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Margaret Sharp*

Inward Investment and Industrial Competitiveness

Inward investment – foreign direct investment in subsidiaries and joint ventures – has played an important part in Europe's post-war development as multinational firms, particularly American multinationals, became a major feature of many European economies. Latterly, we have seen an increasing presence also from Japan and other South-East Asian countries, as well as a resurgence of intra-European investment. What has been the effect of this on the competitiveness of European industry?

The research project on which this article is based began with a conundrum. Studies in the UK revealed that whereas the high level of foreign penetration had tended to stimulate the competitiveness of major UK pharmaceutical firms, it had no such effect on major UK firms involved in the offshore supplies industry.¹ Why should this have been? And how far did this same, varied experience hold true for other industrial sectors and other countries? To help answer these questions we extended the study to cover the semiconductor and consumer electronics sectors, and we examined the role of inward investment in these sectors not just in the UK, but also in other European countries.

Trends in Net Investment

It is helpful to begin with some figures illustrating trends and relativities. Table 1 shows inward investment flows as a percentage of outward flows and therefore illustrates how far a country has been a net recipient or a net lender in terms of direct investment. Using this measure overcomes problems of allowing for both exchange rate fluctuations and inflation while at the

same time illustrating developments over a twenty-five year period.

Three important trends stand out. First, the demise of the United States as a substantial net investor. Second, the shift of West Germany and Japan from the status of debtor to creditor nations. The third trend relates to the UK. Even in the 1960's the UK was, like the US, a net exporter of capital, but in contrast to the position of the US, in the last decade Britain has become a major net investor overseas.

Japanese companies may have become major investors overseas, but cumulatively their share remains very small beside that of the US. Tables 2 and 3 reveal the cumulative totals of direct investment into Western Europe from the two countries. It is noteworthy that Japan's total in 1985 was only 10 per cent of that of the US but that for both countries the major recipient has been the UK with approximately 30 per cent of the total from each country whereas the next highest shares are only half this figure.

Finally, it is worth looking at the sectoral breakdown figures in Tables 4 and 5. The US figures, although less detailed than the Japanese, give the trend over time and

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¹ M. Brech, M. Sharp: Inward Investment: Policy Options for the UK, Chatham House Paper 21, Routledge and Kegan Paul, London 1984; P. L. Cook: The offshore supplies industry: fast, continuous and incremental change, in: M. Sharp (ed.): Europe and the New Technologies, Frances Pinter, London 1985.

reveal the relative decline of manufacturing as the main recipient sector and the rise of the service sector. The Japanese figures show a marked preference for commerce and construction over manufacturing, echoing perhaps the relatively early stage at which Japanese foreign investment still finds itself, with much of the investment being directed towards the setting up of distribution and service outlets. Of the 19 per cent investment that has gone into manufacturing facilities, there is some bias, but not as marked as one might expect, towards electronics and transport equipment (cars).

Post-war National Policies

The dollar shortages of the early post-war years first led European governments to encourage US multinationals to expand their presence in Europe. The UK with its language and cultural affinities was the favoured location (reinforced by generous subsidies encouraging location in the less prosperous regions), followed by the Benelux countries whose geographical position was favourable for distribution throughout mainland Europe. Inevitably the large and fast growing market of West Germany also attracted the multinationals.

The recession of the 1970's and the rising levels of unemployment brought a major change in emphasis. Substantial incentives encouraging location were no longer confined to the less prosperous areas of the UK or the Benelux countries, but were offered by practically every region of Europe.

The deep recession of the early 1980's brought a change in attitude – partly, it must be acknowledged, as a result of the changing types of investment project. The typical inward investment project is no longer the branch plant of an American manufacturing giant. If it is American, it tends either to be in the service sectors, or, if in manufacturing, the offshoot of a small company

producing specialised components at the high-tech end of manufacturing. Mass production manufacture now tends to be the preserve of Japanese or Far Eastern companies, typically in consumer electronics, evading voluntary export restraints. In the meantime many of the major firms who established large manufacturing subsidiaries in the 1930's and post-war years – firms such as Singer, Chrysler and Goodyear – have first rationalised their activities and subsequently withdrawn from European operations altogether as their own manufacturing base in North America has come under threat.²

National policies have changed in belated recognition of the changing global competitive challenge. For the British government there has been a retreat from the indiscriminate "open door" policy of the 1970's, as illustrated by the tough terms negotiated with Nissan over the 1982-84 period.³ The West German federal government, worried by the rise in unemployment particularly in such states as North-Rhine Westphalia, Bavaria and Baden-Wurtemberg, has actively acquiesced to these states' extending overseas in their efforts to attract foreign capital, although at the same time it was by no means happy at the erosion of the capabilities of the indigenous consumer electronics industry by the Japanese. For the Dutch government, inward investment has offered a chance to diversify away from dependence upon the bulk chemical industry

² S. Hood, N. Young: *Multinationals in Retreat*, The University Press, Edinburgh 1982.

