considerations in mind, Table 9.3 presents data on the number of new and renewed licensing contracts concluded in 1994 with licensors based in the Netherlands, and compares the numbers with the total number of contracts from all licensor countries. The number of contracts is disaggregated by product. Firms and individuals in the Netherlands concluded 89 licensing contracts in 1994, which represented 2.8 per cent of total licensing contracts signed by residents in Japan with foreign firms. The majority of contracts from all countries concerned computers and software (1,740), a figure which is heavily influenced by the sale of commodity software. In the case of Dutch licensing, the share of computers and software reached only 21 per cent. If one excluded the licences classified under software and computers, then the Dutch share in the total number of contracts would be nearer to 5 per cent. The distribution of Dutch licences over product groups is heavily concentrated in the electrical and electronics sector: apart from computers and software, a relatively large number of contracts is classified under radio and television and VCRs and medical equipment. As will become clear in the following section, this pattern arises because the electronics group Philips dominates Dutch licensing activity in Japan. The other important product group is general machinery and chemical machinery in particular (8 contracts). Dutch strengths in chemical manufacturing take the form of process technologies and advances in chemical machinery which are exploited in Japan through licensing, while product-related chemical technologies take an extra four contracts. Comparing the number of Dutch licences with the total number by product group confirms the strengths in radio and television, VCRs and medical equipment and chemical machinery. Other product groups with higher than average licensing activity are food, rubber, sports articles and music, plastic products and building materials.

Table 9.3 Number of licensing contracts imported from the Netherlands in 1994 by product/technology

Sector	*Netherlands contracts*	*All countries contracts*	*Netherlands share (%)*
Manufacturing	87	3,112	2.8
Food	2	27	7.4
Textiles and apparel	4	193	2.1
Wood and furniture	0	8	0.0
Paper, printing and publishing	0	10	0.0
Chemicals	4	80	5.0
Pharmaceuticals	0	95	0.0
Oil	0	5	0.0
Rubber	1	4	25.0
Plastics products	3	41	7.3
Leather	2	32	6.3
Building materials	2	28	7.1
Steel	0	12	0.0
Non-ferrous metals	0	10	0.0
Metal products	1	20	5.0
General machinery	16	231	6.9
boilers and generators	0	75	0.0
Chemical machinery	8	54	14.8
Others	8	102	7.8
Electrical and electronics	49	2,092	2.3
Heavy electrical equipment	0	12	0.0
White goods and light bulbs	0	7	0.0
Telecommunications equipment	2	59	3.4
Radio and television	17	85	20.0
Computers and software	19	1,740	1.1
Components and semiconductors	4	125	3.2
VCRs, medical electronics	7	55	12.7
Others	0	9	0.0
Transport machinery	1	33	3.0
Precision machinery and optical	0	90	0.0
Other products	2	42	4.8
Sports, music	2	22	9.1
Others	0	20	0.0
Services and utilities	2	35	5.7
All industries	89	3,161	2.8

Source: NISTEP (1996).

Although not too much weight can be attached to the latter numbers since they are influenced by the very limited licensing activity in general in these product groups, they appear consistent with perceived strengths of Dutch firms in chemical-related industries (rubber and plastics), process industries such as food and building materials and music (Philips subsidiary Polygram).

The licensing data have in common with the FDI data that they include contracts by a number of holding companies and financial subsidiaries established by foreign firms in the Netherlands, which use the Dutch entity to collect the licensing proceeds. On the other hand, the figures do not include licensing contracts signed by Shell and Unilever in the UK and the US subsidiaries of large Dutch MNEs. Also, the 1994 figures in Table 9.3 cannot distinguish between intra-firm and arm's length licensing. In the next section, both these issues are addressed by examining the available data on individual firms' licensing contracts.

Dutch FDI and licensing at the firm level

In both the MITI survey data and the FDI data previously surveyed, the hypothesis of a relatively strong Dutch investment position in Japan is not supported. However, it was also suggested that this may be due to statistical definitions and data imperfections. Micro data on individual Dutch MNEs' investment and licensing activities in Japan are most revealing of Dutch firms' status in Japanese industries. We present extensive data on Dutch MNEs' subsidiaries in Japan in 1995 and look at the pattern of licences sold by Dutch firms in Japan.

Main subsidiaries of Dutch MNEs in Japan

A detailed picture of Dutch MNEs' presence in Japan can be obtained from data published by Toyo Keizai (1995). This publisher conducts a yearly survey among foreign-affiliated firms in Japan. The 1995 survey among 3,432 firms had a response ratio of 86 per cent. This compares to a response ratio of MITI's 1994 survey of 50 per cent to a questionnaire which effectively reached only 2,307 firms. The 86 per cent figure still underestimates the coverage of the survey, since non-responses were also due to withdrawals and because the figures were supplemented with information from news reports and other sources. In contrast with the MITI data, Toyo Keizai's coverage can be considered as near complete. The 1995 survey included firms with paid-in capital exceeding 5 million Yen and foreign ownership of at least 50 per cent, but the latter threshold was reduced to 20 per cent for larger and publicly quoted firms. Key information on most subsidiaries of Dutch MNEs in Japan is provided in Appendix 9.1. The information is based on Toyo Keizai's data and supplemented by a number of other sources and newspaper reports (Dodwell 1988, 1993, 1994; Keizai Chousa Kyoukai 1994; Toyo Keizai 1995; Dun and Bradstreet 1996). The appendix first lists the subsidiaries of the 'big five' Dutch industrial MNEs with substantial operations in Japan. Ranked by sales in Japan these are Shell, Philips, Unilever, Akzo-Nobel, and DSM. The appendix continues by listing the main subsidiaries of other Dutch MNEs. If available, information is included on the Dutch investors equity stake, the equity stake by the Japanese partner, year of establishment or acquisition, capitalisation, sales, declared taxable income, number of employees, imports as a percentage of total procurement, export intensity, function of the subsidiary (manufacturing, distribution, import, export) and lines of business.[23] It should be noted that the listing is not exhaustive: a number of smaller subsidiaries established by the larger firms (Shell in particular) are not included and neither are a number of smaller Dutch MNEs operating distribution subsidiaries in Japan.

Shell

Shell has by far the largest presence in Japan among Dutch MNEs, both in absolute as in relative (market share) terms. Shell Transport and Trading, the English predecessor of the Shell group, set up a subsidiary in Japan at the beginning of the twentieth century and was one of the first foreign firms to establish a presence in Japan. Over time, the Shell group has grown into the third largest fully integrated oil company in Japan. Shell's activities are organised around two core companies: Showa Shell Sekiyu and Shell Japan. Showa Shell Sekiyu was created through the 1985 merger of Shell Sekiyu and Showa Sekiyu, both controlled by Shell at the time. Shell maintains a 50 per cent stake in the company mainly through Shell UK. It effectively controls Showa Shell since the remaining shares are held in relatively small lots by various investors. Showa Shell had consolidated sales of 1.3 trillion Yen (more than US$ 12 billion) in 1994 and is involved in oil exploration, refining, storage, transportation, distribution and research, while it has also diversified into car rental, software, and real estate. It operates five refineries and 7,100 petrol service stations in Japan and has its own marine fleet (Dodwell 1994). It is the fifth refiner in Japan and the third gasoline distributor with 12.5 per cent of the market (Nihon Keizai Sangyo Shinbun 1996). Showa Shell has organised its own vertical keiretsu of 82 subsidiaries and 40 affiliates in different businesses such as exploration (Shoseki Oil Development), distribution (Shoseki Gas, Shoseki Shoji), oil refining (Toa Oil, Showa Yokkaichi Sekiyu), transport (Showa Shell Sempaku), construction (Shoseki Engineering), and production of petrochemicals (Shoseki Kako, Nippon Grease). Showa Shell is also a member of a horizontal *keiretsu,* the Dai Ichi Kangyo Group, but ties to the group are judged to be relatively weak. Shell's other core subsidiary, Shell Japan, is fully owned by Shell UK and is mainly involved in import, manufacturing and distribution of (petro)chemicals. In 1986, Shell Japan set up a joint venture with Siemens to manufacture solar batteries and solar panels. The total number of employees in Shell subsidiaries, including subsidiaries not listed in the appendix, would easily surpass 6,000. Since Shell UK is the investor in both Showa Shell and Shell Japan, none of Shell's investments in Japan enter Dutch FDI statistics. Even in UK statistics, FDI figures are not likely to reflect the size of Shell's operations in Japan very well since most of the investments are by Showa Shell which operates by and large as a Japanese company using equity finance (it is listed at the Tokyo Stock Exchange) as well as local loans to finance its operations.

Shell also had a minority stake in Mitsubishi Oil's subsidiary Mitsubishi Petrochemical, the largest all-round petrochemical maker in Japan. In 1994, Mitsubishi Petrochemical and Mitsubishi Kasei merged to form Mitsubishi Chemical in which Shell maintains a 4 per cent stake. Cooperation with Mitsubishi Oil is likely to increase. In 1997, Mitsubishi Oil and Showa Shell unveiled plans to merge their refining business, which would create Japan's largest refiner with sales of US$ 16 billion.[24] The merger activity follows increasing competition in the Japanese oil industry, which was deregulated in 1996, ending the limitation of import licences to 29 existing refiners and wholesalers. In the face of declining profitability of operations, US oil distributor Caltex pulled out of its oil refining and distribution joint venture with Nippon Oil. Shell, on the other hand, has shown a commitment to the market and through its strong distribution and marketing arm is well-placed to survive the shakeout in the industry.

Philips

Philips is the second Dutch investor in Japan in terms of sales and number of employees. Until 1993 it had been the largest investor due to its 35 per cent stake in a joint venture with Matsushita, Matsushita Electronics Corporation (MEC), involved in semiconductor, lighting and cathode ray tube manufacturing. MEC in 1992 employed 22,000 of which 18,000 were in Japan. It had semiconductor sales of US$ 1.93 billion and was the world's tenth largest semiconductor producer. MEC was responsible for 15 per cent of turnover of the Matsushita group which is Japan's and the world's largest consumer electronics manufacturer. Philips had set up the joint venture with Matsushita in 1952, because Japan's restrictive legislation on inward investment precluded the establishment of a majority owned manufacturing base. Philips provided MEC with technology for cathode ray tubes and lighting, but MEC's operations remained limited to manufacturing and played no role in increasing penetration of Philips-branded products in Japan. Over time, Matsushita obtained equal or superior technological capabilities in a substantial number of MEC's product lines. Discord arose between Philips and Matsushita on how to implement MEC's overseas expansion, in particular over semiconductor sales and production in the US (where Philips subsidiary Signetics is manufacturing) and cathode ray tube production in China and Europe (where

Philips also has its own manufacturing plants). In 1993, Philips, which was troubled by a large debt burden and was in the midst of a painful rationalisation process, indicated it would prefer to pull out of the venture. Matsushita eventually agreed to buy out Philips' stake for 185 billion Yen (about US$ 1.65 billion). The buyout left Matsushita free to pursue its own strategy abroad and to compete head-on with Philips outside Japan, while it left Philips free to pursue a more independent sales strategy in Japan.[25] Philips and Matsushita maintained technological links and cross-licensing agreements after the buyout.

Philips also established Philips Japan in the 1950s as a majority owned joint venture with Matsushita. Philips Japan handles imports and distribution of lighting, semiconductors and small electric appliances. It is also in charge of staffing for Philips subsidiaries in Japan, licensing agreements and procurement of components and OEM products for Philips factories and distribution subsidiaries overseas. Philips Japan had sales of 117 billion Yen (more than US$ 1 billion) in 1994 but this figure may include procurement in Japan for export. In the late 1980s, Philips acquired Matsushita's remaining stake in the subsidiary.

