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The Geography of International Investment

Howard J. Shatz
Anthony J. Venables

Multinationals have become increasingly important to the world economy. Overseas production by U.S. affiliates is three times U.S. exports, for example. Who is investing where, for sales where?

Summary findings

Much foreign direct investment is between high-income countries, but investment in some developing and transition regions, while still modest, grew rapidly in the 1990s.

Adjusting for market size, much investment stays close to home; adjusting for distance, much heads toward the countries with the biggest markets. Foreign direct investment is more geographically concentrated than either exports or production. Thus U.S. affiliate production in Europe is 7 times U.S. exports to Europe; that ratio drops to 4 for all industrial countries and to 1.6 for developing countries.

Multinational activity in high-income countries is overwhelmingly horizontal, involving production for sale to the host country market. In developing countries, a greater proportion of multinational activity is "vertical," involving manufacturing at intermediate stages of production. Thus only 4 percent of U.S. affiliate production in the European Union is sold back to the United States, whereas for developing countries the figure is 18 percent, rising to 40 percent for Mexico. Similarly, less than 10 percent of Japan's affiliate

production in the EU is sold back to Japan, compared with more than 20 percent in developing countries.

In models of horizontal activity, the decision to go multinational is a tradeoff between the additional fixed costs involved in setting up a new plant and the savings in variable costs (transport costs and tariffs) on exports. In models of vertical activity, direct investment is motivated by differences in factor costs. Tariffs and transport costs both encourage vertical multinational activity (by magnifying differences in factor prices) and discourage it (by making trade between headquarters and an affiliate more expensive).

The major outward investors carry out much horizontal investment in large markets. For U.S. investors, this means Europe, especially the United Kingdom; for Japan and Europe, it means the United States. Most EU investments, however, stay within the EU.

The major outward investors carry out much of their vertical investment closer to home: the United States, in Mexico; the EU, in Central and Eastern Europe; Japan, in Asia.

The geography of international investment*

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1. Introduction:

The last 15 years have seen an enormous growth of activity by multinational corporations, as measured by flows of foreign direct investment (FDI). FDI has grown much faster than either trade or income; whereas worldwide nominal GDP increased at a rate of 7.2 percent per year between 1985 and 1997 and worldwide imports at 9.2 percent, worldwide nominal inflows of FDI increased at 17.6 percent.[1] These figures comprise the financing of new investments, retained earnings of affiliates, and cross border mergers and acquisitions. Mergers and acquisitions are a large proportion of the whole (especially among the advanced countries), with their value constituting 49 percent of total FDI flows in 1996 and 58 percent in 1997 (UNCTAD, 1998).

The scale of multinational activity is probably better gauged by looking not at FDI flows, but at sales of multinational firms. In 1996, US multinational parent companies exported $407.3 billion worth of goods out of total US goods exports of $612.0 billion, two-thirds of the total. Much of this trade was intra-firm – of the $407.3 billion, some $182.1 billion, or 44.7 percent, went to exporters' own foreign affiliates or related companies. Between 1983 and 1995, foreign affiliates of all nationalities accounted for between one-quarter and one-third of worldwide exports, according to figures from UNCTAD (1998). Some commentators have estimated that multinationals – parents and affiliates combined – are responsible for 75 percent of the world's commodity trade (Dunning, 1993).

The pre-eminence of multinationals is not spread equally across sectors, but instead is concentrated heavily in industries characterized by high levels of research and development, a large share of professional and technical workers, and production of technically complex or differentiated goods. Firms that invest often have some type of intangible asset they want to keep within the firm, rather than exploit through licensing. Furthermore, investing firms are often the larger firms in their industries.[2]

The above figures show that multinational activity now dominates international economic exchange. Our objectives in this paper are to draw out the main facts about the geographical

location of multinational activity and the main theories that seek to explain these facts. Our focus on the location of FDI means that this is not a comprehensive survey of all issues raised by FDI. We do not address the boundaries of the firm (which activities firms transact internally and which they contract out in 'arms length' trade (see Markusen, 1995, for a survey)). Neither do we deal with the implications of FDI for home or for host economies (surveyed by Blomström and Kokko, 1994, 1997, and 1998). We start in the next section with an overview of the facts about the location of multinationals then turn, in section 3, to an overview of theory. Section 4 looks at empirical studies that have sought to explain the pattern of location.