³ Nissan, who were also in negotiation with the Spanish authorities, made it clear that they would not come to Britain unless they received extra "discretionary" help on top of the automatic regional grants operating at that time. Even so, they were prepared to accept a commitment to 60 per cent local sourcing by 1990 and a long-term target of 80 per cent local sourcing. In negotiating the deal the British government were very conscious that in sluggish markets, Nissan's plant in the North-East would tend to substitute for British Leyland output; equally, improvement in quality and delivery of components would benefit the British firm as well as its Japanese counterpart. See *Financial Times*, July 1, 1986. Supplement Nissan in the North East.

Table 1

Inward Investment as a percentage of Outward Investment

	1963-5	1966-8	1969-71	1972-4	1975-7	1978-80	1981-2	1983-4	1985
UK	64.4	65.8	63.2	50.7	52.4	64.4	26.1	34.7	45.7
W. Germany	281.3	200.5	85.8	118.7	38.6	28.2	26.5	43.7	26.5
France	178.5	95.8	149.8	63.5	111.1	119.6	54.6	96.7	98.3
US	7.9	12.4	14.8	29.7	28.3	55.1	528.0	589.4	98.3
Japan	100.0	33.6	40.8	7.6	7.0	6.9	6.8	3.6	9.6

Sources: J. H. Dunning: *Multinational Enterprises, Economic Structure and International Competitiveness*, John Wiley, Chichester 1985, Table 13.1, p. 410; Updated to 1984-85 from: Eurostat, *Balance of Payments 1986*, Vol. 3, Supplement on Global Data.

which had contributed so much to the country's post-war prosperity. With companies such as Esso and Shell forced into major restructuring and lay-offs, the Dutch government set up an Inward Investment Bureau on British lines (a one stop contact point for firms seeking to invest in the Netherlands) with offices in New York, California and Tokyo, actively looking for potential investors, particularly in high-tech industries.

The most marked change of stance has been on the part of the French government. Since 1965 the French government had pursued an overtly nationalistic policy towards foreign investment. The turnaround in French policy came with Mitterand's volte-face in 1982/83, when the French economy was faced by mounting trade deficits and huge losses from its major nationalised firms. The initial response was protectionist – the infamous

declaration of October 1982 that all imports of video recorders would need customs clearance through Poitiers, a small town in the centre of France. This indirectly signalled to the Japanese that the only way into the French market was to invest directly in France. By the end of 1986, the French, having lagged considerably behind other European countries as hosts to Japanese firms, claimed to have caught up with 40 manufacturing plants, to the UK's 37 and West Germany's 31.⁴

Semiconductors

Inward investment in the European semiconductor industry is the story of two waves of investment. The first, in the late 1960's/early 1970's, established US semiconductor firms as dominant players in the European market place. The second, in the early 1980's, marked the emergence of the large integrated Japanese electronics firms as major producers of semiconductors. As we shall see, the impact of these two waves of inward investment has been very different.

In the 1950's, before the transistor gave way to the integrated circuit, European firms such as Siemens, AEI (later part of GEC), Philips and SGS (Societa Generale Semiconduttori) were substantial component producers. The development of the integrated circuit, initially under the stimulus of US defence requirements, gave US companies associated with its development – Fairchild, Texas Instruments, Motorola, Signetics, National Semiconductor – a technological lead which enabled them to penetrate overseas markets both directly, via exports, and indirectly, via subsidiaries. By the late 1960's all were well established in Europe, subsidiaries being preferred to exports for a number of reasons – the 17 per cent tariff, privileged access to defence contracts, and the proximity to subsidiaries of major customers such as IBM.

The 1970's, however, brought a sharp recession – the first of the periodic cycles of glut and famine that have since become a feature of the industry. The US firms used the occasion to cut prices aggressively vis-à-vis their European competitors, a ploy which succeeded better than they had expected as one after another of the European firms pulled out of the mainstream memory chip markets to the relatively safer havens of the custom chip, where markets were protected by the bespoke nature of the product. After the shake-out, the market had effectively divided itself into two non-

Table 2
US Direct Investment in Europe
Cumulative Total to 1985

	\$ billion Total	% share
UK	33.96	32
W. Germany	16.75	16
Switzerland	16.23	15
France	7.83	7
Netherlands	7.06	6.5
Italy	5.64	5.5
Belgium	5.10	5
Ireland	3.75	3.5
Spain	2.60	2.5
Total	106.8	100

Source: US Dept. of Commerce, Bureau of Economic Analysis.