Philips' major manufacturing subsidiary in Japan is the upmarket audio manufacturer Marantz, listed at the Tokyo Stock Exchange and with a turnover of 44 billion Yen (about US$ 400 million) in 1995. Philips acquired a 50 per cent (but controlling) stake in Marantz in 1981 and Marantz has since entered the video equipment market in 1987 (in particular LCD televisions) as well as the telecommunication market. Including its Japanese manufacturing subsidiaries Standard Communications and Miyako Audio, Marantz employs 1,500 people in Japan. Marantz is Philips' manufacturing and R&D base in Japan for audio and video products, but it is exporting a sizeable share of sales abroad and Philips remains an undistinguished player in the Japanese audio and video markets.[26]

Apart from Philips Japan, Philips operates two specialised distribution subsidiaries in Japan. Philips Medical Systems sells diagnostic imaging systems to Japanese hospitals. It had a 1991 turnover of 22 billion Yen (roughly US$ 150 million). Philips is the third largest seller of this type of medical equipment in the world and has managed to obtain a significant market share in Japan. Signetics Japan sells semiconductors and was acquired by Philips through a takeover of US semiconductor manufacturer Signetics. Philips also has semiconductor manufacturing machinery operations in Japan: majority-owned Philips subsidiary ASM manufacturers and sells steppers (etching equipment) for semiconductor manufacturing. This venture again appears to benefit from Japanese manufacturing strengths in semiconductor machinery: operations are not import intensive but 20 per cent of sales are exported.

Philips has been active in extending its manufacturing and marketing presence in Japan. In 1992, it acquired the 70 per cent stake which GTE (US) held in a Japanese lighting manufacturer, Kondo Sylvania.[27] Kondo

Sylvania specialises in halogen lamps for studios and optical equipment and has appreciable marketing and technological capabilities. Philips later increased its stake to 100 per cent and renamed the company Philips Lighting. Philips Lighting employed 237 people in 1995 and had sales of 4.7 billion Yen (about US$ 45 million). All sales are to Philips Japan which handles distribution of its products in Japan and abroad. As with Marantz, the company is export intensive and sells about 40 per cent of turnover abroad through Philips Japan.

Philips has also set up a number of (smaller) manufacturing and software joint ventures with Japanese firms. PNN, a joint venture with Nippon Steel and Nippon Chemicon, manufactures ceramic semiconductor packages, Philips Sensor Technology (with Nihon LCR) manufactures sensors, and Nihon Micromotor (with Foster Electric) manufactures micromotors. Denshi Media Services (with Toppan Printing) and Kyocera and Philips Datanet (with Kyocera) design software. In addition, Philips has business and equity links with two Japanese electronics firms listed at the Tokyo Stock Exchange (not in the appendix): Philips has a small (4.4 per cent) stake in Foster Electric (a manufacturer of speakers and microphones) and it has strong business and technical ties with Teikoku Tsushin (a resistor manufacturer) with which it established a manufacturing joint venture in Holland in 1989.

Philips' largest presence in Japan is in music sales. Majority owned subsidiary Polygram operates a number of subsidiaries in Japan engaged in music production, CD manufacturing and music distribution. Polygram KK is the largest with 1994 sales of 82 billion Yen (more than US$ 700 million). Polygram has increased its marketing efforts and consolidated its business in Japan in the 1990s, giving Polygram KK overall management responsibility for its Japanese operations. In the early 1990s, Polygram bought out the minority stakes which Matsushita and Matsushita subsidiary JVC had in Polydor KK and Polygram KK.[28] Polygram is the market leader in music sales world-wide with a 17 per cent market share. It has a 13 per cent share of the Japanese music market.[29]

A major new development in Philips' Japanese operations occurred in 1996. Philips set up a liquid crystal display (LCD) panel joint venture in Japan with Hosiden, an electronics components maker. Hosiden is one of the smaller players in LCD panel production in Japan and found it difficult as an independent manufacturer to raise the large amounts of capital necessary to expand production and to secure sales in the increasingly competitive market. Hosiden had LCD panel production worth US$ 180 million in 1995 and has OEM supply contracts with both Hitachi and NEC. It put its two manufacturing plants in Japan in the joint venture. Philips is a relative latecomer in the LCD panel market. It had developed its own technology to produce diode-based active matrix LCD panels, different from the mainstay thin film transistor active matrix LCDs produced by the leading Japanese firms and Hosiden. Philips started mass production of diode LCDs at its Eindhoven based Flat Panel

Display joint venture with Sagem (France), Thomson (France), and Merck (Germany), but has found it difficult to become a significant player in the world market by internal growth only.[30] The venture with Hosiden will give it the necessary critical mass as well as access to Hosiden's manufacturing skills in thin film transistor LCDs. Philips reportedly paid Hosiden 2 billion Yen for use of its technology in Japan and in the Eindhoven plant, which is likely to switch partly to the mainstay technology.[31] The size of Philips' investment in the new venture has not been disclosed, but is likely to be substantial given the capital requirements of LCD manufacturing.

A concluding remark on Philips' manufacturing activities in Japan is that an important part of these, in particular in audio and video, halogen lamps, and LCD panels, are more related to the benefits of manufacturing derived from Japan's strong supplier base and R&D skills in these areas than to particularly strong competitive advantages *vis-à-vis* Japanese firms. Manufacturing operations have consequently had only limited effects on Philips' market penetration in Japan until now and Philips remains undistinguished in these sectors. Although Philips is the world's largest lighting producer, the joint venture agreements with Matsushita appear to have long precluded it from developing its own marketing strategy in Japan. Philips does enjoy significant market shares for other products in which it has a marketing and technological lead: medical diagnostic equipment, music and small electrical appliances.[32]

Unilever

The Anglo-Dutch group Unilever employed about 2,000 people in Japan in 1995. Group sales reached 90 billion Yen (about US$ 800 million). Unilever's flavouring and aromatic substance subsidiary Quest International made the first advance in Japan and set up a subsidiary in 1963. Unilever itself set up a first joint venture with Honen in the same year (Honen Lever KK) and later took a majority stake. It assumed full control over the subsidiary in 1986 and the subsidiary was renamed Nippon Lever. Unilever has since then committed itself to the Japanese market and has increased its investments and marketing activities. It has taken a long-term view of its investment and has accepted substantial initial losses on its Japanese operations: Nippon Lever only turned in its first profit in 1993.[33] It operates two tea manufacturing joint ventures (Japan Black Tea and Lipton Japan) with two of Japan's large trading houses (Mitsui and Mitsubishi), and has a chemicals manufacturing subsidiary (Ablestik). A significant advance in Japan was due to Unilever's acquisition drive in the United States. Unilever acquired the US starch and adhesives maker National Starch and Chemical in 1987 and toiletries and personal care products maker Elisabeth Arden in 1989. Both had substantial Japanese operations which came under control of Unilever: Kanebo-NSC, NSC Japan and Elisabeth Arden Japan.[34] Unilever has carved out significant market shares in Japan in a number of products. After acquiring a margarine brand from Ajinomoto in 1993, it became the second largest margarine producer in Japan with 25 per cent of the market. Unilever also has 7 per cent of the shampoo market but has been less successful in the detergent market with a 4 per cent share (well behind US rival Proctor and Gamble with a 20 per cent share) (Nihon Keizai Sangyo Shinbun 1996).

Akzo-Nobel

AKZO's predecessor Organon established a first subsidiary in Japan in 1960, a joint venture with pharmaceutical maker Sankyo engaged in production, import and distribution of pharmaceuticals. Nippon Organon was still the largest subsidiary of the Akzo-Nobel group in Japan in 1995, with 260 employees and 13 billion Yen (about US$ 120 million) in sales. Akzo-Nobel operates a large number of manufacturing joint ventures and distribution subsidiaries in Japan, each involved in one of the group's different lines of business. Wholly owned Akzo-Nobel KK imports, manufactures and distributes fine chemicals and is also engaged in R&D. Three other wholly owned subsidiaries, Akzo Nobel Coatings (car paints), Organon Teknika and Nihon Akzo Pharma (both pharmaceuticals) are engaged in import and distribution. Two more distribution subsidiaries and seven manufacturing subsidiaries are all joint ventures with local firms. Two joint ventures with Tosoh, Tosoh Akzo and Akzo Kashima, manufacture calcium and titanium, and sulphur and phosphates, respectively. Akzo-Nobel has important business linkages with Tosoh and also operates an ethylene manufacturing joint venture with the Japanese firms in the Netherlands. Akzo's stake in Tosoh Akzo was acquired in 1987 through a takeover of the speciality chemicals division of US firm Stauffer. Akzo-Nobel also manufactures catalysts for oil refining in a joint venture with Sumitomo Metal Mining. This joint venture, Nippon Ketjen, supplies all major refiners in Japan and reportedly has a 35 market share (Toyo Keizai 1995). The joint venture with Denki Kagaku Kogyo, Denak, is the largest manufacturer in Japan of monochloroacetic acids. Akzo-Nobel manufactures organic peroxide with Nihon Kayaku (Kayaku Akzo), acid derivatives with Lion (Lion Akzo), and paints with Toa Paint (Toa Akzo Coatings). It sells its proprietary aramide fibre through a joint venture with Sumitomo Chemical (Nippon Aramid), plastics through a joint venture with Dainippon Ink and Chemicals (Nihon Interstab) and additives for paper processing industries through a joint venture with Nissan Kagaku (Nissan Eka Nobel).

DSM

DSM is the latest entrant to the Japanese market among the largest five Dutch industrial MNEs. It set up its first joint venture in Japan with Japan Synthetic Rubber, Japan Fine Coatings, only in 1982. By 1995 DSM operated at least seven subsidiaries in Japan. With the exception of wholly owned DSM Japan, which has relatively small operations, none of the subsidiaries is majority owned. The largest subsidiary in terms of sales and employment, Nippon Polypenco, came under control of DSM through DSM's acquisition of US manufacturer Polymer in 1989. DSM also makes synthetic rubber with Idemitsu Petrochemical (DSM Idemitsu), fibres and resins with Sankyo Toatsu (MD Composites), polystyrene with Toyobo (Nihon Dyneema) and resins with U-Pica (U-Pica DSM Resins).

Other Dutch industrial MNEs

Besides the five large Dutch MNEs, there are only three other Dutch MNEs with manufacturing operations in Japan. Aluminium producer Hunter Douglas operates two joint ventures in Japan which engage in import, manufacturing and distribution. It produces aluminium panels with Sankyo Aluminium (Hunter Douglas Japan) and blinds with Sekisui Resin (Hunter Douglas Window Fashions) and operates a wholly owned distribution subsidiary (Hunter Douglas Metals Japan) as well. Packaging materials group Van Leer has been active in Japan since 1963 (Tri Sure Japan) but until recently did not manufacture in Japan. In 1996 this situation changed when Van Leer invested US$ 34 million in greenfield manufacturing operations for its mainstay steel drums. It aims to manufacture 1 million drums a year and capture 8 per cent of the Japanese market. A major customer will be the Shell group, which Van Leer supplies in other parts of the world as well. Although Van Leer is the world's largest producer of steel drums for the oil and chemical industries and has an extensive network of manufacturing plants worldwide, it has until now not been able to sell significant numbers in Japan. The company cited difficulties in entering the Japanese market, which is dominated by the affiliates of the large Japanese steel makers. It apparently was not able to forge a link with a steel products manufacturer because of pressure from the large Japanese steel suppliers and has had to keep the source of steel supplies for the new plant secret.[35] A number of other Dutch firms operate distribution subsidiaries in Japan. Heineken has a joint venture with Japanese market leader Kirin Beer. Heineken Japan had a turnover of 2.9 billion Yen (roughly US$ 25 million) in 1994. Heineken has changed its strategy in Japan in the early 1990s. Until 1993, Kirin was the sole distributor of Heineken beer and was producing Heineken beer under licence. From 1993, Heineken has shifted to imports to bypass high production costs in Japan, has renegotiated the distribution contract with Kirin, and has started a marketing campaign targeting a doubling of sales in 1995 (Toyo Keizai 1995). Instrument manufacturer Delft instruments, machinery manufacturer Stork, and dairy products manufacturer Friesland Frico Domo are among the Dutch MNEs with sales subsidiaries in Japan. Friesland Frico Domo has the largest operations and has also licensed production of cheese to Japanese manufacturers. According to Dun and Bradstreet (1996), subsidiaries are also operated by machinery manufacturer Greenland, steel manufacturer Hoogovens, chemical firm Norit, paper and packaging group BT-KNP and engineering firm Fugro (not in the appendix).