2: Empirical overview:

Where does FDI come from? The predominant source of supply is, unsurprisingly, the advanced countries.[3] In 1997, they controlled 89.8 percent of worldwide FDI stock, compared to 10.2 percent for the developing and transition countries. Recent FDI flows show some decline in the dominance of the advanced countries; whereas during the period 1988-92 they accounted for 92.5 percent of total FDI outflows, during the five years from 1993 to 1997, this share had fallen to 85.3 percent. Within advanced countries, the major single investor is the US which, in 1997, controlled 25.6 percent of the world's FDI stock, compared to 45.1 percent for the European Union 15, and 8.0 percent for Japan. Japanese and European flows boomed during the late 1980s, although have now fallen back to a position broadly in line with existing stocks.

Most of the difference between the advanced and developing countries is accounted for by sheer economic size, and the difference in outflows relative to GDP is perhaps less than might be expected. Figure 1 maps out the time series of FDI outflows relative to source country GDP. Outward flows from the advanced countries averaged 1.3 percent of their GDP each year from 1993 to 1997, with the EU having much the highest rate (almost 2 percent of GDP), largely on the basis of intra-EU investments. For developing countries, outward FDI flows averaged 0.8 percent of their GDP during 1993 to 1997, compared to 0.3 percent from 1988 to 1992, a large increase.

Figure 1: Sources of Outward FDI

Source: UNCTAD FDI/TNC Database and World Bank.
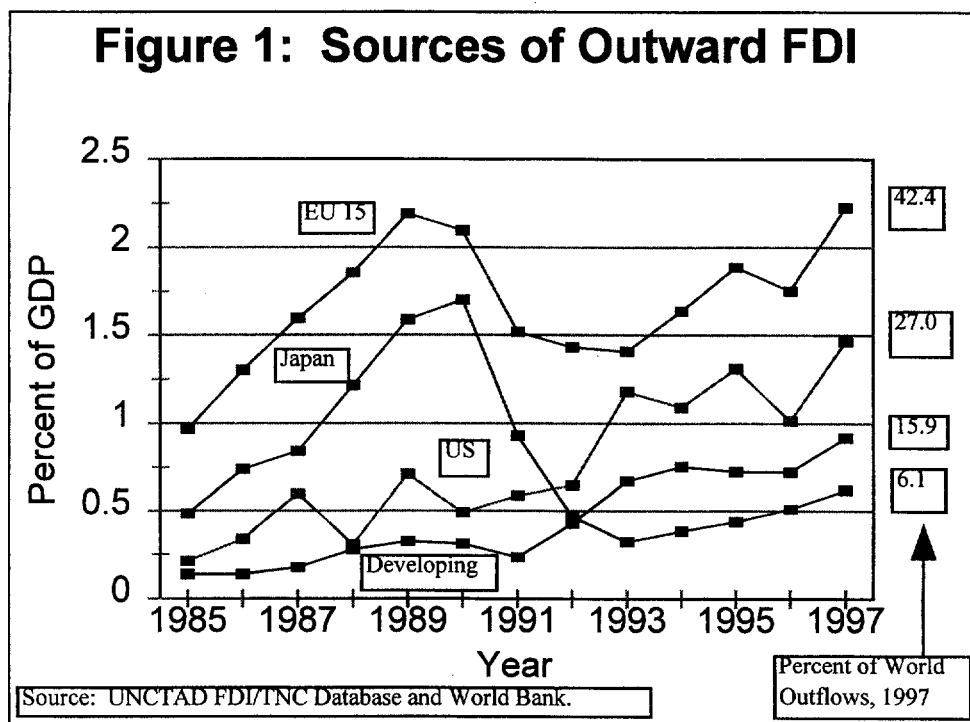
Turning to the destination of FDI, most goes to the advanced industrial countries. In the period 1985 to 1997 the developed countries received fully 71.5 percent of FDI flows. Inevitably most of this is advanced to advanced country FDI. Of the G-7 countries, France, Germany, Italy and the UK sent more than three-quarters of their 1997 FDI flows to the rest of the OECD; Canada, Japan, and the US sent more than 60 percent most recently. This pattern of reciprocal FDI shows up strongly at the industry level as well, with a large share of flows appearing as intra-industry investment.