Table 3
Japanese Direct Investment in Europe
Cumulative Total to 1985

	\$ billion Total	% share
UK	3.14	28.5
Netherlands	1.69	15
W. Germany	1.34	12
Luxembourg	1.22	11.0
France	0.82	7.5
Belgium	0.74	6.5
Switzerland	0.66	6.0
Spain	0.51	4.5
Ireland	0.26	2.5
Italy	0.18	1.7
Total	11.0	100

Source: MITI quoted in Financial Times of 13. 11. 86.

⁴ These figures quoted by the French authorities do not in fact tally with the JETRO figures for 1985.

competing segments – the “big league” firms which competed mainly in the mainstream “commodity” semiconductor markets,⁵ and the “little league” firms which competed mainly in the niche markets. Sciberras, writing in 1977, concluded, “The dominant US multinationals are able to obtain the elimination of competition by pricing at a level which ensures volume economies through pre-emption of the mass standard device markets, and at the same time ensure long-term profits”.⁶

Sciberras’ thesis was that once established as the dominant firms in the market, these big leaguers were relatively invulnerable backed as they were by the learning curve advantages of knowledge and experience gained. It held good for the best part of 10 years. Of the European firms only Philips had a presence in the top 10 producers of semiconductors, and that only by virtue of its purchase of Signetics in 1978. Thomson and Siemens both manufactured memory chips but mainly for internal consumption, while the UK trio, GEC, Plessey and Ferranti, had withdrawn to custom markets. To the Europeans there seemed no way of dislodging the American dominance. It was the Japanese who challenged US pre-eminence in these markets. Spearheaded by the MITI orchestrated VSLI (very large scale integration) programme of the late 1970’s, the Japanese electronics manufacturers – Hitachi, Toshiba, NEC and Matsushita – effectively broke into the market by using the same tactics that their US competitors had used in Europe a decade earlier. With the 256K RAM chips which came on-stream in 1983, they launched on to the market ahead of their competitors and cut prices in anticipation of volume sales, effectively pre-empting the US firms.

The rapid rise of the Japanese is well illustrated in Table 6 which lists the changing faces in the top 10 semiconductor manufacturers between 1973 and 1985. Like their US counterparts earlier, the Japanese have been busy setting up subsidiaries in Europe. The difference

between the US and Japanese “invasions” was that whereas the US firms were predominantly new, start-up firms specialising in micro-chip production, the Japanese names were already well known names in consumer electronics, most of which had had plants in Europe for some time.

Consumer Electronics

The history of Japanese inward investment in consumer electronics is well known. When Japan first began to export colour TVs in the late 1960’s, the European market was protected by the PAL system which required that no more than 50 per cent of output of license holders be exported, imposing limits on the degree to which the Japanese could source European

Table 4
Main Sectoral Breakdown of US Direct Investment into Europe
% Share by Sector

	1970	1975	1980	1984
Petroleum	22	22	15	16
Manufacturing	46	41	40	32
Finance and Banking	17	12	15	18
Trade and Distribution	8	18	19	20
Other	7	7	6	14

Source: US Department of Commerce, Bureau of Econ. Analysis.

Table 5
Sectoral Breakdown of Japanese Investment in Western Europe, Cumulative Value of Assets up to 1985

		Total \$m	% share
	Manufacturing	2088	19
of which	Food	73	1
	Textiles	193	2
	Chemicals	216	2
	Metals	261	2.5
	Machinery	214	2
	Electrical Mach.	400	3.5
	Transport Mach.	419	4
	Non Manufacturing	8455	77
of which	Construction	2486	23
	Commerce	3695	34
	Banking & Ins.	252	2.5
Total		11,002	

Source: MITI quoted in Financial Times of 13.11.86.

⁵ Mainstream memory chips are sometimes called “commodity chips” because basically one chip of a type – e.g. a 16K RAM chip – is essentially indistinguishable from another of that type produced by another manufacturer. By contrast, custom chips are designed for a specific purpose for a particular manufacturer and are in this sense “bespoke” and can command a very high price. The market for custom chips is therefore safe – products are made to order – and high priced because production runs are short and profitable. On the other hand, the chances of a major profit spinner such as can be achieved with a winning memory chip is absent. Since the early 1980’s a further type of memory chip – the application specific integrated circuit (ASIC) – has become increasingly used. This is called a semi-custom chip because although it has many common design features and can therefore be produced in bulk, final design features, which effectively customise it, can be incorporated at the finishing stage.

⁶ E. Sciberras: Multinational Electronic Companies and National Economic Policies, JAC Press, Greenwich, Conn. 1977, p. 231.

markets from Japan. This in itself provided an incentive for local production, and the subsequent rash of voluntary export restraints (VERs) negotiated around Europe in the early 1970's provided yet further incentive. The first company to establish itself in the European market was Sony with plants in Wales (1973) and W. Germany (1975), followed by Matsushita (1976 – Wales), Mitsubishi Electric (1979 – Wales), Aiwa (1980 – Wales; 1981 – France) and JVC (joint venture with Thorn and Telefunken to manufacture video recorders in 1982).