MNEs in services

The largest Dutch financial group, the Internationale Nederlanden Group (ING), has built up substantial operations in Japan since entering the market in 1984. In 1984 it established Nationale Nederlanden Life Insurance. It obtained a licence to sell life insurance policies from MOF in 1986. It has gradually increased sales in Japan and in 1995 employed 363 in its life insurance subsidiary. Its banking subsidiary in Japan, ING Bank, has assets of 275 billion Yen (US$ 2.5 billion) and employs 71 people. In addition, in 1996 it acquired the securities and investment banking group Barings in the United Kingdom and took control over Barings' Japanese operations (not in the appendix). The other major Dutch banking group, ABN-Amro employs 150 people in Japan. Its banking subsidiary has substantial assets totalling 1186 billion Yen (about US$ 10 billion). In 1997 it boosted its securities trading and investment banking business in Japan by acquiring the stock brokering licence of a Japanese security dealer and ABN-Amro is planning to increase its activities in this area substantially. In the transport sector, Dutch shipping firm Nedlloyd operates one of the larger subsidiaries in Japan with 140 employees, and a second subsidiary with 30 employees. Nedlloyd is likely to increase its presence in Japan after it merged its international shipping business with P&O, creating the world's largest shipping group. Dutch international trading firms Borsumij Wehry, Van Ommeren and Hagemeyer all operate trading subsidiaries in Japan. Borsumij Wehry set up its main subsidiary in Japan, Geo Wehry International, as early as 1955 and employs 47 people. The subsidiary specialises in the import business and is not exporting from Japan. Reed Elsevier has publishing operations in Japan for professional and academic medical journals, in which the group is world leader. The most recent entry in Japan is by fast expanding business software house Baan, which set up a subsidiary in 1995 employing 39 people. In addition, the Dutch privatised telecommunications and postal services provider KPN gained a foothold in Japan through its acquisition of Australia's TNT. TNT, a major provider of international parcel and mail service for businesses, operated a subsidiary (TNT World-wide Express Japan) with 290 employees in Japan in 1995.

Apart from the two main financial groups and Nedlloyd, the presence of Dutch MNEs other than the five large industrial concerns is very limited. Indeed a large number of Dutch MNEs with substantial operations in Europe and North America are entirely or almost entirely absent from Japan. The list includes food and drink manufacturers Bols Wessanen, Meneba, and Nutricia, chemical and pharmaceutical producer Gist Brocades, copier and printing machinery manufacture Oce van der Grinten, retail and wholesale groups Vendex, Ahold, and SHV, transport firms Internatio Muller and Pakhoed, construction firms Ballast Nedam, HBG, Boskalis and Volker Stevin, publishers Kluwer and VNU and financial group Fortis.[36]

Concluding remarks

The evidence in this section has revealed a number of features of the operations of Dutch MNEs in Japan. These operations are much more extensive than FDI flow and stock data suggest. As predicted, Dutch operations in Japan are dominated by the five largest MNEs: these firms were responsible for more than 90 per cent of the 12,000 employees in Dutch controlled subsidiaries identified. The dominance of the largest firms is much stronger compared with Dutch FDI in Europe or North America where the 'second tier' Dutch MNEs have made substantial advances as well. Many of the smaller MNEs have ignored the Japanese market. In fact, even a large part of the Japanese expansion of Akzo-Nobel, Unilever, and DSM has been a by-product of their acquisition drive in the United States. Although the Japanese interests of these US acquisitions are likely to have played a role in their investment decisions, it shows that Dutch firms generally have not focused their international expansion strategy on Japan. The Dutch investment pattern reflects the historical and present barriers to inward investment and the difficulty of direct acquisitions in particular, as described in the second section. Only Shell with its historic presence in Japan has been able to expand its Japanese business in the immediate postwar years, because Japan needed to secure oil supplies and this necessitated close cooperation with the leading oil companies. Philips, in contrast, was forced to enter into a minority joint venture with its later rival Matsushita and this has not helped it much in increasing its market presence in Japan.

The investment patterns show important differences in market entry strategies of the larger MNEs. DSM and Akzo-Nobel operate a range of manufacturing joint ventures with Japanese partners. The joint ventures aim to sell in Japan but also often function as an export platform for Asian markets. Unilever operates wholly or majority owned subsidiaries and has invested in distribution and marketing to increase market share of its branded products in Japan. Philips' strategy is to create stronger links with the Japanese electronics manufacturing base and to benefit from Japanese R&D and manufacturing strengths. It has acquired stakes in three Japanese companies with important technological and design expertise and has set up a number of high technology joint ventures as well. A high share of its manufacturing output in Japan is sold in Europe and North America. Another observation is that in areas in which Dutch firms are world market leaders, they have often set up manufacturing or distribution affiliates in Japan which have captured a significant share of the Japanese market. Shell is the best example; others are Philips in small electrical appliances, diagnostic equipment and music, Akzo-Nobel in monochloroacetic acids and catalysts for oil refining, Unilever in margarine, Elsevier in medical journals, and only very recently, Van Leer in steel drums. Finally, Dutch firms are also reaping benefits from the greater opportunities for foreign firms in the Japanese market in the mid 1990s.

Philips has succeeded in two acquisitions and has bought out Japanese partners in a number of majority ventures, Shell is planning a merger to become the largest oil refiner in Japan and to consolidate its integrated oil business in the wake of deregulation, and Baan and Van Leer have made new entries in Japan.

Licensing contracts by individual Dutch MNEs

Licensing data may throw further light on the strategies of Dutch firms in Japan. By distinguishing between intra-firm licensing contracts and arm's length contracts, it is possible to determine the role of internal versus external exploitation of intangible assets. The STA in the past has published a yearly volume containing licensing data per foreign licensor and Japanese licensee. Unfortunately the publication of individual contracts was discontinued in 1987. In this paragraph, the licensing behaviour of Dutch multinationals in Japan is examined during the last five-year period for which contract data are available, 1981–6. Despite the time lag, these data reveal long-term differences in firm strategies which complement the findings based on subsidiary data.

During the five year period 1981–6, MOF recorded 180 licensing contracts between Dutch firms and resident firms in Japan. In addition, during 1981–6 50 extra licences were sold by foreign subsidiaries of Dutch MNEs, mainly located in the UK and US. The 180 Dutch licences, on the other hand, included about 30 licences by foreign holding companies in the Netherlands. The Dutch subsidiary of US biotechnology firm Biogen was responsible for 12 more licences. As with FDI, Dutch licensing activity was dominated by the larger MNEs.

Table 9.4 presents key data on the number and characteristics of licences by firm. Philips sold by far the largest number of licences in Japan: 108, of which four were by Philips in the US, and 17 by Polygram Germany. Six licences involved Philips group firms as licensees, of which three licences were to Marantz. Among the major licensees were large electronics firms such as Toshiba and Sanyo Electric. The licences were strongly concentrated around compact disk (CD) technology: seven concerned the disks, 24 the (plastic) cases for the disks and 39 concerned CD players. These numbers reflect Philips' hold on a number of major CD patents after it pioneered CD technology with Sony. Licensing in this case not only generates revenue but also has the important objective of promoting standardisation and increasing the market potential of CD hardware and music. The strength of Philips' licensing activity reflects the group's technological strength in hardware: software (3 licences) and trademarks (2 licences, to Marantz) are much less important.

The second largest licensor is the Shell group with 41 licences. As with FDI, most of Shell's activities in Japan are controlled from the UK: Shell Research and Shell International Petroleum were responsible for 25 licences. More than half of the licences (23) were intra-firm, reflecting Shell's large and

Table 9.4 Characteristics of Dutch firms' licensing to Japan, 1981–6

Firm	*Total*	*Intra-firm*	*Foreign Subsidiaries*	*Trademarks*	*Main technologies*
Philips	102	6	23	2	CDs, CD cases, CD Players, semiconductors, audio
Shell	42	23	32	3	Petrochemicals, chemical processes and machinery
Akzo-Nobel	9	1	0	1	Rubber processing, chemical machinery
Unilever	7	6	4	4	Tea, margarine, soap
DSM	5	0	0	0	Polystyrene, chemical machinery
Gist-Brocades	5	0	0	1	Pharmaceuticals

Source: STA (1982–7).

established operations in Japan and the choice to exploit its technology in-house. Almost half the licensing activity concerned chemical machinery and processes and 10 licences involved petrochemical products.

Unilever's small number of licences (7) is due to a concentration of activities in low technology (but marketing intensive) industries. Four of the seven licences involved tea processing technology and trademarks from its Lipton subsidiary in the UK. All but one licence was to Unilever firms in Japan. This reflects a long-term strategy to build up its market share of branded goods by exercising control over its Japanese operations (as seen in the previous section). Also at a considerable distance behind Philips and Shell, Akzo sold nine licences in Japan, of which only one was a (general know-how) licence to an Akzo subsidiary (Lion Akzo). The technologies involved are varied: paint, chemical machinery, rubber processing technology and plastics. One trademark was licensed. The licensing pattern of DSM is similar. There were no intra-firm licences among the five recorded contracts, which is congruent to DSM's limited presence in Japan, in particular in the early 1980s. One other technology-based Dutch MNE has multiple licensing contracts: pharmaceuticals and yeast producer Gist Brocades sold five licences in Japan. The firm has chosen to sell its know how rather than investing in Japan and does not operate a Japanese subsidiary. Other Dutch firms with licensing activity in Japan include the national air carrier KLM (1), wholesaler SHV (1), dairy producer Frico Domo (1), glass manufacturer Smit Ovens Nijmegen (3), oil exploration engineers Marine Structure Consultants (4), machinery manufacturer Stork (1), building materials manufacturer Schokbeton (1) and engineering firm Fugro (1 licence to its Japanese subsidiary).

Conclusions

Dutch multinationals' investment and operations in Japan reflect the particular regulatory and economic conditions which have affected inward FDI in Japan at large. Japan's level of inward FDI is low by any standard, though not as low as conventionally used statistics suggest. There are, however, important differences in foreign penetration across industries, which are in line with perceived competitive advantages of foreign firms. Another feature of inward FDI is its concentration in joint ventures as opposed to wholly owned operations and acquisitions. The main reason for these stylised facts is the legacy of almost three decades of prohibition and strict regulation of inward investment. Locational disadvantages and a range of entry barriers affecting foreign and Japanese entrants alike (such as vertical integration of manufacturers in the distribution sector) have kept inward investment growing at only a low pace during the 1980s. Deregulation and the prolonged recession of the 1990s have transformed the investment climate in Japan to an important extent in the mid-1990s, as a result of which new FDI and in particular acquisitions by foreign firms, have shown unprecedented advance.

The persistent barriers to FDI in Japan are likely to have discouraged smaller MNEs with fewer financial and managerial resources to enter the Japanese market. Consequently one would expect that Dutch FDI, dominated by five large industrial MNEs with substantial world-wide resources, would be relatively less affected in Japan. Figures on Dutch FDI flows and stocks appear to suggest otherwise: they indicate a very limited investment position of Dutch MNEs in Japan commensurate with limited levels of Dutch exports to Japan. However, comparison with survey data on foreign-affiliated firms in Japan highlights that FDI figures give a misleading picture of the extent of Dutch MNEs' operations in Japan, primarily because bilateral investment flows are not always picking up investments by Dutch firms. Survey data identify a large number of subsidiaries of Dutch MNEs which in all employ at least 12,000 people in 1995. The largest group, Shell, had sales exceeding US$ 12 billion in Japan, but none of the group's Japanese assets are recorded in Dutch FDI statistics. As expected, Dutch MNEs' FDI in Japan is dominated by the five largest industrial groups with a share of over 90 per cent on an employment basis. Other MNEs with a significant presence in Japan are shipping firm Nedlloyd and financial groups ABN-Amro and ING. The operations of Dutch MNEs in Japan are on the whole profitable, which is in line with the overall performance of foreign-affiliated firms in Japan. On the other hand, Dutch subsidiaries are uncharacteristic in terms of import and export behaviour. Survey data suggest that Dutch affiliates export more from Japan than they import, and there is evidence that this trade imbalance is even larger with the Netherlands. This is a result of the export intensive Japanese manufacturing operations of a number of subsidiaries, in particular in the electronics and speciality chemicals sectors, and the fact that affiliates in Japan are also involved in procurement of high technology components and materials for world-wide operations of Dutch MNEs (in particular in the case of Philips). Statistics on Dutch licensing activity in Japan in 1994 highlight Dutch firms' technological strengths in chemical machinery and processes and consumer and applied electronics.