While intra-OECD investment and intra-industry investment within the OECD have been long-established facts, an emerging trend is the rise of FDI to developing countries. The share of worldwide FDI received by the developing and transition economies jumped from 21.8 percent in the 1988 to 1992 period, to 39.8 percent in the 1993 to 1997 period. The picture is more dramatic if we look at FDI relative to the size of the host country's economy, as shown in figure

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2. During the five years from 1988 to 1992, advanced countries received FDI inflows at an average annual rate of 0.90 percent of their GDP, while developing and transition countries received FDI at an average annual rate of 0.78 percent of their GDP. By 1993 to 1997, the inflow rate of developing and transition countries had more than doubled to 1.91 percent of GDP, while that for the advanced countries had decreased slightly to 0.87 percent of GDP .

Figure 2: Hosts of Inward FDI

So:uce: UNCTAD FDI/TNC Dabase and World Bank.

Percent of World Inflows, 1997
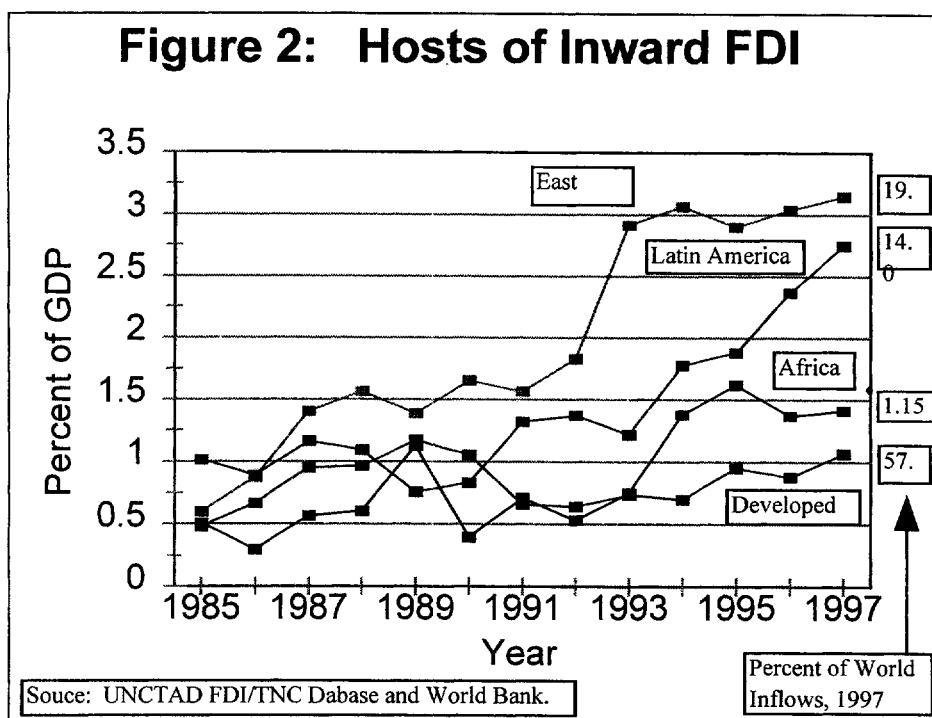
Among developing countries, the distribution of FDI is quite uneven. Only 10 countries accounted for two-thirds of all inward flows during the most recent five years for which data are available, 1993 to 1997 (Argentina, Brazil, Chile, China, Hungary, Indonesia, Malaysia, Mexico, Poland, and Singapore). China alone received an annual average of 30.6 percent. Indeed, China accounts for much of the increase in flows to developing countries, with its share of world total FDI flows rising from 2.9 percent for the period 1988 to 1992, to 12.2 percent for 1993 to 1997. In nominal dollar terms, inward direct investment to China increased from $3.2

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billion in 1988 to $45.3 billion in 1997. The source of all these flows, about five percent of China's GDP in 1997, remains hotly debated. The main sources are considered to be Chinese business groups resident in Asia, Chinese businesses resident in China that send their money out and then bring it back to get certain benefits available to foreign investors (the so-called 'round trippers'), and investors from the advanced industrial economies.