For most of the 1970's the European consumer electronics industry remained surprisingly passive in the face of the threat from the Far East. The industry was highly fragmented and, as competitive pressures built up, many European firms abandoned some standardised products. Production of hi-fi audio equipment kept going longer in specialist market niches, but eventually many lost out to the technical and price performance of Japanese products. This left a single product, colour TV. Voluntary export restraints were imposed, joint ventures tried, but generally there seemed no satisfactory way of halting the invasion.⁷

By the early 1980's pressure had shifted from colour TVs to video cassette recorders, and the notorious

incident of Poitiers illustrates well the element of hysteria that had set in amongst European producers. One lesson, however, was beginning to penetrate, namely that when capital was mobile, protection, whether by tariff, quota or voluntary export restraint, could only be a temporary palliative. There was no alternative in the longer run but to meet Japanese competition head-on. It was this perception which underlay the very different response of European industry in the 1980's to the incursions of US and Japanese business.

The effort has been spearheaded by the Philips-Siemens megaproject announced in 1984, a joint project aimed at giving both firms the capability of producing the 1 megabit chip (1000K RAM) and the 4 megabit chip (4000K RAM). This is now echoed by the Thomson-SGS Ates joint venture in semiconductors. Between them, Philips, Siemens and Thomson provide the key to what has been happening to European electronics.

Philips, the Dutch company which established its multinational status in the interwar years is the most important manufacturer of consumer electronics in Europe. With a legacy of 170 plants in 60 countries, Philips had survived the war and flourished in the post-war years as a highly decentralised organisation. Local subsidiaries behaved, and were treated, as indigenous companies in their host country, and its whole ethos was protectionist. Indeed it was heavy Philips lobbying which secured EEC quotas on video cassette recorders in 1981, and more recently Philips has played a leading role in securing the 19 per cent "infant industry" tariff on compact disc players.

New Strategy

But behind the protectionism of the 1980's are major changes. The old, fragmented decentralised structure has now been replaced by a highly centralised structure based on product divisions. Consumer electronics are central to the new strategy. Asked why, like their US (and British) counterparts, the company had not cut its losses in consumer electronics and left the whole area to the Japanese, the answer given was that consumer electronics was too central to Philips' organisation for the company to be able to "dump it".⁸ 50 per cent of its output of components goes into its own consumer electronics. Its strategy is, rather, to make a comeback based on consumer electronics, just as the Japanese

Table 6
The Top Ten Producers of Integrated Circuits 1973-1985

1973	1979
1. Texas Instruments (US)	1. Texas Instruments (US)
2. Motorola (US)	2. National Semiconductors (US)
3. National Semiconductor (US)	3. Motorola (US)
4. Fairchild (US)	4. Intel (US)
5. Signetics (US)	5. Fairchild (Schlumberger-French)
6. American Microsystems (US)	6. Philips (Netherlands) ¹
7. Intel (US)	7. Mostek (United Technologies – US)
8. RCA (US)	8. Advanced Micro Devices (AMD – US)
9. Rockwell (US)	9. RCA (US)
10. Mostek (US)	10. Harris (US)
1983	1985
1. Motorola (US)	1. NEC (Japan)
2. Texas Instruments (US)	2. Texas Instruments (US)
3. NEC (Japan)	3. Hitachi (Japan)
4. Hitachi (Japan)	4. Motorola (US)
5. Toshiba (Japan)	5. Toshiba (Japan)
6. National Semiconductor (US)	6. Philips (Netherlands) ¹
7. Intel (US)	7. Fujitsu (Japan)
8. Fujitsu (Japan)	8. Intel (US)
9. AMD (US)	9. National Semiconductor (US)
10. Philips (Netherlands) ¹	10. Matsushita (Japan)

¹ Includes Signetics acquired in 1978.

Sources: G. Dosi: Technical Change and Survival: Europe's Semiconductor Industry, Sussex European Paper No. 9, obtainable from SPRU, University of Sussex; Financial Times.

⁷ M. Brech, M. Sharp, op.cit.

⁸ Guy de Jonquieres: interview with Cor van der Klugt: Philips: Breaking out of the Past, in: Financial Times, April 25, 1986.

companies derive their strength from their broad, integrated capabilities in electronics. The purchase of Grundig was a step in this direction; as was the belated shift into making VCR machines to the VHS standard, linking up with Matsushita. £100 million has been sunk in its new CD player plant at Hasselt in Belgium – the world's largest CD production centre – and it is making a determined effort to get into the North American market through the acquisition of GTE's television interests.⁹

There are similarities between the Philips' response to the Japanese threat to its consumer electronics base and that of Siemens, even though, for Siemens, consumer electronics form a much smaller part of its overall product base. As one Siemens executive explained, "Consumer electronics is that part of business which uses a high volume of semiconductor products. So the Japanese get two things if you give over your market to them – first they get control of the consumer products, then they move into manufacturing the micro-electronics that go with them."¹⁰ Siemens' strategy, like that of Philips, is not to do as their American counterparts have done, to cut their losses on consumer electronics, but to keep firmly in the market.