Analysis of individual MNEs' subsidiaries and licensing operations reveals a diversity of investment strategies. Early entrant Shell has grown into a large integrated and diversified oil firm in Japan and is exploiting its refining and chemical technologies and its access to oil in its Japanese operations. Unilever, operating in the low technology but marketing intensive food and personal care industries, has invested in wholly or majority owned operations to increase market access for its branded products. Both of these groups' licensing activities in Japan show a high share of intra-group contracts. On the other hand, chemical manufacturers Akzo-Nobel and DSM have set up a broad range of manufacturing joint ventures with different Japanese partners. These manufacturing ventures improve access to the Japanese market but are also exporting to the rest of Asia. Licensing contracts by these two chemical groups are mainly with independent Japanese firms. The Japanese manufacturing subsidiaries of Philips export relatively high shares of turnover to Europe and the United States and activities are concentrated in sectors where Philips does not hold significant market shares in Japan (such as lighting and audio and video). Philips uses its Japanese manufacturing base to establish and improve linkages with the strong local supply base and the local R&D infrastructure. It does generate substantial income from licensing agreements with Japanese firms: it was responsible for two-thirds of the number of Dutch licensing contracts in the first half of the 1980s. Its licensing activity mostly reflects its possession of major compact disk patents and know-how. Philips does command significant market share in a number of markets where it is world leader, such as medical diagnostic equipment, music and small electrical appliances. Other firms have also been able to translate their strengths into a substantial presence in Japan: besides Shell in the oil sector the list includes Akzo-Nobel in monochloroacetic acids and catalysts for oil refining, Unilever in margarine, Elsevier in medical journals, ING in life insurance and Nedlloyd in shipping.

A number of Dutch firms are poised to benefit from the greater opportunities to foreign firms in the Japanese markets of the mid 1990s. Philips acquired two LCD panel manufacturing plants from OEM manufacturer Hosiden, Heineken has reduced its dependence on market leader Kirin with the aim of increasing its Japanese sales, Shell is planning a tie-up with Mitsubishi Oil to become the largest refiner in Japan and software house Baan and packaging group Van Leer both made new entries in Japan. What remains striking, though, is the complete or near absence from Japan of a large number of Dutch MNEs which have been very active in expanding in Europe and the United States. Even an important share of the growth in

Japanese operations of Unilever, Akzo-Nobel, and DSM has been a by-product of their US acquisitions, which brought US firms' Japanese subsidiaries under their control. The new opportunities for market entry and acquisitions in Japan demonstrated by the experience of a number of Dutch firms warrant a much greater focus on the Japanese market by Dutch MNEs than has been the case to date.

Notes

1 The evidence suggest that the parent firm is certainly not the main source of finance for affiliates in Japan. In the 1994 MITI survey among foreign-affiliated firms in Japan, foreign subsidiaries reported that only 10 per cent of all loans were obtained from the parent firm, while the parent financed only 1 per cent of investments in fixed capital (MITI 1995a:161–163).
2 The bilateral investment imbalances with the United States (3.6) and Europe (4.9) are again considerably smaller. The ratio of 3.6 compares quite well with figures drawn from US Department of Commerce data on Japanese affiliates in the US and US affiliates in Japan. Dunning and Narula (1994) report that US FDI in Japan in 1990 was 21 billion US$, while Japanese FDI in the US was 83 billion US$, which implies a FDI ratio of roughly four.
3 In the electronics industry, employment in Japanese-affiliated subsidiaries abroad (mostly in consumer electronics and components) is very substantial, but the investment imbalance is held in check by US investments by IBM and Apple in the computers industry.
4 See MITI (1992). The more recent MITI surveys no longer ask for the establishment details of the subsidiaries. Note that the 1991 survey only covered subsidiaries in which foreign firms had a stake equal to or greater than 50 per cent.
5 See, e.g. Bailey, Harte and Sugden (1992), Mason (1995), Batzer and Laumer (1989), Japan Development Bank (1997), Lawrence (1992), Yoshitomi and Graham (1996).
6 For example, Eaton and Tamura (1994), Japan Development Bank (1997), Lawrence (1992), Wakasugi (1995), and Nakamura *et al.* (1995).
7 See also Mason (1995) and Yoshitomi and Graham (1996).
8 Barkema *et al.* (1996) argue that such joint ventures are also more likely to be short lived because of the greater difficulties facing such ventures in the light of cultural and managerial differences, but also because accumulation of local experience by the foreign firm undermines the basis of the joint venture. They find that (joint) ventures of Dutch multinationals in Japan in particular have a shorter life than subsidiaries elsewhere (with the exception of Africa).
9 *Nikkei Weekly,* 23 January 1995. Samsung paid 52 million US$ for its stake in Union Optical.
10 See *Financial Times,* 23 January 1997.
11 The ratio of royalty receipts from affiliated firms to royalty receipts from independent companies rose to 1.37 in 1990 from 0.61 in 1982 (Dunning and Narula 1994:48).
12 In contrast FDI flows based on balance of payments data have not shown a similar increase. The latter net FDI figures are reduced by a number of large divestments and rationalisations of older joint ventures by foreign firms in Japan. MOF notification data are *gross* figures which do not include withdrawals.

13 A good example is the partial repeal of the *Large Scale Retail Store Law* in 1989 which has led to an increasing role for large stores and foreign retailers. US toy retailer Toys R Us, whose pressure had been instrumental in the relaxation of the law, has increased the number of Japanese outlets to 51 in 1996 after setting up its first store in 1991. It is now Japan's largest toy seller with 75 billion Yen (US$ 610 billion) in sales. *Nikkei Weekly,* 31 March 1997.
14 The distribution of the FDI stock in Japan over sectors was as follows: 73 per cent was in manufacturing, 26 per cent in trade, and 1 per cent in banking and other services. FDI stocks calculated by DNB incorporate reinvested earnings and are adjusted for revaluations.
15 Perhaps this is so because of the historical presence in Japan of the UK arm Shell Transport & Trading.
16 Examples are SGS-Thomson and Pirelli. MOF does not correct for FDI by such financial subsidiaries, but DNB does (Van Nieuwkerk 1985). On the other hand, MOF figures also exclude FDI by Shell UK.
17 In contrast, more than 4 per cent of Japanese trade goes to the Netherlands, which is partly due to the importance of the Netherlands as a base for European distribution activities.
18 The operations of Unilever would appear not be included in the figures either.
19 In the rather unhelpful MITI classification, mining, construction, banking and insurance, transport, real estate and telecommunications and utilities are grouped under 'other non-manufacturing', while leasing, software and information services, advertising, consultancy and the leisure sector are grouped under 'services'.
20 This appears not to be a persistent characteristic of FDI in this sector: the 1991 survey showed a profit ratio of 3.4 per cent. For a number of other industries as well, 1991 figures were very different from 1994 figures: pharmaceuticals reported a loss in 1991 and general machinery a profit ratio of 18.4 per cent (MITI 1992:71).
21 See Belderbos (1998) for more details.
22 In a few areas, such as space technology and weaponry, licensing deals have to be approved by the Japanese government. In the other cases there is only an ex-post reporting requirement.
23 It is not always clear whether the sales figures reported by Toyo Keizai are on a consolidated or unconsolidated basis. In particular in the former case, adding up sales figures will generate an inflated figure for total Japanese sales of the MNE. Employment figures are usually on an unconsolidated basis and may be added up with fewer reservations.
24 *Financial Times,* 17 February 1997.
25 See *Nikkei Weekly,* 3 May 1993 and *Financial Times,* 1 May 1993. In 1994 Matsushita acquired a cathode ray tube plant of Nokia in Germany and began production in Europe. Until 1994, Matsushita had relied on tube deliveries from Philips plants in Europe for its European television manufacturing operations.
26 It has even been reported that Philips would discontinue the marketing of consumer electronics products in Japan altogether (*Financial Times,* 14 January 1997).
27 *Nikkei Weekly,* 2 January 1992.
28 *Financial Times,* 14 January 1994. Polygram KK has also restructured CD manufacturing operations and was the first Japanese music producer to relocate all CD production for the Japanese market to Asia in 1995.
29 *Financial Times,* 9 May 1996.
30 The Eindhoven Joint venture was producing 40,000 displays a month at the end of 1995. *Financial Times,* 12 October 1996.
31 The *Nikkei Weekly,* 25 November 1996.

32 Philips' share of the Japanese coffee maker market in 1992 was 10.8 per cent. Philips also held 4.5 per cent of the shaver market in 1992, but was well behind Matsushita (42 per cent) and Braun of Germany (24 per cent) (Yano 1994). In semiconductors, Philips has been less successful. Its highest share in 1994 was recorded for digital bipolar integrated circuits at 1.9 per cent, in sharp contrast with Philips' world market share for digital integrated circuits of more than 11 per cent. Philips' share in the overall Japanese semiconductor market reached only 0.37 per cent for discrete semiconductors and 0.18 per cent for integrated circuits; total sales amounted to 10 billion Yen (about US$ 90 million) (Yano 1995).

33 *Financial Times,* 7 May 1992 and 23 February 1994.

34 In a recent development, Unilever sold its speciality chemicals division, including Quest and National Starch and Chemical, to UK chemicals group ICI. *Financial Times,* 8 May 1997.

35 *Financial Times,* 7 November 1996.

36 Building group Ballast Nedam set up a subsidiary with Penta Ocean Construction to develop business in underwater construction in 1980 but this subsidiary appears to have been liquidated. Similarly, a pharmaceuticals joint venture between Gist Brocades and Chugai set up in 1984 is no longer recorded in the listings provided by Dun and Bradstreet (1996) and Toyo Keizai (1995).

