

A Note on Intra-Industry Foreign Direct Investment

I

There is now a well established body of literature which suggests that intra-industry trade in manufactured goods, particularly between developed industrialised economies, is not only an important component of total trade, but that its significance has been increasing over the post world war II period (Giersch 1979). Such trade, unlike Ricardian or Heckscher/Ohlin trade, which is based upon country-specific differences in the structure of factor endowments, partly reflects the increased product or process specialisation of economic activity *within* industries, to capture the economies of large scale production, and partly a convergence of consumer tastes coupled with more product variety. Such trade flourishes in the absence of tariff barriers and import restrictions; *inter alia*, its significance varies with the size and income level of the participating countries and the degree of fineness of the industrial classification.

The most commonly accepted measure of intra-industry trade for a particular industry (i) is the total of its exports (X) plus imports (M) less the difference between its exports and its imports divided by the total of its exports plus imports viz. $[X_i + M_i] - [(X_i - M_i)/(X_i + M_i)]$. It is the weighted average of the indices for all sectors which gives a country's overall propensity to engage in intra-industry trade. Among the empirical studies, Aquino (1978) suggests that in 1972, and among 25 industrial sectors, this latter propensity, ignoring the negative sign when $X < M$, was over 70% for France, the UK, Netherlands, Sweden, West Germany, Austria, Canada, Italy, Denmark and Belgium, while for the US it was 57%. Several writers e.g. Hesse (1974), Grubel and Lloyd (1975) and Aquino (1978)¹ assert that intra-industry trade has continued to increase in the 1970s.

¹ As quoted in GIERSCH (1979).

This note suggests that patterns of international direct investment in manufacturing industry not only tend to follow those of commodity trade, but that, over the years 1965-1975, the intra-industry component of such investment has tended to increase. However, there are only a few countries in the world which are both substantial inward and outward direct investors, — and the industrial breakdown of intra-industry investments not as detailed as that of trade. Nevertheless, as discussed in Section III of this paper, data on outward and inward direct investment assets in five countries over a 10 year period 1965-1975 reveal some interesting insights.

II

Why does international direct investment take place? Received theory suggests the propensity of a country's enterprises to engage in foreign production or for it to be a host to enterprises from other countries rests on:

- (i) the extent to which they are better able to service a particular market — be it the home or foreign market — *vis-à-vis* enterprises of other nationalities;
- (ii) the extent to which it is in the best interests of such enterprises to exploit these advantages rather than to sell their right to do so to other firms, via e.g. management contracts, licensing, franchising agreements etc; and
- (iii) the attractions of a foreign, compared with a domestic location as a production base, from which to supply the goods being marketed.²

We have said that, unlike trade — as a whole — international production may be one way only. While most countries which engage in outward direct investment are also host to affiliates of foreign firms, the majority of countries which attract inward direct investment, do not themselves invest outside their national boundaries. This is because the sectors in which such investment might be desirable for locational

² For a fuller discussion of the eclectic theory of international production see DUNNING (1977, 1979 and 1981).

reasons are those in which their enterprises do not have production or marketing capabilities *vis-à-vis* their foreign competitors to service such markets. On the other hand, those sectors which account for their exports are those which (for reasons to do with resource availability etc.) are able to attract inward direct investment.