It would appear that this is now also the strategy of Thomson with its purchase of Mostek (1986) and the joint venture with SGS-Ates (1987), and with the building up of its consumer electronics interests. In 1982 there was the abortive bid for Grundig which was blocked by the German cartel office; in 1983 was the "compensatory" prize of Telefunken; then in 1987 came two surprise moves – first the purchase from Thorn EMI of their Plymouth plant, the last remaining British manufacturer of TV sets in Britain, and secondly the purchase of (US) General Electric's RCA television and audio equipment businesses in the US. Commenting on the RCA purchase, Gomez said, "We lost the first round in the 1970's in the colour television, video cassette recorder and compact disc markets because we did not have the necessary volumes or costs. What Thomson is now seeking is to be among the winners in the second round."¹¹

The Offshore Supplies Industry

The offshore supplies industry is the collective term for the firms supplying hardware and services for the oil companies which explore, develop and produce offshore oil and gas. As far as Europe is concerned the industry has grown since the early 1960's with the discovery of North Sea oil and gas. The main countries involved are those with oil prospects in the North Sea – Britain, Norway and Holland – together with France.

There are two dominant characteristics of the industry that in many respects determine its structure. First, its projects are large, complex, and unique (i.e. one-off) and involve a large network of firms as contractors and sub-contractors. The giant oil companies are the ultimate clients controlling the allocation of the main contracts and the crucial technological decisions. Secondly, it is an industry where change is continuous and incremental as companies tackle ever deeper and more difficult fields within the North Sea. This means that those wishing to enter the industry have not only to learn what is already being done, but to be able continuously to adapt their capabilities to keep abreast of the latest technological developments. A considerable premium is put therefore on those with accumulated knowledge and experience.

The leading contractors are predominantly American, established in the early 1950's, with several of them, notably McDermott and Brown and Root, rapidly becoming world leaders. One important result is the widespread use of American standards and specifications in the industry.

The four country studies show very different patterns of development and very different government policies. The UK has an industry which is large but foreign dominated, in that most of the contracting and technological lead firms are foreign. Many are fully established in the UK and operate very much as the equivalent indigenous firm would. A large number of UK firms have become good second rank firms and many have been successful in particular niches. It is a moot point whether, had the UK followed the French route in promoting R&D and using major oil companies as preferential purchasers, British industry would have responded. The unhappy experiences of some of the large UK firms which did enter the industry – e.g. British Steel and Vickers – and might have been expected to become lead firms, suggest that there were other, management, factors besides the inhibiting effect of multinationals which affected British performance.

French policy was unashamedly nationalistic and based on the judgement that assistance and protection can help (or even ensure) the development of efficient firms in a new activity. Their policies, notably extensive

⁹ Ibid.

¹⁰ Terry Dodsworth: interview with Karlheinz Kaske, chief executive of Siemens: Manufacturing with Passion, in: Financial Times, June 29, 1987.

¹¹ "Mr Gomez builds a high risk empire", in: Financial Times, July 24, 1987, p. 16.

R&D assistance and nationalistic purchasing, were well suited to this approach. It was a high risk policy in that, if their lead firms did not compete successfully, their sub-contractors would also fail. But it did not fail. Instead, in contrast to the British, the French can now boast a number of large, successful firms operating at the front line of this industry – Forex (exploration), Comex (underwater), EPTM (pipe laying), GC Doris (platforms), CFEM (rigs) and UIE (fabrication and design).

The Norwegian government made use of existing controls over foreign investment and the purchasing clout of the new national oil company, Statoil, and the quasi-national company, Norske Hydro, wielding power via the licensing system to influence the behaviour of the foreign oil companies. As a result, the Norwegians have succeeded in promoting a number of their major firms into big league players – viz. Aker, Kvaerner and Norske Hydro – and in laying the foundations for further development. Norway has been able to maintain its offshore business in better shape than most other countries through the last year or so of low oil prices, and is in a good position to exploit the next boom when it comes.

The Dutch have given substantial assistance to basic research and training, but essentially have relied upon free competition to provide the backbone of their own offshore industry. They had the advantage of getting in early – the major discoveries of natural gas off the Dutch coast came in the 1960's – and given the relatively shallow operating depths the Dutch "wet" civil engineering expertise, built on centuries of dyke and harbour building, provided a highly relevant background. The result was that by the mid-1970's Dutch firms such as Royal Boskalis-Westminster, Nedlloyd, Smidt International Fugro (sub-sea surveying), Heerema, de Groot and HBG (Hollandse Beton Groep) had all become firms of international standing. Dutch policy had always put emphasis on the R&D input and their research organisation, TNO, had from the first had close links with developments. This was reinforced by the "gentleman's agreement" reached in 1981 when Shell and Esso, joint owners of NAM, the oil company of the Netherlands, agreed to route that part of their profits which derived from the 1979 oil price rise (some £2 billion a year) into a special development fund aimed at helping restructure Dutch industry.