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APPENDIX 9.1

Table 9.A1 Main subsidiaries of Dutch MNEs in Japan, 1995

Name	*Owned (percentage)*	*Year established*	*Paid-in capital*	*Sales*	*Income*	*Employees*	*Activities*	*Imports per cent*	*Exports per cent*	*Line of business*	*Partner(s), stake per cent*	*Remarks*
Shell												
Showa Shell Group												
Showa Shell Sekiyu	62	1901	34,198	f1354,414	4,448	2,395	I,M,D		0	oil and petrochemicals	various	through Shell (UK)
Showa Yokkaichi Sekiyu	75	1957	4,000	31,201	973	658	M	0	0	oil products	Mitsubishi Kasei 4.2, others	through Showa Shell
Toa Oil	42	1924	4,961	30,341	1,145	507	M		0	oil products	various	through Showa Shell
Nippon Grease	49.6	1941	100	a11, 677		225	M			grease, petrochemicals	various	through Showa Shell
Shoseki Kako	100	1953	200	8,409		170	M,D			asphalt		through Showa Shell
Shoseki Shoji	100	1952	100	5,544		60	D			petrochemicals sales		through Showa Shell
Shoseki Gas	100	1941	100			280	D			gas distribution		through Showa Shell
Shoseki Engineering	100	1979	100			286				construction		through Showa Shell
Showa Shell Sempaku	100	1976	450	41,290	175	18				transport		through Showa Shell
Shoseki Oil Development Vietnam	55	1992	1,827			15				oil exporation	Sekiyu Kodan 45	through Showa Shell
Shell Japan Group												
Shell Japan	100	1963	12,100	64,100	8,379	350	I,M,D,E	49	16	petrochemicals, LNG		through Shell (UK)
Yuka Shell Epoxy	59.7	1979	1,200			135	M			chemicals	Mitsubishi Chemical	through Shell (UK)

Table 9.A1 continued

Showa Solar Energy	75	1986	494	1,500		b37	I,M,D,E	50	70	solar batteries, panels	Siemens 25	through Shell (UK)
Total Shell						*5,099*						
Philips												
Philips Japan Group												
Philips Japan	100	1953	4,000	117,300	2,065	619	I,D,E			electronics		
Philips Lighting	100	1992	50	4,700	260	237	I,M,D,E	7	40	halogen, metal halide lamps		acquired 1992
Philips Medical Systems	100	1987	480	b22,000		150	I,D			medical equipment		
Philips Mediservice	100	1991	110			80	D			medical equipment services		
Marantz Group												
Marantz Japan	50	1981	1,135	f43,897	594	953	M,D,E		41	audio, video	various	Acquisition of 50% stake
Miyako Audio	100	1981	50			200				audio, video		through Marantz
Standard Communications KK	100	1984	20			60				audio, video		through Marantz
Standard Communications Corp.	100	1981	50			295				audio, video		through Marantz
Polygram Group												
Polygram KK	100	1990	3,561	82,363		320	M			CDs, audiotapes		through Polygram (Neth)
Polydor KK	99	1953	480		d840	100	D			CDs, video, audiotapes		through Polygram (Neth)
Mercury Music Entertainment	100	1970	400	9,400	471	50	I,D	20		CDs, records, audiotapes		through Polygram (Neth)
Others												
ASM Japan	100	1982	2,900			125	I,M,D,E	5	20	semiconductor steppers		through ASM (Neth)

Table 9.A1 continued

Name	*Owned (percentage)*	*Year established*	*Paid-in capital*	*Sales*	*Income*	*Employees*	*Activities*	*Imports per cent*	*Exports per cent*	*Line of business*	*Partner(s), stake per cent*	*Remarks*
Signetics Japan	100	1988	e60	e8,000			D,I			semiconductors		acquisition Signectics (US) 1988
PNN	40	1986	1,500	731		130	M,D			ceramic electronic devices	Nippon Steel 30, Nihon Chemicon 30	
Philips Sensor Technology	50	1987	180			23	I,M,D,E	10	10	sensors	Nihon LCR 50	R&D focus
Nihon Micromotor	49	1979	200			e3	M,D			micromotors	Foster Electric 51	
Denshi Media Services	25	1987	300			30	M,D			CD-I software design	Toppan Printing 75	
Kyocera & Philips Datanet	50	1985	200	e6,000		e20	I,D			telecommunications software	Kyocera 50	
Total Philips						*3,372*						
Unilever												
Wholly Owned												
Nippon Lever	100	1973		f90,000		1,000	M,D			foodstuffs, detergents, fats and oils		
Ablestik Japan	100	1984	34			39	M,D			chemicals		
Quest International Japan	100	1963	480			100	I,M,D,E			aromatics, flavourings		
Lipton Lever	100	1990	50				D			food, margarine		

Table 9.A1 continued

Joint Ventures											
Japan Black Tea	30	1973	193			237	I,M,D,E			tea	Mitsubishi Corp 39, others	
Lipton Japan	70	1984	300				M,D			(Japanese) tea	Mitsui Corp 15, others	
US acquisitions												
Kanebo-NSC	95	1987	250	14,128	1,663	350	M,D	2	2	resins, adhesives	Kanebo 5	acquisition NSC (US) 1987
Elisabeth Arden Japan	100	1989	228			260				personal care products		acquisition Elisabeth Arden (US) 1989
NSC Japan	100	1987	50			27	I,M,D,E	90	10	starch, reinforcing agents		acquisition NSC (US) 1987
Total Unilever						*2013*						
Akzo-Nobel												
Manufacturing Joint Ventures												
Nippon Organon	60	1960	277	13,000	854	260	I,M,D	100	0	pharmaceuticals	Sankyo 40	
Tosoh Akzo	50	1987	500	7,373	1,142	191	M,D,E	0	16	calcium, titanium	Tosoh 50	acquisition Stauffer (US) 1987
Akzo Kashima	70	1975	2,000		a138	147	M	0	0	sulphur, posphate	Tosoh 30	R&D
Nippon Ketjen	50	1970	480	c4,000	1,401	112	M, D	5	20	oil refining catalysts	Sumitomo Kinzoku Kosan 50	
Lion Akzo	50	1963	900	8,002	746	104	M,D			acid derivatives	Lion 50	
Kayaku Akzo	50	1970	400		989	100	M,D			organic peroxide	Nihon Kayaku 50	
Denak	50	1976	1,200		134	5	I,M,D,E		50	monchloroacetic acids	Denki Kagaku Kogyo 30, Mitsui Toatsu Kagaku 20	
Toa Akzo Coatings	50	1979	230				M,D,E			car paints	Toa Paint 50	
Wholly owned												
Akzo Nobel KK	100	1973	2,000		b119	43	I,M,D,E			chemicals		merged with Stauffer Japan in 1988

Table 9.A1 continued

Name	Owned (percentage)	Year established	Paid-in capital	Sales	Income	Employees	Activities	Imports per cent	Exports per cent	Line of business	Partner(s), stake per cent	Remarks
Akzo Nobel Coatings	100	1984	230			60	I,D	100		car paints		
Organon Teknika	100	1979	169			50	I,D			pharmaceuticals		
Nihon Akzo Pharma	100	1975	230				I,D			pharmaceuticals		
Distribution Joint Ventures												
Nippon Aramid	50	1987	200			13	I,D	100	0	aramid	Sumitomo Kagaku 50	
Nissan-Eka Nobel	50	1986	120			8	I,D	60	0	paper processing agents	Nissan Kagaku Kogyo 50	through Eka Nobel (Sweden)
Nihon Interstab	50	1972	30				I,D			plastic materials	Dainippon Ink Chemicals 50	
Total Akzo						*1093*						
DSM												
Manufacturing Joint Ventures												
Nippon Polypenco	45	1989	240	c4,873	247	107	M,D	4	0	engineering plastics, nylon	Mitubishi Resin 55	acquisition Polymer (US) 1989
DSM Idemitsu	50	1988	4,700	d2,870		100	I,M,D,E	0	50	synthetic rubber	Idemitsu Chemical 50	exports to Asia
Nihon Dyneema	50	1987	80			5	M,D			polystyrene	Toyobo 50	
MD Composites	50	1992	800				M			artificial fibres, resins	Sankyo Toatsu Kagaku 50	
Wholly Owned												
DSM Japan	100	1990	40			10	M,D			resins, chemicals		
Distribution Joint Ventures												
Japan Fine Coatings	50	1982	92	2,556	443	1	I,D,E	5	10	coatings for plastic & paper	Japan Synthetic Rubber 50	

Table 9.A1 continued

U-Pica DSM Resins	50	1991	20				I,D			resins	Nihon U-Pica 50
Total DSM						*223*					
Other Dutch Industrial MNEs											
Heineken											
Heineken Japan	51	1983	200	2,920		60	I,D	60	0	beer	Kirin (49)
Friesland (Frico Domo)											
Foremost Blue Seal	100	1963	152			50	I,D			dairy products	
Norit											
Norit Japan	100	1982	50			3	I,D			chemicals	
Hunter Douglas											
Hunter Douglas Japan	77	1973	93	1,598	107	37	M,D,I	100	0	aluminium panels	Sankyo Aluminium 23
Hunter Douglas Window Fashions	50	1989	400			20	M,D,I	100	0	blinds	Sekisui Resin 50
Hunter Douglas Metals Japan	100	1984	25			3	D,I			aluminium products	
Van Leer											
Van Leer Japan	99.5	1992	40			5	D,I	50	0	steel drums	
Tri-Sure Japan	100	1962	155	194		3	D,I	70	0	cans and drums	
Stork											
Stork Nippon TP	100	1994	10			11	I,D			printing machinery	
Delft Instruments											
Oldelft Japan	100	1968	20			6	I,D			Instruments, radar	

Table 9.A1 continued

Name	Owned (percentage)	Year established	Paid-in capital	Sales	Income	Employees	Activities	Imports per cent	Exports per cent	Line of business	Partner(s), stake per cent	Remarks
Greenland												
Vicon Japan	95	1975	46			16	I,D			machinery		
Dutch MNEs in Banking and Insurance, Services, and International Trade												
Borsumij Wehry												
Geo Wehry International	100	1,955	95	3,933	197	47	I,D	94	0	international trade		
Van Ommeren												
Seino Votanier Logix	60	1985	10				I,D,E			international trade	Seino Transport 40	
Hagemeyer												
Hagemeyer Import & Export	100	1968	80				I,D,E			international trade		
Nedlloyd												
Nedlloyd Lines	100	1973	100	2,095		140				international shipping		
Nedlloyd Lines Nagoya	50	1972	30			30				transport		Through Nedlloyd (Hong Kong)
Reed-Elsevier												
Excerpta Medica	100	1980	60		c92	41	I,D			publishing of medical journals		

Table 9.A1 continued

Baan Company								
Baan Japan	100	1995	230			39	software	
ABN-Amro								
ABN AMRO Bank	100	1950				121	banking	assets 1,187 billion Yen
ABN-Amro Securities	100	1987	3,204		826	19	securities trading	
Mees-Pierson Capital Management	100	1987	125	124		5	investment banking	through Mees Pierson International (Switzerland)
ING								
Nationale Nederlanden Life Insurance	100	1984	8,000			362	life insurance	
ING Bank	100	1985				71	banking	assets 275 billion Yen

Sources: Dodwell (1988, 1992, 1994), Keizai Chousakai (1994), Toyo Keizai (1995), Dun and Bradstreet (1996).

Notes
Established = year of establishment or year of acquisition; paid in capital in million Yen; income is declared taxable income in million Yen; sales is unconsolidated sales in million Yen if not indicated otherwise; imports is imports as percentage of total procurement; exports is export as percentage of sales; I = import; M = manufacturing; D = distribution; E = export.
a 1990; b 1991; c 1992; d 1993; e 1988.
f consolidated basis.

10 Small, smart and sustainable?

Policy challenges to the Dutch model of governance (together) with multinationals

Rob van Tulder

Introduction

This chapter shows how the government of a small country like the Netherlands can be 'smart' in governing its economy (together) with multinational corporations. Can that particular smartness be sustained under changing circumstances? First, the chapter assesses what can be understood by smart governance in a small country. This section underscores the function of corporatism in an open economy. Next, the degree of 'smartness' of consecutive Dutch governments in four important phases in Dutch economic history is considered. Then, recent challenges to the Dutch corporatist model are scrutinised: foreign entries; further internationalisation of the Dutch multinationals; and further European integration. Will they change the room for manoeuvre to such an extent that the effect of government policies *vis-à-vis* multinationals and its effectiveness in balancing public and private interests will become more limited? This chapter ends with an assessment of leading policy challenges that the Dutch government is facing—assuming it intends to sustain its historical 'smartness'.

Coping with smallness

The Netherlands is a small country with a remarkable number of sizeable home-based multinationals. Dutch multinationals have undoubtedly been responsible for pushing the Netherlands up the rankings of technologically sophisticated nations and underlie its strong trade orientation and dependence. Being the home-base for many large firms, however, poses particular policy making problems. In addition, the policy margins in a small and open economy are smaller than the policy margins of a large and often more closed economy. At the same time, the Netherlands has had to cope with firms that dominate large shares of domestic employment and research and development. The situation is further aggravated by the fact that Dutch multinationals are among the most internationalised firms in the world, i.e., the largest of these firms have more employees, assets and sales abroad than at home (see e.g. UNCTAD 1997; Ruigrok and Van Tulder 1995). Thus, these small policy margins are under constant pressure, because the most important players in the economy have the bulk of their interests elsewhere in the world.