In contrast, all of sub-Saharan Africa including South Africa received an annual average of 3.2 percent of all flows to developing and transition countries between 1993 and 1997, a decrease of almost 2.1 percentage points from the annual average of 5.3 percent during the 1988 to 1992 period. Relative to world inflows, sub-Saharan Africa's share increased slightly, from around 1.0 percent between 1988 and 1992, to around 1.3 percent between 1993 and 1997. This is also reflected in its inflows of FDI relative to host country income, as in figure 2, where we see some increase in FDI to Africa, but at levels dwarfed by inflows to East Asia and Latin America.

3. Location of multinationals: theory.

There are two main – and quite distinct – reasons why a firm should go multinational. One is to better serve a local market, and the other is to get lower-cost inputs.

FDI designed to serve local markets is often called 'horizontal' FDI, since it typically involves duplicating parts of the production process as additional plants are established to supply different locations. This form of FDI usually substitutes for trade, since parent firms replace exports with local production. The motive is to reduce the costs involved in supplying the market (such as tariffs or transport costs) or in some other way to improve the firm's competitive position in the market.

In contrast, FDI in search of low-cost inputs is often called 'vertical' FDI, since it involves slicing the vertical chain of production and relocating part of this chain in a low-cost location – for example, assembling electronic goods in Asia even though component manufacture and final sales might take place in the US. The cheap inputs might be labour – of different skill

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levels – primary commodities, intermediate goods, or even access to externalities, such as knowledge spillovers. Vertical FDI is usually trade creating, since products at different stages of production are shipped between different locations. The distinction between vertical and horizontal FDI can of course become blurred – one plant may serve both functions, and the decision to open a plant to serve a market will depend on local costs – but is nevertheless a fundamental one.

3.1 Horizontal FDI and market access: A firm can supply a foreign market with its product either by exporting, or by producing locally – becoming multinational. Under what circumstances will it choose to become multinational?

Establishing local production will involve the firm in a variety of additional costs. Some of these are the costs of dealing with foreign administrations, regulations, and tax systems. These may be mitigated by collaboration with local firms through joint ventures, licensing arrangements, or sub-contracting. Some are production costs, both variable and fixed, their size depending on factor prices and technology. The presence of plant level economies of scale will raise the cost of establishing foreign plants, as compared to producing from a single home plant.

On the other side of the equation, switching from exporting to local production will bring cost savings, the most obvious of which are savings in transport costs or tariffs. To these might be added other benefits of proximity to the market, such as shorter delivery times and ability to respond to local circumstances and preferences.

Theoretical modelling of this sort of FDI has typically posed the issue as one of a trade-off between the additional fixed costs involved in setting up a new plant, and the saving in variable costs (transport costs and tariffs) on exports. Analysis is usually based on a 'new trade theory' model, in which there are distinct firms, and the issues of increasing returns and market structure are addressed explicitly (Smith, 1987, Horstmann and Markusen, 1987, and Markusen and Venables, 1998). What are the main results from this modelling? The first point is that the value of FDI to the firm may exceed the simple calculation of net costs, since establishing local

production may have a strategic value. In an oligopolistic environment each firm's sales depend – in equilibrium – on the marginal costs of all other firms. If one firm reduces its marginal costs then it may induce rival firms to reduce their sales, and this will be of value.[4] Essentially, FDI serves as a commitment to supply the local market, and this commitment may change the behaviour of competitors.

Turning to the location of FDI, the theory predicts that FDI will replace exports in markets where the costs of market access through exports (tariffs and transport costs) are high, or where the costs of setting up a local plant are low. These predictions seem to be at odds with the facts of high (and rising) FDI between economies with low (and falling) trade barriers, e.g., within the EU and between North America and Europe, although the apparent contradiction might be resolved by the simple fact that countries with low trade barriers also tend to have low barriers to FDI.