Looking across the experience of these four countries, broadly speaking, British policies of holding open the door to multinationals and hoping that routing sub-contracts to indigenous firms would endow these firms with the experience and knowledge necessary to

participate at the international level have not been successful, whereas French and Norwegian policies, based upon selective entry and a deliberate use of the purchasing power of national oil companies, had considerable success.

It would be wrong to conclude that the blame necessarily lies with the open-door policy. The Dutch, for example, welcomed American expertise in the early days of North Sea development in much the same way as the British. But whereas the Dutch succeeded in developing a number of firms who became big league players by the late 1970's, the British failed to do so. The significant differences would appear to have been that the Dutch got in earlier and concentrated on sectors where the Americans had least experience; that they built upon a tradition of "wet" civil engineering and reinforced this with a major programme of research geared to industry's needs; and that they did not hesitate to bring pressure to bear on the multinational oil companies when the going got tough. Here the Dutch benefit (as do the Norwegians) from having an industrial community sufficiently small and tightly knit that pressure to be a good club member has some effect rather than, as in the UK, a more diffuse community, where similar pressures tend to arouse cries of unfair discrimination.

Pharmaceuticals

The pharmaceutical industry was one of the first industries to "go multinational". Indeed, many of today's famous names such as Merck, Sharp and Dome and Schering Plough betray their origins as subsidiaries of their German namesakes. The modern research-based drug industry dates from the development of sulphonamide drugs in the 1930's – the first of a new generation of chemical drugs which looked to a lengthy process of screening and testing before being marketed. With the Second World War came the antibiotics, and after them a whole rash of new drugs. US firms, which had pioneered the large-scale production of penicillin during the war, were in the forefront of these new developments in drugs, taking the lead at this time from the German and Swiss companies. Meantime, European governments, under pressure from their medical professions to import these drugs but facing severe balance of payments problems, urged the US companies to manufacture them in Europe.

Although regulatory procedures today are rarely overtly discriminatory, some preference is frequently given to companies with substantial domestic subsidiaries. This helps to explain the still very

fragmented pattern of location and production shown in Tables 7 and 8, which identify the main companies with subsidiaries in the different countries of the EEC.

Pressure to establish subsidiaries led to many companies establishing the minimal facility whose function was merely to formulate (mix) drugs from imported chemical intermediates, and package and sell them. These minimal facilities are designated in the tables. P stands for production facilities for chemical intermediates, the next "stage" of integration, while R designates research and development laboratories, which are regarded as the most desirable acquisition, indicating a considerable commitment by the company concerned to the development of its subsidiary in that country and the production of drugs with higher value-added.

The two tables provide a good picture of the foreign direct investment that has taken place in pharmaceuticals. Broadly speaking, most of the major US and Swiss multinationals have formulation facilities in the major European countries, but only two countries, the UK and Belgium, have attracted major investments, with the UK standing out as having attracted both major production and research facilities. The pattern within the EEC is rather different. The major German companies have substantial investments in both France and Italy, and the French have invested in the UK, and all the major companies have substantial facilities in the US, but generally speaking, the major German firms have not established facilities in Britain nor, vice versa, have the British firms sought to establish facilities in West Germany.¹² The explanation for this pattern of investment rests partly on the regulatory framework mentioned above, partly on the effect of British and Belgian policies to attract the multinationals in the 1960's and 1970's (and in the British case by pricing regulations for the Health Service, which have favoured foreign firms with research facilities). But the UK's attraction as a research location for the US pharmaceutical companies does not just depend upon these incentives. It is clear from interviews that the high quality and low cost of research in the UK is a major attraction.

¹² The reason why so few firms have located in West Germany can be partly explained by the fact that the market was/is open to imports and partly by what would appear to be an unwritten understanding between members of the world oligopoly that they do not compete directly in the market of other major players.

¹³ The cost of the research *per se* for a new drug may be a relatively small proportion of the total development costs. The major costs are the toxicology and clinical testing costs necessary to meet regulatory requirements, costs that are often duplicated by the requirements of the different regulatory authorities.