Political economists refer to this situation as the 'small country dilemma': given a process of internationalisation, smaller countries are on the one hand rather powerless to influence that process itself, whereas on the other hand they are hit the hardest by international developments (Höll 1983:34). Others, in considering the position of these economies in international technological developments, have referred to this as a process of 'small country squeeze' (Kristensen and Levinson 1983). Large and economically strong societies have the opportunity to 'internationalise domestic structures' to a certain extent, whereas the smaller economies are largely confined to an 'internalisation of international structures'. What this means is that while the sovereignty of a small country in theory is large, in practice this sovereignty is often limited by a number of non-legal political, economic and even practical factors (Van Tulder 1989:12).

Notwithstanding the 'small country dilemma' or 'squeeze', consecutive Dutch governments have been particularly creative and successful in leveraging their limited policy margins to their extreme and matching the private interests of international firms with longer-term domestic public interests. As a result, the Dutch economy is among the most competitive in the world, while at the same time generating income levels that are high enough to sustain a welfare state. In this context Cameron (1978) has pointed at the interesting (statistically significant) causation that the large involvement of the state in the smaller countries should be considered the logical consequence to the openness of the economy and the higher concentration of employment in production with a few large (multinational) companies. The welfare state can thus be considered the logical complement to the process of internationalisation and an input to a sustained viability and competitiveness of the economy.

Policy formulation and implementation in the Netherlands for the past four centuries has never developed in isolation. Trade and industrial policies in particular have materialised in close consultation with a number of big and influential multinational corporations, which remained remarkably 'Dutch' in their management approach, financial sources and location of research and development, i.e. being clearly embedded in the Dutch economy and culture. Dutch governments, multinational firms and trade unions have always mixed up policy and business strategy in a very pragmatic manner. This typical form of Dutch pragmatism has been dubbed by some as *interactive governance* (cf. Kooiman 1993), *corporatism* (Visser and Hemerijck 1997), an *associative export oriented* model (Senghaas 1982), or most recently as the *'polder model'*.

In comparing a number of smaller countries, Katzenstein (1985) typified the Dutch model (along with the Belgian, the Canadian and the Swiss) as *'company induced',* clearly putting the emphasis of policy form(ul)ation with representing the interests of companies. However, in judging the success of the Dutch corporatist model, many have also stressed the often constructive role the trade unions have played, in particular through a low strike proneness and responsible wage claims, which were linked to the international competitiveness of the country. Small countries in general tend to have stronger trade unions, and a higher propensity towards corporatist bargaining institutions. The Dutch government has often acted as a referee in conflicts between employers and employees, which in practice reinforced its bargaining position *vis-à-vis* both parties.

An important result of the postwar corporatist compromise in the Netherlands has been the linkage of high productivity with relatively high wages, creating the foundations not only for the success of the Dutch model as an international powerhouse but also as a welfare state. In the approach of the French regulation theory the coupling of productivity with wages is also referred to as a 'productivity coalition' (cf. Ruigrok and Van Tulder 1995:37). It can overcome inherent control dilemmas in capitalist production and contribute to virtuous circles of economic growth/welfare. In the Netherlands, the tripartite bargaining platform of corporatism was predominantly organised *at a national level:* with centralised trade unions (confederations), centralised employers' organisations and a central state.

The Dutch model of governance over time has shown a considerable degree of effectiveness, demonstrated by the success of the Dutch economy over a prolonged period. Being a small, but economically successful power, in a world dominated by big countries has required a substantial degree of 'smartness' in state policy formulation and implementation, which can be defined as an optimal utilisation of its small policy margins (Katzenstein 1985; Voorhoeve 1979). To be perfectly clear about the term 'smartness' used in this contribution: it should be considered without any qualitative overtones.[1]

Phases of 'smart' governance

In Dutch economic history four phases of 'smart' governance can be distinguished. First, the *Golden Age* in the seventeenth century, in which Dutch trading firms 'ruled the waves' and the Dutch economy achieved hegemonic status. A second phase began at the end of the nineteenth century during which period many of the leading Dutch industrial multinationals were established. A third phase started in the 1950s and 1960s, in which the Netherlands was among the six founding members of the first stages of European economic integration. Finally, in the 1980s the Dutch government—

again in close consultation with some Dutch multinationals—played an important role in overcoming *'Eurosclerosis'* which had threatened to strangle further initiatives in the economic integration of Europe.

These four periods embody 'smart' governance in striking a balance between the interests of particular multinationals and a national policy making elite. A further elaboration of these phases should, it is hoped, illustrate the wide range of policy instruments used by the Netherlands over time. This short historical overview also shows that the Dutch smartness was often linked with an appeal to high international moral values—although in practice policies were less altruistic.

The *first*—and undisputedly most successful—phase of smart governance was the age of Dutch 'hegemonic power' (cf. Wallerstein 1980). The Netherlands became the leading economic power as well as the breeding ground for many institutional innovations that still facilitate the operational aspects of international business today, such as the stock exchange. Policy formulation and implementation always implied a close scrutiny of public and private interests in which the distinction between rulers and business people was often absent. Under these circumstances, the Dutch East India company, founded in 1602 as a state-owned company, became the first true multinational corporation (cf. Chapter 2 and Jones 1996). The scholar Hugo Grotius, an employee of the Dutch East India company, set forth the legal principles of International Public Law. Grotius contributed to opening up markets and trading routes for the Dutch against the domination of the Spaniards and the Portuguese in particular. Trade policy (self interest) thus became moulded in the form of International Public Law (universal interests), which subsequently was also used with considerable pragmatism. Voorhoeve adequately observes for instance that the elevated principles of Grotius 'were not always applied by the Dutch themselves when vital interests were at stake' (Voorhoeve 1979:24).

The *second* phase of smart Dutch governance can be situated in the late nineteenth century. The Dutch economy was in the middle of catching up with the industrial revolution that had spread across most other European countries, with the exception of the low countries. Officially the Dutch still favoured a regime of open international trade. However, while the Dutch adopted fewer visible trade barriers than other countries they used non-tariff barriers to their advantage. In particular the Dutch refusal in the 1869–1910 period to comply with international patenting law has contributed to favourable circumstances for their 'own' multinationals. Due to this refusal, Dutch start-up companies could copy foreign technology without paying remuneration to the inventor. Companies now listed in the Fortune 500 ranking which 'illegally' copied in this way include Philips—Anton Philips started his firm on copied light-bulb technology of Thomas Edison (General Electric)—and Simon van den Bergh, who together with 70 other Dutch margarine producers freely copied the French margarine processing technology of Hippolyte Mège Mouriès, and founded (Unilever Wennekes 1993:38). By the end of the nineteenth and the beginning of the twentieth century, Royal Dutch/ Shell used the Dutch part of its firm for the more technical activities, such as exploration, drilling and refining set in major technical laboratories in the country, whereas the British part accounted for the commercial activities, such as transport and marketing (Luiten van Zanden, 1997:52–3). All three firms still count these activities among their core businesses.

The *third* phase of smart Dutch governance matured after World War II. Although the Netherlands had been among the founding fathers of consecutive phases of European economic political and economic integration initiatives, Dutch governments have played a less prominent role at the political forefront of these initiatives than other continental governments. The effectiveness of Dutch policy involvement in the European integration process was based on silent diplomacy rather than on overt support. The Dutch faced a balancing act with regard to their business constituencies: they had to balance the clear continental interests of part of the Dutch business community (the export dependence on Germany for instance) with the prevailing North-American orientation of another important part of Dutch multinational business. Previous chapters of this volume have given the quantitative and strategic details of that orientation. The situation of other European countries has varied between the two countervailing interests. France, Germany and Italy had clearer continental European interests and thus their bias was often more explicitly in that direction, while the United Kingdom had stronger transatlantic interests in its economic orientation, which partly explains their more fundamental hesitation to engage in European initiatives. The particular shape the early phase of European integration took can be considered to represent an adequate compromise between the two orientations of Dutch (multinational) business: a European market was created as a compensation for the loss of its colonial empire and as a means of managing the crisis in its resource-based multinationals in the coal and steel industries.

The successful rejuvenation of the European integration trajectory in the 1980s which culminated in the Treaty of Maastricht can be considered the most recent, *fourth,* phase of smart Dutch policy governance. The evolution of the European Economic Community in the 1973–86 period from the original six to twelve member states had put a heavy burden on the effectiveness of the European policy making arena. At the beginning of the 1980s, a feeling of Eurosclerosis was spreading throughout Europe. The process of further European integration had almost come to a halt. Direct and indirect trade barriers between the European member states remained substantial. Unlike the intentions of the Treaty of Rome, the mobility of labour and capital remained low and the harmonisation of technical standards was still an illusion. The costs of doing business within Europe therefore stayed high. This situation was particularly harmful for Dutch multinationals that had internationalised relatively early within Europe and had developed a *multi-domestic* strategy to overcome intra-European trade barriers. While the multi- domestic strategy makes it more difficult to profit from economies of scale, coordination problems between the various national organisations lowers the firm's strategic flexibility.

In the 1970s and 1980s multi-domestic oriented multinationals were confronted in particular with the challenge of Japanese firms which competed on the basis of economies of scale, and export-orientated strategies in high-tech consumer oriented areas. Dutch multinationals took an active role in breaking the apathy of Eurosclerosis. In particular Philips and its president Wisse Dekker were actively pursuing a large number of initiatives to step up further European integration. Philips was hit hardest by the international developments. The firm—in close consultation with the Dutch government—constructed the foundation for the European Roundtable of Industrialists (ERT). The ERT has been very influential in pressing for further European integration. The Presidents of Unilever and Shell have also been among the most active members of the ERT. At the same time Philips led the initiative to create European technological collaboration projects. The 1983 ESPRIT project facilitated a large number of pre-competitive collaborative research projects in Europe which subsequently led to an even larger number of complementing projects all meant to strengthen the competitive position of European firms. Dutch firms figure prominently in many of these initiatives, and as a consequence the Netherlands is also well represented in the administration and regulation of these initiatives.

Perhaps most important, however, has been the initiative of Philips' president Dekker in launching a plan called 'Europe-1990; An Agenda for Action'. In this plan a design for further integration—for example via harmonisation of standards and procurement policies—and the breakdown of customs procedures was presented. The Dutch government actively lobbied for the adoption of this plan by the other European governments. The effectiveness of the Dutch approach proved very high: many elements of the Philips scheme subsequently reappeared in the June 1985 White Paper 'Completing the Internal Market' by Commissioner Lord Cockfield—the most important departure from the original scheme being that the target year became 1992 instead of 1990. The Philips/Dutch government initiative thus became the bandwagon on which the Single European Act and the famous '1992' trajectory was based, finally leading to the Treaty of Maastricht. Euroscleroris was thus superseded by 'Europtimism' and the Dutch played a catalytic role in facilitating this change of mood.

The Dutch model facing recent dominant strategies of multinationals

Elsewhere the restructuring strategies of the largest Dutch industrial and service oriented multinationals in the period 1985–95 have been inventorised in more detail (Van Tulder and Ruigrok 1997). It is clear that the Dutch multinationals have profited from the political initiatives undertaken by the Dutch governments in the direction of Europe. The 1992 trajectory facilitated their regional restructuring strategies. At the same time other Dutch firms continued to pursue a North-American strategy. During the 1990s some firms have accelerated the implementation of the latter strategies. At the same time the Dutch economy became further invaded by foreign-owned companies. This section will consider these developments in order to outline the circumstances under which the Dutch policy model is entering the next phase of governance, which is challenging its historical smartness.

A European orientation: regional restructuring strategies

Dutch companies who have internationalised most are companies like Philips, Unilever, Shell, Akzo and KNP-BT. At the moment they are mostly trying to regroup regionally within Europe. This is partly made possible by the formation of the European Union, a process on which especially these companies have strongly insisted. Within the European region, production facilities are being recentralised so that the whole European market can be served from one location. These companies strive for a 'regional division of labour' and less for a 'global' division of labour. This restructuring process has put considerable pressure on all parties concerned, including governments, suppliers and employees. Because of this strategy, the threat of curtailment of existing investment has become a part of the bargaining process whereby governments and trade unions who meet the wishes of the big companies (increased flexibility, sharper supply conditions, deregulation, wage modification, regional support and industrial politics) are the ones who have the highest chance of keeping or getting the higher value-adding parts of the company inside their borders.