Like trade, international direct investment may be classified into various categories. There is for example, something like Ricardian trade, where enterprises of one nationality wish to exploit the use of a factor endowment which is only located outside their home country; most investments in the primary sector by industrialised countries are of this kind. The locational advantage is the very presence of the minerals, raw materials or foodstuffs which are not evenly distributed over the world's surface; the fact that foreign firms exploit these suggests that they, rather than indigenous firms, have a better capacity (e.g. technological, managerial, financial, organisational) so to do and/or have a privileged access to intermediate product or final markets. Within manufacturing industry, downstream investment from high to low wage cost economies, and upstream investment from low to high technology intensive countries is of this kind. It may be prompted by *aggressive* motives, e.g. 19th century UK investment in Indian tea plantations and Malaysian tin mines, or *defensive* motives e.g. 20th century Japanese investments in textile industries in SE Asia. Except where it is intra-firm, and where all the stages of the production are within the same industry, such investment is not normally intra-industry; i.e. it is predominantly one way. Normally too, its direction is opposite to that of trade, i.e. capital exports (imports) are associated with commodity imports (exports). Yet, even in the primary sector, there is some product differentiation and intra-industry trade; for example the UK both imports and exports oil and coal, while Sweden both imports and exports wood pulp. But in almost all cases, this kind of international investment leads to *more* trade.

The second kind of foreign direct investment is that designed to supply foreign markets in place of, or in addition to, exports from the investing country. Such *import substituting* investment may also occur for aggressive or defensive reasons. The product cycle theory (Vernon 1966) traces the movement from exports to foreign production, but there are various explanations of *defensive* oligopolistic investment³

³ For example see KNICKERBOCKER (1973), FLOWERS (1976) and GRAHAM (1978).

which suggest there is a good deal of cross-penetration of markets e.g. by the large oil, motor vehicle and chemical multinationals in each others territories. Normally such import substituting investment is *horizontal* rather than *vertical*, and while some kinds are based on genuine differences in factor endowments between countries, much of it, particularly where the ownership specific advantage takes the form of product differentiation, (usually accompanied by a brand name), is also intra-industry. It is at this point where the literature itself makes a distinction between technology gap trade (Hufbauer 1970), trade based upon product differentiation (Drèze 1960), and trade reflecting cross-border differences in consumer tastes (Burenstam Linder 1961). Here, where production, financed by foreign direct investment, and exports are viewed as alternative ways of exploiting foreign markets, then, if one is intra-industry, the other is likely to be too. However, although in some cases such investment may replace exports from the trade investing country, in others it may add to them.⁴

The third kind of foreign direct investment, which often grows out of the first or second kind and is particularly associated with larger diversified multinational enterprises (MNEs) which operate in a large number of countries, is that designed to take advantage of *intra-firm* international division of labour. By engaging in vertical, horizontal or lateral integration of processes or products, such corporate integration flourishes where there are no tariff barriers and there are economies of scale in production; it is especially practised by MNEs in the European Economic Community (EEC), the Latin American Free Trade Area (LAFTA) and, within countries, in free trade zones.⁵ Like the first type of investment, it is trade creating; however, while it is usually *intra firm* it may or may not be *intra industry*.⁶ It is this kind of MNE activity — sometimes called rationalised investment — which is growing the most rapidly among manufacturing MNEs both in the developed and developing countries.

The fourth kind of investment is designed primarily to serve the other three kinds (i.e. banking, insurance and consulting activities) and/or to promote the trade of the investing country (either import or export or both). Investment in sales distribution and marketing ventu-

⁴ Particularly of products not produced overseas by the investing firm and of capital equipment, parts and components used by the foreign affiliate.

⁵ The growth of export processing zones is discussed in CURRIE (1979).

⁶ e.g., IBM's trade in computer parts is *intra-firm* and *intra-industry*; Phillips trade of TV sets and steam irons is *intra-firm* but *inter-industry*.

res are examples. We need not really consider these investments in our scheme of things; they are not usually autonomously motivated, and their success is rarely measured in terms of the profits earned on the capital invested. It is however, worth noting that some service investment by MNEs, e.g. in shipping, airlines, hotels, and building and construction are more aligned to those which we have classified under the first and third categories.