Competition in the pharmaceutical industry is essentially about competition to develop and market new innovative drugs. This in turn requires major R&D expenditures, since the cost of developing and marketing a new drug is upwards of \$ 50 million and takes a minimum of seven years.¹³ But high expenditures on R&D require high profits which in turn tend to come from large sales. The whole competitive process tends to reinforce the position of the leading pharmaceutical companies, creating what has been a relatively stable world oligopoly. Companies such as

Table 7
Location of Major¹ Subsidiaries of non-EEC
Pharmaceutical Firms, 1982

	UK	France	West Germany	Italy	Belgium
American Home Products	F			PF	
Johnson & Johnson	RPF	F	F	F	RPF
Eli Lilly	RPF	F	F	F	F
Merck, Sharp & Dore	RPF	RPF	F	F	
Pfizer	RPF	RF	F	F	PF
Smith, Kline Beckman	RPF	F	F	F	RPF
Warner Lambert	PF		RPF		
Ciba Geigy	RPF			RPF	PF
Hoffman LaRoche	RPF	F	F	F	PF
Sandoz	F	RPF	F		F

¹ Major in this context means firms with European production of more than \$ 200 m p.a. in EEC countries.

R = research facilities; P = active ingredient production; F = formulation facilities only.

Source: M. Burstall: The Community's Pharmaceutical Industry, Report for the EC Commission, Office for EC publications, Luxembourg 1985.

Table 8
Research, Production and Formulation Facilities
of Major¹ EEC Pharmaceutical Companies, 1982

	UK	France	West Germany	Italy	USA
West Germany					
BASF			RPF		
Bayer		RPF	RPF	RPF	RPF
Boehringer Ingelheim	RPF	RPF	RPF	PF	PF
Boehringer Mannheim			RPF	RF	R
Hoechst	RPF	RF	RPF		RPF
Merck		RF	RPF	RPF	
Schering			RPF	RPF	
France					
Rhone Poulenc	RPF	RPF			
Roussel Uclaf	RPF	RPF			
Sanofi		RPF		RPF	
UK					
Beechams	RPF			F	PF
ICI	RPF	RF	P	F	RPF
Glaxo	RPF			RPF	RPF

¹ Major in this context means total drug sales of over \$ 600 m p.a.

R = research facilities; P = active ingredient production; F = formulation facilities.

Source: see Table 6.

Table 9
Production and Consumption of Pharmaceuticals
and Origin of Major Drugs in the EEC, 1982

	% Developed World		Origin Major Drugs in EEC		
	Production	Consumption	>\$10	>\$25	>\$50
France	10	6	23	16	11
W. Germany	11	9	15	20	16
Italy	7	5	3	2	5
UK	7	3.5	11	18	21
USA	33	27	30	25	26
Japan	25	26	0	0	0

Source: see Table 6.

Merck, Sharp and Dome, Hoechst, Bayer, Eli Lilly, Pfizer, Sandoz, Ciba Geigy, American Home Products, Abbott and Warner Lambert have tended to dominate the top positions in the industry, trading places over time as different drugs wax and wane in the bestseller category. The significant feature of the last ten years has been the entry of two British companies, Glaxo and ICI, into the "big league". Indeed, with booming sales of its drug Zantac, the British company Glaxo is currently the most profitable pharmaceutical company in the world.¹⁴ As Table 9 shows, in terms of both production and consumption, the UK is a minor player in world terms, but it has been disproportionately successful in terms of the major new drugs it has introduced.

The rise of Britain's pharmaceutical industry – and beside ICI and Glaxo, Wellcome and Beecham are not insubstantial players – owes a good deal to the invasion of the US multinationals in the 1950's and 60's. In the 1950's, firms such as Beecham, Glaxo and Fisons were all small firms with substantial interests in products other than drugs; ICI was primarily a chemical firm making its profits from bulk chemicals; May and Baker had bankrupted itself in the production of sulphonamides and been taken over by Rhone Poulenc; the only firm specialising in pharmaceuticals was Wellcome, but its semi-charitable status seemed to inhibit it from the cutting edge of competition. Into this, somewhat sleepy, environment came the US multinationals with their large research budgets and competitive push. These provided a "role model" for the British pharmaceutical firms, forcing them even at that early point to compete on equal terms with the major international players (compare this with the protected position of Britain's electronics firms at the same period); and providing a cadre of management which had been trained to work in an international and highly competitive environment. In the course of the last 20 years, these factors have helped transform Britain's sleepy pharmaceutical industry into an industry of multinationals.

Long-run Stimulus

What conclusions then can be drawn from these studies about the relationship between inward investment and national competitiveness? Can we explain the conundrum with which we began – where inward investment had on the one hand stimulated firms to aspire to multinational status and, on the other, discouraged such aspirations and seemingly constrained indigenous firms to "little league" status?

First, it is important to state what is perhaps obvious from the examples quoted above – confronted by a seemingly similar challenge, firms in different sectors will behave differently according to the competitive conditions prevailing in the sector, and the underlying structure and dynamics of markets and technology.

That said, the overall conclusion from these studies is surely that inward investment is a spur to competition and does, *in the long run*, provide a stimulus to competitiveness. The example of the electronics industry provides ample illustration of this point: the message of the last two decades is that where there is mobility of capital, protection can at best provide only a temporary palliative; in the long run, there is no alternative but to meet the competition head on.