An example is the restructuring strategy of Unilever. In 1994 Unilever reserved 1,372 million guilders for a period of three years for the restructuring of its production. While 73 per cent of the annual turnover is generated in just two world regions, 94 per cent of the restructuring costs were directed to these regions (57 per cent to Europe, 37 per cent to North America). The restructuring will result in the closing down of a considerable number of factories, meaning a loss of 7,500 jobs, of which a great part will be in Europe (Unilever, Annual Report 1993, *Financial Times,* 23 February 1994). Unilever's restructuring policy will therefore put all the national governments and trade unions in the countries involved under permanent pressure.

Similar restructuring strategies by other Dutch MNEs tremendously increased the share of Dutch investment in the EU over the period 1985 to 1994. Until 1990, the investment flow to other European countries accounted for almost half of the foreign investments. Since then, this share has increased (see Chapter 1 of this volume). While Japanese companies mainly invested in Europe *before* 1992 in the fear of a 'Fortress Europe', Dutch companies seem to put the emphasis of their investments in Europe *after* 1992. The creation and utilisation of economies of scale are an important consideration. It can be expected that this trend will continue for the time being. The role of Eastern Europe as a targeted region for investments will probably stay restricted—although relatively speaking there is considerable growth but starting from a very low investment level. The current situation would suggest that Eastern Europe does not play a significant role in the strategic plan of most of the large Dutch companies, either as a potential market, or as a supplier. Although most Dutch MNEs are indeed present in Central and Eastern Europe, the region still has low priority when it comes to their generic restructuring plans.

Dutch banks and insurance companies—some of which rank among the Fortune 500 companies—have also primarily been interested in Europe and the United States. In Asia, Singapore and Japan have been the focus of attention, but these markets make up only 10 per cent of the turnover. Even the most internationalised Dutch bank (ABN-AMRO) rapidly withdrew from its goal of achieving 'global status' in the course of the 1990s. In 1995 the three largest Dutch banks had more than 90 per cent of their employees located in Europe, although the share of turnover recovered abroad is much bigger.

Overt support for sustaining the Dutch national corporatist model under these circumstances comes from the least internationalised of the three largest banks, the Rabobank. This bank in many respects represents a microcosm of Dutch corporatism and is also organised as a 'corporative'. The management approach of the Rabobank (ranked 297 in the 1995 Fortune 500) is still Dutch-centred. It can be expected that the Rabobank especially will remain most active in the support and (re)formulation of domestic instruments for a more aggressive industry and technology policy.

North American orientation of some home-based multinationals

In terms of their internationalisation strategies, the US is the second most important market for Dutch firms. Approximately 30 per cent of the total investments of the Netherlands are concentrated in the US. Looked at in absolute terms, Dutch companies are the second largest investors in the US. Extrapolating from the strategy of Unilever, Vendex and Ahold it would seem that the majority of the investments are focused on rapid entry, often through takeovers and mergers and acquisitions. Dutch companies worldwide take sixth place in the field of takeovers, mergers and joint ventures (Ministry of Economic Affairs 1996:17). In the period 1986–92, only 30 to 35 per cent was focused on greenfield investments. By the mid-1990s, the proportion of greenfield investments had even decreased to 10–15 per cent of all international investments (Centraal Plan Bureau 1996).

In services, the leading Dutch insurance company—Aegon (307 in the 1995 Fortune 500 ranking) has clearly aimed at the United States market, next to its European strategy, with 31 per cent of its turnover achieved in the USA in 1995. The ABN-Amro Bank is also developing the American market in particular—albeit using a more gradual strategy. Far behind the European and American interests are other world regions.

The Netherlands as an attractive host to foreign-owned multinationals

Ever since the 1950s when American firms started to develop activities in Europe and the Netherlands, the Dutch economy has remained a prominent destination for inward FDI. The Netherlands was ranked seventh world-wide since 1980 on the list of receiving FDI. Next to transatlantic and—later—Japanese investments, since the mid-1980s a strong interest from European firms in investing in the Netherlands can be observed. This involves primarily companies from Belgium, the UK and Switzerland. The share of EU firms in the total investments in the Netherlands has grown from 33 per cent to 43 per cent between 1984 and 1993, with a subsequent decline in the (relatively high) share of the US (De Nederlandsche Bank 1994; Ministry of Economic Affairs 1995:20).

The inroads of foreign multinationals have been substantial in the Netherlands. Not discouraged by the small size of the home market or the supposed high-wages, foreign-owned firms invested heavily in the country. Based on a survey conducted by Buck Consultants International for the Ministry of Economic Affairs on the motives of non-EU companies for investing in the Netherlands, it would seem that the Netherlands is the preferred location when selecting a site for European headquarters as well as distribution (Table 10.1). From the point of view of other European countries, the Netherlands is often seen as an attractive location for the establishment of production facilities. It seems that this is especially true for companies from other small countries that are looking for comparable institutional conditions—note in particular the interest in the Netherlands as production location for Scandinavian companies (Table 10.1).

One of the most obvious explanations for this investment behaviour is of course the transit function of the Netherlands, the excellent infrastructure and the (still) highly educated and (still) internationally orientated working population. The strategic roles of the port of Rotterdam and Schiphol Airport in particular are still of great importance. According to a survey of merchants and transporters from the Far East, Rotterdam has been the best European sea port (before Hamburg and Antwerp), while Schiphol Airport is the best European airport (before Frankfurt and London-Heathrow) (*Cargo New Asia* quoted in *De Volkskrant,* 26 March 1996). Wage levels are not necessarily an important consideration for investments that are primarily triggered by the transit function of the Dutch economy and the entrance provided to the wealthy European continental economy.

It is important to note that in the postwar period, foreign-owned firms substantially contributed to employment—and thereby to the continuation of the Dutch corporatist model. Fifteen per cent of the growth of industrial employment in the 1950–63 period was accounted for by foreign-owned companies. In the 1964–72 period these companies achieved a growth of 30,000 jobs, while the rest of the Dutch companies shed more than 83,000

Table 10.1 Foreign investments in Western Europe:* the Dutch score for 1991–4

	Number of establishments		*Employment*	
	Relative (%)	*Ranking*	*Relative (%)*	*Ranking*
European headquarters				
American companies	30	1	24	2
Japanese companies	32	1	42	1
Production locations				
American companies	10	4	7	5
Japanese companies	11	4	8	3
Scandinavian companies	23	2	11	3
R&D centres				
American companies	12	2	8	3
Japanese companies	11	3	3	5
European distribution centres				
American companies	46	1	48	1
Japanese companies	52	1	57	1
Call centres				
American companies	41	1	50	1
Japanese companies	–	–	–	–
Total	22		12	

Source: Buck Consultants International, March 1995.

Note
* Survey includes seven Western European countries: Germany, France, the United Kingdom, the Netherlands, Belgium, Luxembourg and Ireland.

jobs (Atzema and Wever 1994:171). As a result of these inroads, the Netherlands has become a small country with approximately 40 per cent of employment and 25 per cent of production in manufacturing industry in the hands of foreign affiliates in 1993 (OECD 1997:100).

One could argue that the Dutch economy in the postwar period has been penetrated by foreign multinationals *precisely because* of the close consultation between government, trade unions and the home-based multinationals, as well as its important role as a transit point in the European economy. The Netherlands is considered a tax haven by many firms. Consequently the country is being chosen to play host to some company headquarters. The latter blurs the official (de jure) distinction between foreign-owned and home-based multinationals. In practice, however, it should be noted that these firms cannot really be considered Dutch. For instance, French telecom equipment producer Alcatel has its headquarters in The Hague. The Netherlands also houses the headquarters of the Swedish firm IKEA. Additionally, the European headquarters of many Japanese firms moved to the Netherlands.

Firms locating in the Netherlands to profit from the transport function of the country in general can be considered to have had a positive influence on the Dutch productivity model. The pressure for lowering wages came more from home-based multinationals competing on world product markets.

The result of restructuring: a multinational country with structural deficiencies

Dutch society nowadays is faced with three major types of strategy of the multinational corporations:

1 regional restructuring strategies of important home-based multinationals that have traditionally focused on the European internal market and are taking further steps towards European integration in the direction of Central and Eastern Europe;
2 the Atlantic orientation of some home-based multinationals that are oriented more towards the United States than towards continental Europe; and
3 the influence of foreign-owned multinationals that utilise the Netherlands primarily as an entry point to the European Union.

The parallel restructuring activities originating in these strategies have created a unique governance challenge to the Dutch as compared to other small countries (cf. OECD 1997:100). Belgium, Ireland and Canada are small economies with large foreign-owned multinationals (with more than 50 per cent of employment in the hands of these firms). Finland, Denmark and Norway are small economies with a limited number of own multinationals but with some inroads of foreign multinationals in their economy (less than 10 per cent of employment). Sweden and Switzerland represent small economies with large home-based multinationals but with relatively low impact of foreign-owned multinationals (less than 20 per cent of employment). The Netherlands, though, seems to be the only important small economy that has a large number of sizeable home-based *as well as* sizeable foreign-owned multinationals represented in the national economy.

The multinationalisation of the Dutch economy, on balance, remains outward oriented. The 'black hole of the Dutch economy' as it is called by some means that outward-oriented FDI for decades outvalued inward-oriented FDI. It goes without saying that the Dutch corporatist compromise (productivity coalition) is under continuous and heavy pressure due to this hole: productive investment capacity leaks away to other countries, without appropriate compensation by leakages from other countries to the Netherlands. The productivity coalition of the Dutch governance model thus remains in a particularly weak equilibrium.

The unique multinational structure of the Dutch economy has also contributed to a number of structural deficiencies that have become increasingly apparent in the course of the 1990s. Centuries of involvement of (vertically integrated) multinationals in the Dutch governance structure have had a major impact on the structural outlook of the economy. Increasingly, observers of the Dutch economy are coming to the conclusion that the Dutch economy suffers from a *lack of dynamism,* particularly in the area of smaller and medium sized firms. The following observations have been made with respect to this:

- clusters of economic activities do not sufficiently overlap, hampering the build-up of an efficient supply network in many areas (Jacobs *et al.* 1990; Beije and Nuys 1995); and
- smaller start-up companies face difficulties for further growth, because of an over-dependence on one big customer or supplier (Henniger *et al.* 1993);

But perhaps most important at a time when technological innovation is supposed to contribute decisively to a country's competitive position, the Dutch economy increasingly suffers from a lack of dynamism in its Research and Development (R&D) infrastructure. Dutch R&D investments on the one hand rely heavily on public sector R&D (Ministry of Economic Affairs 1995:31), while on the other hand it is dominated by a few home-based multinationals (van Tulder 1991:287). These multinationals have clearly had a close relation with the public R&D sector, which has made the public sector less open to use by smaller and medium sized firms, as well as by foreign firms. As a consequence, private sector spending on R&D has not been very high—except for a limited number of home-based multinationals—and the attractiveness of the Netherlands for foreign-funded R&D is low as well. The Netherlands has the smallest share of foreign-funded R&D of the European countries. It is the only country of a sample of six countries (consisting of the USA, Japan, Germany, Britain and Denmark) in which the share of foreign-funded R&D in the 1985–92 period substantially *declined* (Ministry of Economic Affairs 1995:36).

The innovation policy problem for the Netherlands in the 1990s has been that private sector R&D spending has remained low and is even falling due to the decisions of the core firms to either lower R&D and/or to relocate part of their R&D investments elsewhere. The R&D intensity of the Dutch high-tech industry seems likely to remain lower compared to many other countries (Ministry of Economic Affairs 1995:36). The Dutch economy suffers from a lack of product and process innovation which is bound to affect the competitive position of its industry in the longer run (Kleinknecht and Ter Wengel 1996).