The theory also predicts that FDI is more likely to replace exports the larger is the market. There are two reasons. The first is that the plant-specific fixed cost may be spread over more units of output the larger is the market. The second is that larger markets will tend to have more local firms, and consequently more intense competition than smaller markets. This will lead to a lower price and, if the marginal cost of supply through exports is relatively high, be particularly damaging to the profitability of exporting, tipping the firm's decision in favour of local production.

Extending these models to a full multi-country framework, Markusen and Venables (1998) analyse the mix of multinational and national firms operating in each country. They show that multinationals will be prevalent the more similar are countries (in size, and also in other economic dimensions, such as technology and factor endowments). Thus, as Europe has become integrated – essentially increasing market size – it has become more worthwhile for US and Japanese FDI to enter, even though trade barriers and other costs of supplying Europe through trade have been declining.

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3.2 Vertical FDI and factor endowments: A significant part of multinational activity now takes the form of firms shifting a stage of their production process to low-cost locations. The economic analysis of this turns on the idea that different parts of the production process have different input requirements and, since input prices vary across countries, it may be profitable to split production, undertaking unskilled labour-intensive activities in labour-abundant countries, for example.

The classic analysis of this comes from Helpman (1984, 1985) and Helpman and Krugman (1985), and is based on an extended Heckscher-Ohlin trade model with two factors of production and two sectors, one perfectly competitive, producing a homogeneous good under constant returns to scale, and the other producing differentiated products under increasing returns to scale. Firms in the increasing returns sector have distinct 'headquarters' and production activities, which can be separated between countries.

In this model, free trade in goods will bring about the international equalisation of factor prices, providing the countries' relative endowments of the two factors are not too different. When this occurs there is no incentive for firms to separate headquarters and production, so there is no multinational activity. But if the relative endowments are sufficiently different – for example, one economy has a much higher endowment of labour relative to capital than the other – then trade does not equalise factor prices. It is then profitable for firms to divide activities, unsurprisingly putting the more capital-intensive part of the firm (e.g., headquarters) in the capital-abundant country. The capital-abundant economy then becomes an exporter of 'headquarters' services to its production operations located in the labour-abundant economy.

While this analysis provides an elegant way of incorporating multinationals in classical trade theory, its applicability is severely diminished by the maintained assumption that international transactions are frictionless – there are no trade barriers of any sort, and no additional costs are incurred in splitting production. What happens when we allow for such frictions?

3.3 FDI, factor prices, and location: Adding trade frictions brings two new forces into play. The first is that transport costs on trade in final goods destroy factor price equalisation (unless relative endowments are identical); the consequent international differences in factor prices increase the incentives to split production. The second is that costs of splitting production – additional costs incurred by having different parts of the firm located in different countries – make multinational production less attractive. Whether firms go multinational, and where they locate different activities, depends on the interaction between these forces.

To analyse this, suppose there are many countries, at varying distances from an economic center from which they import goods (including components) and to which they export at least some of their final output. Transport costs both on imports (of intermediate goods and final products) and on export sales are higher at more remote locations. If there is some mobile activity – say one stage of a production process – where will it locate?

Locations further away from the centre are unattractive, in so far as firms face heavy transport costs; Radelet and Sachs (1998) show how large these cost penalties can be. On the other hand, since these locations also face transport costs on their other tradeable activities, their factor prices will be lower. In particular, the price of factors used intensively in the location's export activity will be low, so investment projects that are intensive users of these factors may be attracted to remote locations. Generally, whether a project will be established in a particular country depends on the factor intensity of the project, relative to the factor intensity of other exports from the country, together with the 'transport intensity' of the project, relative to the transport intensity of other goods traded by the country. These considerations allow us to predict which sort of projects will locate close to established manufacturing regions, and which will go to more remote countries.[5]

3.4: Agglomeration: There is some evidence that FDI is spatially more clustered than other forms of production. This could appear in the data for reasons we have already seen. The market size and factor endowment models suggest that all locations have some production, but

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only some locations will have FDI, meaning that FDI will appear to be clustered. It also appears because of cross-country variations in legal framework, particularly in transition economies, where privatization programs have been more or less open to foreign investors.