If the electronics industry provides an example of how inward investment can be a spur to competitiveness, it also provides an illustration of how slow that process can be. The first round of inward investment, from the Americans in semiconductors and the Japanese in consumer electronics, had surprisingly little impact, perhaps because it was a fragmented challenge and the firms involved responded independently, retreating to the safety of niche markets where they were protected by patents or long-standing public purchasing agreements. It took the second wave of inward investment, a decade later, to awaken these same firms to the technological limitations of their niche strategies and to the impending threat even to these seemingly safe markets.

The pharmaceutical sector provides further illustration of the long-term nature of the "inward investment effect". Here is an industry which has long been highly competitive at a global level but where regulation and national restrictions have led to fragmented markets, with pressure on the large multinationals to establish local facilities for production and distribution. The UK, with an open door policy to foreign firms and a strong research base, attracted a

¹⁴ See Scrips League Tables 1986-87.

disproportionate share of US multinational investment in this sector, which in turn provided a role model for the, originally small, UK-based, pharmaceutical firms. But the lead time has been 20 years.

Mechanisms Promoting Competitiveness

What are the mechanisms which have helped to promote competitiveness? It is often assumed that the main gain from inward investment is technology transfer. This is not so. In pharmaceuticals, for example, it is arguable that technology transfer went the other way – from Britain to the US.¹⁵ In other sectors, it is the ability of the incoming multinational to maintain and reinforce its technological process that has created the “big league–little league” phenomenon. This is really about the learning curve effect – the fact that technology is not disembodied but comes at least in part with knowledge and experience, making it difficult for new entrants to break the hegemony of established firms. Inward investment does not help in such circumstances, as is well illustrated by the contrast between Norwegian and British experience in the offshore supplies industry. The Norwegians broke through to the big league by, on the one hand, using to the full the bargaining power that licensing procedures and monopoly state oil companies endowed and, on the other, a requirement for joint ventures and joint research and training policies which enabled the Norwegian operators to acquire the knowledge, experience and technical know-how required. UK policy, which required UK-based firms to be given a reasonable number of contracts, left the vital position of main contractors untouched; it did not provide for building-up a UK presence in sectors such as drilling, where there were no UK operators; it encouraged foreign operators to establish subsidiaries, and it failed to provide the R&D back-up which the development of an indigenous technological competence required. The technology transfer, on which breaking through the learning curve barriers depended, could not take place.

For Europe the main gain from the presence of US multinationals has lain not in technology transfer but in the transfer of management skills and production technology. This is particularly apparent in semiconductors and pharmaceuticals, where a cadre of management trained in the multinationals has now moved into senior positions within indigenous firms and is helping to provide the creativity and flair seen in such companies as Thomson and Glaxo. The US companies have traditionally been open in their management

methods and have recruited locally to fill top positions. It is not surprising therefore that, in time, this group has spread itself into indigenous firms. But it has required a generation to work itself through.

Japanese firms, in Europe since the 1970's only, have had less influence on the European market. There has, however, already been some “demonstration effect”. While European managers had learned about (and observed in Japan) the Japanese methods of simplifying production technology and improving quality control, it was only when they saw the “zero defect” and “just-in-time” methods working in the European environment that they were prepared to acknowledge the scope for application. Increasingly, too, a whole range of European component suppliers are having to meet the tough standards laid down by the Japanese firms as buyers, and this, too, has beneficial knock-on effects for European buyers.

Nor should the psychology of competition be underestimated. In fact, many Japanese companies in Europe operate at sub-optimal production levels with costs little if any below their European counterparts. But their presence on the ground reinforces the message of competition and the futility of protection, and it is the expectation of competition as much as competition itself that stimulates a response from indigenous firms.

Finally, these studies have demonstrated the interrelationship between inward and outward investment and the increasing irrelevance of *national* boundaries. In effect, in the sector studies we have four cross-sections of industries in the throes of internationalisation. Inward investment and outward investment are two sides of the same coin. As competition is increasingly between global enterprises, so it is natural to expect flows of both inward and outward investment as firms from all countries become multinationals. A necessary concomitant is that national policies towards these industries are less and less relevant. The emergence of a dominant *European* oligopoly in electronics puts this, perhaps, in stark terms. Who controls them? Industrial policy is still substantially the province of national governments who are still unwilling to surrender sovereignty over this aspect of policy – or indeed over competition or anti-trust issues – to the European Commission. It is all too easy for multinationals, by transfer pricing and similar mechanisms, to shift profitability from one centre to another and thereby hide from the general public the true nature of their operations. Over the next decade we shall need to give serious thought to global mechanisms for the control of global firms.

¹⁵ M. Brech, M. Sharp, op.cit., chapter 4.