Policy challenges for (re)new(ed) smart Dutch solutions

Witnessing some of these structural deficiencies, can the Dutch add a fifth phase of 'smart' domestic governance to their historical legacy? The answer to this intriguing and complex problem, as always, very much depends on whether a new compromise can be found between multinational and national interests, between the status of the Dutch population as producers and as consumers and the way in which the Dutch economy can create a new dynamism in order to overcome the structural deficiencies that have developed over the past decades. At present, the Dutch 'polder' model is heralded in many parts of the world as a best-practice solution, for instance because of its low levels of *official* unemployment and low budgetary deficits. Looks can deceive, however. Underneath the surface of the Dutch success, substantial deficiencies and structural weaknesses exist that are bound to make the Dutch policy arena a forum for intense debate for decades to come.

Considering the three strategic orientations of multinational enterprises present in the Netherlands seems to be a good guide in understanding and anticipating Dutch policy debates for the future. When these interests converge—or partly overlap—the policy debate is often non-existent and/or policy makers are highly creative in finding solutions to every problem that appears in the area. When the interests do not converge the policy debate becomes more intense and sometimes even vicious, and to the critical contributor to the debate it often seems as if policy makers invest more time in creating additional problems even when solutions seem perfectly logical and feasible. For Dutch policy makers in these circumstances, striking a balance between the various interest groups becomes more complex but also more important.

Undisputed non-issues: converging interests

Converging interests of the multinational constituencies of the Netherlands have made a number of very important policy issues almost undisputed—and often unsaid. The most important (non)issues for the Dutch seem to be: free trade; further European integration; the mainport strategy of the country; and deregulation and privatisation.

First, consecutive Dutch governments have been particularly smart in using the free trade argument and a relatively low governmental involvement to facilitate international business—be it home-based or foreign-owned. Consequently, the free-trade orientation of the country is a *non-issue* in the Netherlands (although practice and principles can diverge, as the previous sections have indicated).

Second, the European integration trajectory is an almost sacred *non-issue* to the Dutch. If left alone, the Dutch would probably go for a European Federal State, thereby striking a balance between the interests of home-based multinationals that are restructuring their European operations *within the European Union* and the position of the country as 'port to Europe'.

There is no other country in Europe in which the debate on the Maastricht Treaty and the creation of a European Monetary Union has received so little attention as in the Netherlands.

Third, even though the country is small and the burden of related environmental problems very big, the status of the country as the home base of important European 'mainports' is undisputed. Rotterdam and Schiphol in particular serve the distributional aims of both home-based and foreign-owned multinationals. Balancing the interests of inhabitants with the interests of the mainports has lead to intense debates, but the end result of each debate has always been a further growth in the size of these mainports.

Fourth, the choice of a strategy of deregulation and privatisation in the Netherlands was taken relatively early and is seemingly more radical than in many other European countries. The Dutch also proved to be more open to pressure, in particular from the United States, to open up their markets in order to enable Dutch firms to enter into alliances with foreign firms. This happened in particular with regard to American multinationals: the Dutch deregulation and privatisation in the area of telecoms was preceded by an alliance of Philips and American Telephone and Telegraph (AT&T). The deregulation and privatisation in the area of airways was paralleled by an 'open skies' agreement between the United States and the Netherlands and a strategic alliance between KLM and Northwest Airlines. Considered thus, the Dutch deregulation and privatisation trajectory strikes a smart balance between the Atlantic orientation of some firms, their European restructuring strategies and the desire of non-European firms to enter the huge European Union market. Consequently, deregulation and privatisation have largely remained a *non-issue* in the Dutch debate.

As always, in practice the Dutch are more pragmatic and less principled than they seem. All sorts of *re*regulation activities can also be witnessed. In former state-owned or state-controlled sectors (telecom, public utilities, railways and air-transportation) the interest constellation is still very heavily dominated by Dutch multinationals, which makes policy-making a relatively simple negotiation process between a limited number of actors—behind closed doors.

In these four governance areas it has been easiest to strike a balance between the diverging interests of multinationals. Consequently most Dutch political creativity has been mobilised there and the typical Dutch 'smartness' is bound to be sustained in these areas.

Under dispute: diverging interests

The moment the interests of multinational firms in the Netherlands really start to diverge a compromise becomes less obvious and the debate heats up. Not surprisingly, this type of debate in the Netherlands regularly centres around the way in which the problem of structural deficiencies and the lack of industrial and innovative dynamism in the Dutch economy should be tackled. Due to negative experiences with selectively 'picking winners' or 'backing losers' in the Dutch economy, a plea for the reinstatement of selective industrial and technology policies is a *non-issue* (a taboo) as well. Consequently, the debate centres around a number of macroeconomic themes that are central to the future of the Dutch corporatist model.

This final section picks out two inter-related areas of considerable and probably lasting contention: (1) the wage component in triggering a more dynamic and innovative economy; and (2) the question whether corporatist bargaining institutions in the Netherlands should be abolished or rejuvenated. The interest of many of the multinational corporations and their intellectual supporters in these debates seems obvious: in favour of lowered wages; and the abolition of the laborious corporatist bargaining institutions. These measures would cut at the very root of the Dutch corporatist model. They are the real longer-term challenges to the question whether the Dutch can sustain their smart governance model. This debate is far from resolved; so this last section will give only a number of, observations on these issues.

Challenge one: linking wages, innovation and the dynamisation of smaller firms

Under processes of prolonged internationalisation the pressure mounts to lower wages and engage in a policy of competition with other European countries as a means to further attract multinationals. The dual presence of dominant large home-based *and* host multinationals in the same economy clearly puts more pressure on the community in the direction of lowering wages. In the postwar period, the plea from big employers for wage moderation has therefore been a constant factor in the Dutch bargaining setting. This pressure, however, has generally been overcome by smart institutional arrangements in which the wage level got coupled with productivity rises and a large number of other socioeconomic policy measures mediated by the state. The agreements between labour and core (multinational) companies spread throughout the country by means of central wage agreements that applied to smaller and medium-sized firms in the same sector as well. No company in the Netherlands was able to compete with another company on the basis of low(er) wages. The wages settled between the tripartite bargaining partners in the Netherlands were relatively low compared to neighbouring countres. Smartness is always relative.

But since the midst of the 1990s, a sustained relatively low wage level has become a matter of dispute. First, Dutch trade unions are taking a less corporatist stance. High profit margins of the big employers have not been matched by higher wages. Second, a fierce debate evolved additionally in the course of the 1990s on the relationship between the wage level and the lack of dynamism of the Dutch economy. In particular Kleinknecht (cf.

Kleinknecht and ter Wengel, 1996) argued that the low innovative ability and dynamism of small Dutch companies is due to a lack of powerful domestic purchasing power which in turn is caused by sustained wage modification. These authors (other followed suit) therefore suggested that the traditional economic view, that every wage increase hurts Dutch competitiveness, has to be revised. It should not come as a surprise that proposals like these have been fiercely criticised in particular by firms that have large international interests. More local—though sizeable—firms like the Rabobank generally take a much more positive attitude towards raising wages in order to restore the dynamism and to compete internationally on the basis of innovativeness instead of (low) wage levels.

An increase in dynamism of the Dutch economic structure could give the medium sized and small companies a bigger chance to grow. If smaller local companies become more efficient, they could alter the trend of increased investments abroad which has become one of the single most important challenges of Dutch policies over the 1980s and 1990s. The phenomenon of a massive flight of investments and goods abroad is also called the 'black investment hole' by the Dutch Central Planning Bureau. Smaller companies are much more inclined to invest in the Netherlands than are large companies. As such a more effective functioning of small and medium sized firms in the Dutch economy could lower the impact of the 'black investment hole'.

Challenge two: reinvent corporatism at a local and regional level?

An often cited complaint, in particular by larger employees, is that the sluggishness of the Dutch economy is increased (some would even say caused) by the Dutch habit of discussing everything interminably, resulting in the already mentioned extreme form of wage levelling. National bargaining institutions have been held responsible for this 'lethargy'. The traditional bargaining arrangements of the Dutch corporatist model got stuck at the national level between centrally organised governments, employers and employees. Since the 1990s, restructuring processes primarily take place either at local or at European level. Effectively handling the societal processes surrounding these restructuring strategies, thus, preferably requires bargaining institutions at the local and European level. The national state is withdrawing from society, while other central bargaining institutions (such as the SER) are losing their function. What comes instead of the central institutions, however, is under fierce dispute. The challenge of reinventing bargaining institutions has clearly been biggest for the Dutch trade unions that have been effective negotiators at the central level (even when they officially represented only one-third to one-quarter of Dutch workers). The Dutch trade-union movement is the only organised interest group who in practice know how to maintain the coupling between productivity and wage rates.

In this manner they played an important role in the economic growth of the Netherlands (cf. Van Tulder 1989). An effectively organised trade-union movement has always made an important contribution to the prevention of policy competition between countries and regions.

The Dutch trade-union movement has actively started rethinking new local coordination mechanisms since the mid-1990s. After the 19 unions constituting the largest trade-union confederation in the Netherlands (the FNV) voluntarily changed over to working together in clusters, four specific unions (metalworkers, services, food and transport sector) have stated their intention of merging. A comparable development can be made out with the much smaller CNV-union confederation, where the industry and food union and the transport union, CNV, have become one union (de *CNV Bedrijvenbond*) from 1 January 1998. This merger process opens new perspectives for a local dimension to Dutch economy negotiations, but one cannot be completely sure about this. It is, for example, the intention that the newly merged union of the FNV will split up into trade associations with employees divided by profession. At the same time one expects a further decentralisation of collective labour agreement negotiations. The merger movement is more an expression of a defensive strategy than an offensive one where unions actively try to put new life into central coordination mechanisms—among other things by trying not to let wage rates grow too far apart. Central coordination is also hindered by this same process, considering that there are also deserters in the FNV-union confederation. This has been exacerbated by the exclusion of the 'construction and wood' union from the four-partnership union deal. These bargaining movements leave the position of the FNV as a conferation agency even more undermined. To coordinate decentralised negotiations locally will become harder.

The other institutional challenge is posed at the regional level—within the European Union. At the end of the 1990s the Dutch trade unions had not been able to formulate an unambiguous strategy for European Workers Councils (EWC). From September 1996 EWCs were created around multinationals operating in more than one country. The EWCs offer possibilities for influencing European-scale company investments, location decisions and the accompanying labour conditions effectively. EWCs could also form the first step in the direction of a European tripartite bargaining environment, in which the (Dutch?) corporatist model could be raised to a European model. However, this step is far from being implemented. It is not really favoured by big Dutch multinational employers. The step is also barred by the dominant principle of subsidiarity which states that the European Commission should focus only on those activities that national governments cannot effectively pursue by themselves. Whether a European social and labour policy is required has not been resolved in the Maastricht Treaty. Finally, the step towards European-level bargaining institutions is far from being implemented because the European trade unions have not been capable of merging their activities on a European scale.

At the local level in the Netherlands, there appears to be a stronger awareness that new tripartite institutions should be (re)created rather than at the European level. The plea for tripartite institutions is even shared by some industry circles as well. In particular those industries that are strongly embedded in the Dutch economy tend to be more outspoken in support of rejuvenated corporatist bargaining institutions. Hoogovens steel provides a case: the chairman of the board of Hoogovens, Mr van Veen publicly stated that there might even be *too little and too short* negotiations between the parties involved. Besides this, there is also the (slow) realisation that perhaps the negotiations take place between the *wrong parties*. Industrial restructuring is most evident at the local level, but local government bodies, trade unions and even the entrepreneurs themselves (besides other interest groups) are not familiar with the serious and constructive way of negotiating about the design of the productive system. Undoubtedly, there will be a typical Dutch solution to this problem, but whether this proves to be smart *and* sustainable is a matter of concern.

Note

1 An assessment of the nature of the success of the Dutch Golden Age can illustrate this point. The early phase of Dutch international trade dominance can be considered ‘smart’ in a more or less neutral connotation. But the smartness of the Dutch state and its multinational trading companies clearly received more vicious connotations with the further development of the very profitable ‘triangular trade’. One has to remember that one of the legs of the ‘smart’ trade model consisted of slave trade between Africa and the Americas.

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