The contention of this article is that the structure of direct investment is tending to follow that evolved by trade some years before, although, in some cases, trade patterns are influenced by investment patterns. Most noticeably, just as trade was originally mainly vertical but is now increasingly horizontal, so direct investment seems to be following a similar sequence. This is partly because the composition of the ownership advantages making for foreign direct investment is shifting in favour of *horizontal* integration away from *vertical* integration — except where the latter is within the same broad branch of manufacturing. *Inter alia*, this is shown by the movement towards externalising or indigenising the production of primary products, while the advantages of by-passing the market in the supply of intermediate products in the high-technology and high income branded goods sectors of manufacturing industry continue to increase (as e.g. witnessed by the increase in *intra-firm* trade (Helleiner and Lavergne 1979).

Such a hypothesis is particularly relevant to the alleged contrast between Japanese and US style foreign direct investment and technological transfer. Kojima (1978) has argued that while the former is mainly inter-industry and trade creating, the latter is intra-industry and trade substituting. However, other commentators (e.g. Mason 1980) have suggested such differences in investment patterns primarily reflect the different stages of development of the two countries as international investors; it being argued in the Japanese case, the recent Ricardian (inter-industry) type investment will eventually give way to technology gap, product cycle, and monopolistic competitive type investment. At the same time, where MNEs locate their manufacturing activities to take advantage of *intra-firm* specialisation endowments, a kind of neo-Ricardian type trade may be advanced, based upon a division of labour *within* particular sectors.

III

Let us now examine such evidence as we have on intra-industry foreign direct investment. We take as our data the outward and inward

foreign direct capital stake of five industrialised countries, viz. UK, US, West Germany, Japan and Sweden,⁷ for three years 1965, 1970 and 1975. These data are available for nine manufacturing industries, which we can group into 'more technology intensive' and 'less technology intensive' sectors.

In Table 1 we set out revealed intra-industry direct capital stake ratios for each of the nine sectors. For any sector (i) this is defined as the outward stake (Kx) plus the inward stake (Km) less the difference between Kx and Km divided by the total of Kx and Km viz. $[Kx_i + Km_i] - [Kx_i - Km_i]/[Kx_i + Km_i]$. The higher the ratio, ignoring the negative sign when $Km_i < Kx_i$, the higher the intra- (or cross) industry international investment is assumed to be. The Table reveals a number of interesting points.

- (i) The three countries with the largest domestic markets for manufactured goods, and/or which, in 1975, had the largest combined outward and inward direct capital stakes, had the highest intra-industry capital stake ratios. Japan, which has only become an important international direct investor since the 1960s, had a much lower ratio (thus supporting the Kojima hypothesis) while Sweden's below average ratio reflects her smaller size and more specialised structure of resources.
- (ii) Between 1965 and 1975, all countries increased their overall intra-industry capital stake ratios. The most marked proportional increases occurred in Japan and Sweden, and in the technologically intensive sectors, in which the third type of foreign direct investment (e.g. rationalised investment) is most likely to occur. *Inter alia*, this suggests a certain convergence in the patterns of inward and outward direct investment of the individual countries; and that the Kojima thesis about differences between Japanese and US investment patterns was less valid in 1975 than in 1965.
- (iii) There is no clear pattern between the distribution of the intra-industry ratios between sectors. However, while some of the traditional sectors (e.g. food, drink and tobacco;

⁷ These countries account for about 73% of all outward (accumulated) investment and 60% of inward (accumulated) investment. I am grateful to Jeremy Clegg of the University of Exeter for the use of these data which he compiled when working on his PhD thesis.