Alternatively, clustering of FDI may be due to positive linkages between projects, creating incentives to locate close to other firms. Several mechanisms seem particularly important. One is the spillovers created by research and development; much has been written on this (see Audretsch, 1998), although not particularly from the perspective of FDI. Another is confidence, and the possibility that firms 'herd'; firms are uncertain as to whether a particular country is a good location for FDI, and take the success of one firm as a signal of underlying national characteristics. A third mechanism arises from the supply of, and demand for, intermediate goods; once again, this has been extensively analysed, although not particularly from the perspective of FDI.[6]

4. Location of multinationals: empirical studies.

We now review the empirical studies on the determinants of the location of FDI. These have been undertaken for different regions of the world, and each region has presented its own set of patterns. We therefore organize the material by region. The best documented and most heavily researched FDI flows are those from the US, and we start with these, then turn to outflows from Japan and Europe.

4.1: US Outward FDI:

Table 1 summarises the US position, showing the direct investment position abroad (the stock of direct investment), sales by US-owned affiliates, and, for comparison, US goods exports, all for 1996. The main determinants of the location of FDI are proximity and host country income level. This 'gravity' relationship has been used extensively in explaining trade flows, and

Table 1 United States Direct Investment Position Abroad and Sales by Affiliates, 1996 (Billions of US Dollars or Percent)

Area	Direct Investment Position	Share by Region %	Affiliate Production	Share by Region %	% of prod. by US affiliates sold in US	US Goods Exports	Share by Region %	Ratio of affiliate Prod. to Exports
All Countries	777.2	100.0	1861.4	100.0	10.1	625.1	100.0	3.0
Advanced *of which:*	536.3	69.0	1434.1	77.0	7.8	356.7	57.1	4.0
European Union 15 *of which:*	337.2	43.4	949.6	51.0	4.2	127.7	20.4	7.4
United Kingdom	122.7	15.8	287.0	15.4	6.0	31.0	5.0	9.3
Canada	91.3	11.7	231.0	12.4	28.0	134.2	21.5	1.7
Developing *of which:*	240.9	31.0	427.3	23.0	18.0	268.3	42.9	1.6
Latin America *of which:*	147.6	19.0	178.7	9.6	20.5	109.4	17.5	1.6
Mexico	19.9	2.6	46.7	2.5	39.9	56.8	9.1	0.8
Brazil	28.7	3.7	49.8	2.7	4.3	12.7	2.0	3.9
Asia *of which:*	67.2	8.6	198.3	10.7	15.3	120.1	19.2	1.7
Singapore	14.0	1.8	72.6	3.9	21.8	16.7	2.7	4.3
Greater China	18.5	2.4	49.1	2.6	11.8	26.0	4.2	1.9
Africa of which:	6.8	0.9	19.8	1.1	21.6	10.6	1.7	1.9
South Africa	1.5	0.2	5.6	0.3	0.5	3.1	0.5	1.8
Middle East	7.8	1.0	10.6	0.6	15.0	20.0	3.2	0.5
East Europe and FSU	6.7	0.9	13.7	0.7	0.9	7.6	1.2	1.8

typical findings are that two-thirds of the geographical pattern of trade can be 'explained' by these few variables (see Leamer and Levinsohn, 1995). Our own analysis shows that a similar finding holds for multinational affiliate sales.

The interesting question then is to see the ways in which the pattern of FDI differs from that of trade, and the final column of table 1 sheds light on this, giving US affiliate production in each region or country relative to exports from the US to each region or country. On average, this ratio is equal to three, so the main outliers are the regions for which this number is markedly different from three. Several points stand out. First, developing countries do poorly, having less than half the level of affiliate sales relative to trade as do developed countries (1.6 as compared to 4.0). Second, neighbouring countries do poorly; this is essentially due to very high trade volumes between the US and Canada and Mexico. Third, the European Union has a high ratio of affiliate production to exports, and FDI is uneven within the EU, with the UK having the largest share.

To go further we make the distinction between horizontal and vertical FDI. Horizontal FDI was studied by Brainard (1997), who asked the question, how does the US supply foreign markets? She took as dependent variable the share of exports in total US sales (defined as exports plus affiliate sales) in each market (also disaggregated by industry). Her findings are in line with what we would expect. The share of affiliate sales is higher the higher are trade costs, and lower the lower is per worker income in the host country; this conforms with the poor performance of developing countries we noted above.