TABLE 1
INTRA-INDUSTRY DIRECT CAPITAL STAKE RATIOS, BY COUNTRY AND INDUSTRY, 1965, 1970, 1975

	USA			JAPAN			UK			SWEDEN			WEST GERMANY		
	1965	1970	1975	1965	1970	1975	1965	1970	1975	1965	1970	1975	1965	1970	1975
Chemicals and Allied Products	0.77	0.75	0.79	0.14	0.28	0.51	0.91	0.99	0.99	0.66	0.53	0.57	0.86	0.77	0.79
Mechanical and Instrument Engineering	0.85	0.86	0.92	0.50	0.45	0.59	0.27	0.50	0.54	0.37	0.65	0.68	0.73	0.70	0.82
Electrical Engineering	0.57	0.50	0.59	0.40	0.72	0.94	0.98	0.96	0.92	0.68	0.78	0.98	0.54	0.73	0.98
Transportation Equipment	0.03	0.03	0.03	0.09	0.34	0.70	0.40	0.32	0.63	0.30	0.11	0.28	0.84	0.94	0.91
Food, Drink and Tobacco	0.65	0.65	0.71	0.27	0.42	0.63	0.65	0.77	0.81	0.53	0.63	0.70	0.76	0.78	0.85
Primary and Fabricated Metals	0.74	0.71	0.75	0.48	0.59	0.44	0.50	0.62	0.64	0.12	0.19	0.10	0.57	0.64	0.73
Textiles, Leather, Clothing and Footwear	0.83	0.86	0.89	0.18	0.12	0.05	0.48	0.23	0.31	0.62	0.78	0.88	0.49	0.98	0.97
Paper, Printing and Publishing	0.99	0.93	0.99	0.21	0.15	0.21	0.49	0.62	0.90	0.12	0.18	0.16	0.58	0.76	0.95
Other Manufacturing Industries	0.79	0.98	0.98	0.78	0.75	0.78	0.89	0.75	0.94	0.68	0.42	0.53	0.96	0.86	0.78
	0.80	0.84	0.83	0.53	0.51	0.38	0.62	0.61	0.73	0.49	0.49	0.54	0.60	0.80	0.86
Total	0.71	0.72	0.76	0.39	0.46	0.53	0.64	0.70	0.78	0.52	0.59	0.65	0.71	0.79	0.86

Definition of Ratios: As stated in text page 432.

Source: Ratios derived from data processed by Jeremy Clegg and provided by national Governments.

textiles, leather and clothing) generally recorded the lowest ratios in each of the years, the more technology intensive sectors recorded the most pronounced *increases* in ratios⁸ between 1965 and 1975. It may well be, however, that this lack of pattern may reflect differences in the breadth of coverage of the sectors as much as anything else.

- (iv) The structure of the ratios is broadly comparable with that of intra-industry trade (set out in Table 2), but the dispersion of the latter ratios, both between countries and between industries is considerably less. This supports our earlier proposition that patterns of direct investment may lag those of trade. However, intra-industry trade ratios were generally higher in the more technology intensive sectors than in the less technology intensive sectors; these former sectors also recorded the highest intra-firm trade ratios in 1972 and 1977 (Dunning and Pearce 1981). The technology intensive sectors also showed the greatest increase in intra-industry trade over the period, which is also the area in which both inward and outward capital stake increased the most.⁹
- (v) In comparing the two sub-periods set out in Table 1, no clear pattern emerges, although there is some suggestion that, except for the UK, the most marked growth in the intra-industry capital stake ratio in the technology intensive sectors occurred in the second sub-period, while, in the less technology intensive sectors, the increase occurred between 1965 and 1970. This gives some support to the idea that intra-industry direct investment in low technology sectors precedes that in high technology sectors. There is however, little suggestion of a similar pattern for intra-industry trade; here, one of the most interesting features is that trade ratios actually fell in four of the five countries for low technology sectors between 1970 and 1975.

⁸ Again this is consistent with Type 3 investment increasing faster than Type 2 investment.

⁹ In terms of number of foreign affiliates of MNEs and/or percentage of world wide sales accounted for by international production.