Wheeler and Mody (1992) included market size in their analysis of capital expenditures by multinational affiliates, so while their results do not cover the choice of serving a market, they do provide a measure of how market size affects inward multinational activity. They found that

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market size had a positive influence on capital expenditures by manufacturing affiliates of US multinationals between 1982 and 1988, with an elasticity of 1.57. Elasticity for the highest-income countries was 1.86, while that for the lowest-income countries was 0.74. Other variables that proved important in raising capital expenditures by these affiliates included quality of a country's infrastructure, its degree of industrialization, and the current level of foreign investment. They interpreted these three variables as measures of agglomeration effects.

What about vertical FDI? We can start investigating this by looking at column 5 in the table, which gives the percentage of US affiliate production that is sold back in the US. This share is more than twice as high for developing countries (18 percent) than for advanced countries (7.8 percent) indicating, as would be expected, that factor price differences play a role in driving such investment. Indeed, Wheeler and Mody alluded to a wage effect in vertical production when they separately tested capital expenditures in the electronics industry, an important offshore assembly industry.[7] They found low labour costs were strongly related to the level of capital expenditures by US electronics affiliates, with larger elasticity in low income countries than high, indicating the importance of labour costs to vertical investment decisions.

Shatz (1999) analyses vertical exports by US-owned manufacturing affiliates in developing countries. He finds that the level of sales back to the US by these affiliates is higher in countries with low labour costs and tax rates. Low transport costs to the US and a high degree of trade openness are also important determinants of vertical sales, as the models suggest. These findings hold true for the ratio of sales back to the US relative to total sales by these affiliates.[8]

Returning to table 1, Mexico and Singapore stand out as having high sales back to the US, with Mexico selling almost 40 percent of its output to the US and Singapore selling almost 22 percent.[9] Africa also stands out because of the resource intensity of affiliate production. The one outlier among the advanced countries is Canada, from which US affiliates sell 28 percent of their output back home. The high level of vertical investment in Canada and Mexico might be explained by three factors – proximity, allowing producers to coordinate their production more easily as they slice it into sections; economic integration, creating a more stable investment

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climate; and Mexico's maquiladora program, started in the 1960s, enabling US producers to set up assembly plants to take advantage of Mexico's lower wages. A reform in 1983 simplified the initiation of maquiladora projects, and inward FDI (from all sources) skyrocketed from $478 million in 1983 to $3.6 billion in 1989 (Feenstra and Hanson, 1997). Much of this was from the US (almost $1.7 billion in 1989, for example) and most of it went into maquiladoras. US data show that sales to the US from US-owned affiliates in Mexico increased 19.6 percent annually in nominal terms from 1986 to 1995. Worldwide, sales to the US from US-owned affiliates increased only 8.6 percent annually.

4.2: Japan's Outward FDI:

What are the similarities -- and differences - between Japanese and US FDI? Table 2 gives the basic data, and several points are immediately apparent.

First, the preponderance of investment to advanced countries is as great for Japan as for the US, with the US the dominant host. This is almost entirely horizontal FDI. A distinctive feature of Japan's multinationals is the way their export strategy has interacted with their investment strategy. The heaviest Japanese investments in the US in the 1970s were in distribution rather than production so Japanese companies could market their durable-goods exports, such as automobiles. Subsequent investment in productive facilities occurred in those sectors where widespread distribution networks had been set up.

Another result of this export success was that the threat of quantitative restrictions on exports, starting in the late 1970s, turned into a significant motivator for Japanese FDI in the US and Europe. Gittelman and Dunning (1992) found that Japanese investment in both the US and Europe responded to such threats, though investment activity in the US seemed to lead investment activity in Europe by several years during the 1980s. While the Japanese were putting most of their efforts into productive facilities in the US in the early 1980s, they were still expanding their distribution network investments in Europe. In both the US and Europe, after investment in productive facilities, follow-on investment arrived to establish local production of inputs.[10]

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A second characteristic of Japanese FDI is the significant amount of resource-based FDI, particularly in Latin America and Australia (see Caves, 1993, and Drake and Caves, 1992). We see from table 2 that around one third of output from Japanese FDI in these regions is exported back to Japan.