TABLE 2
INTRA-INDUSTRY TRADE RATIOS, BY COUNTRY AND INDUSTRY, 1965, 1970, 1975

	USA		JAPAN		UK		SWEDEN		WEST GERMANY						
	1965	1970	1965	1970	1965	1970	1965	1970	1965	1970					
Chemicals and Allied Products	0.64	0.65	0.81	0.61	0.68	0.71	0.97	0.98	0.91	0.58	0.60	0.64	0.92	0.92	1.00
Mechanical and Instrument Engineering	0.54	0.60	0.63	0.67	0.80	0.97	0.71	0.80	0.79	0.97	1.00	0.98	0.67	0.69	0.67
Electrical Engineering	0.77	0.98	0.96	0.61	0.64	0.70	0.67	0.85	0.98	0.82	0.87	0.97	0.72	0.87	0.93
Transportation Equipment	0.70	1.00	0.96	0.60	0.50	0.32	0.32	0.51	0.70	0.96	0.76	0.81	0.54	0.69	0.71
Food, Drink and Tobacco	0.63	0.80	0.82	0.63	0.67	0.67	0.69	0.79	0.81	0.87	0.84	0.87	0.71	0.77	0.81
Primary and Fabricated Metals	0.62	0.63	0.53	0.31	0.31	0.11	0.42	0.59	0.59	0.29	0.27	0.33	0.30	0.34	0.48
Textiles, Leather, Clothing and Footwear	0.50	0.43	0.52	0.25	0.56	0.84	0.94	0.95	0.85	0.39	0.46	0.48	0.57	0.66	0.52
Paper, Printing and Publishing	0.59	0.86	0.87	0.38	0.45	0.39	0.44	0.47	0.51	0.13	0.19	0.19	0.43	0.56	0.54
Other Manufacturing Industries	0.73	0.73	0.84	0.84	0.74	0.41	0.66	0.74	0.86	0.71	0.87	0.80	0.76	0.83	0.77
Total	0.61	0.68	0.67	0.61	0.73	0.52	0.70	0.77	0.78	0.56	0.63	0.56	0.67	0.77	0.72
	0.62	0.75	0.77	0.62	0.70	0.60	0.69	0.78	0.80	0.72	0.74	0.74	0.69	0.74	0.77

Definition of Ratios: As stated in text page 427
Source: United Nations Commodity Trade Statistics, New York, various issues.

IV

Although the data set out in Tables 1 and 2 generally supports the kind of hypotheses advanced in Section 1, a proper testing must await on a much finer disaggregation of industries. Unfortunately, no country provides such a disaggregation of both the inward and outward investment stake. What, however, the data do suggest is that intra-industry and intra-firm direct investment tend to be greatest in the sectors in which MNEs possess the type of ownership advantages¹⁰ which is best exploited internally rather than by way of licensing, management contracts, franchise and technical service agreements etc.; and that the more multinational a firm becomes and the greater its involvement in countries with comparable economic structures and at similar stages of development, the higher the intra-industry investment ratio is likely to be.

We also believe that the intra-industry direct investment will continue to increase — although for measurement to be really meaningful the sectors must be further disaggregated. Our reasoning is as follows. The type of advantages which MNEs possess over indigenous firms in import substituting investment are of a kind which tend to be eroded over time as they become learned by the local affiliate and/or diffused in host countries. But as economies — particularly industrialising economies like Singapore, Hong Kong and Taiwan — develop, they are likely to wish to import more sophisticated technology and other intangible assets, which are best exploited through rationalised production by MNEs; as earlier suggested, this is likely to involve an increase in intra-industry investment and trade. Such specialisation in investment (like that in trade) is the final stage of multinationalisation. It is one which comparatively few MNEs — and these largely of US origin — have so far reached. But we believe the 1980s, will see a marked increase in this type of foreign direct investment — particularly of Japanese companies, who are now only just reaching this point in their international investment development cycle.¹¹

Reading

JOHN H. DUNNING

¹⁰ Such as the economies associated with size, product and geographical diversification, the exploitation of complementary assets, and operational synergy. See particularly chapter of KOJIMA (1978).

¹¹ Particularly when one takes account of the activities of the Japanese trading companies, which largely operate abroad through fully owned subsidiaries.

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