The third feature of Japanese FDI is its role in the development of the wider East Asian economy, and the extent to which it has involved relocation of Japanese production to lower wage economies as a base from which to supply the Japanese market and export to third markets. While FDI played only a modest role in the development of some of the first wave of Asian newly industrialised countries (Taiwan and Korea) it has played a much larger role in the second wave, with the share of foreign affiliates in manufacturing sales exceeding 40 percent in Thailand, the Philippines, Malaysia, and Singapore. In fact, while Japanese manufacturing FDI to developing countries as a group stagnated from the mid-1970s to at least the late 1980s, FDI to Asia increased steadily (Takeuchi, 1991). Japanese investments in some of these countries are given in table 2.

Much of this investment is vertical, and column 5 indicates the relatively high levels of sales by these affiliates back to the Japanese market. This figure certainly understates the extent to which this is vertical FDI; less than half the output is sold in the host country, and much goes to other affiliates in the region. Exports to Japan have been particularly important in general machinery, electrical and electronic machinery and equipment, transport equipment, and precision equipment, and most sales back to Japan are to the parent company.

Kimura (1998) contrasted the activities of majority-owned Japanese affiliates in East Asia (specifically, Korea, Taiwan, Hong Kong, Singapore, Malaysia, Thailand, Philippines, Indonesia, and China) with those in the rest of the world. Japan's Asian affiliates are much more likely to be part of vertically integrated production networks, while the non-Asian affiliates are more likely to serve foreign markets horizontally. Not only do the Asian affiliates sell more back to Japan, they also sell a much higher share of their production to Japanese affiliates.

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The importance of production costs in choice of locations was confirmed by a firm level survey, analysed by Mody, Dasgupta, and Sinha (1998). Japanese firms investing in Asia were motivated partly by high Japanese capital costs. Raw labour costs did not prove an attractor, but labour quality did, suggesting that unit labour costs rather than raw labour costs mattered, since

Table 2. Japan: Direct Investment Position Abroad (1994) and Sales by Affiliates (1991) (Billions of US Dollars or Percent)

Area	Direct Investment Position	Share by Region %	Affiliate Production	Share by Region by Region %	% of production by Japanese affiliates sold in Japan
All Countries	436.6	100.0	498.0	100.0	14.2
Advanced	317.0	68.4	402.0	80.7	12.8
Of which:					
United States	194.4	41.9	229.0	46.0	12.2
European Union 15	84.3	18.2	133.0	26.7	9.5
Of which:					
United Kingdom	33.8	7.3	61.0	12.2	7.4
Australia	23.9	5.2	22.0	4.4	37.9
Developing	146.6	31.6	96.0	19.3	20.1
Of which:					
Latin America	55.6	12.0	9.0	1.8	28.7
Of which:					
Brazil	8.8	1.9	3.0	0.6	41.8
Asia	76.2	16.4	83.0	16.7	18.7
Of which:					
Greater China	22.6	4.9	26.0	5.2	19.9
Indonesia	17.0	3.7	1.0	0.2	12.5
Singapore	9.5	2.1	29.0	5.8	20.0
Thailand	7.2	1.5	5.0	1.0	19.5
Malaysia	6.4	1.4	6.0	1.2	19.7
Africa	7.7	1.7	n.a.	n.a.	n.a.
Middle East	4.7	1.0	n.a.	n.a.	n.a.
East Europe and FSU	0.8	0.2	n.a.	n.a.	n.a.
Of which:					
Russia	0.4	0.1	n.a.	n.a.	n.a.
Hungary	0.3	0.1	n.a.	n.a.	n.a.

Notes: Greater China is China and Hong Kong. EU is the EU 12 for sales data. Levels may not sum to total for all countries and shares may not sum to 100 because of rounding. In addition, the sales data probably understate the level of actual sales, as explained in Kimura.
Sources: Investment Position is from OECD (1997). Sales data are based on Kimura (1998), Table 5.1, p. 115-6, and are available only in billions of dollars.

labour costs throughout Asia are lower than in Japan. Finally, a firm's export propensity from Japan was negatively correlated with the firm's share of investment in Asia. Mody, Dasgupta, and Sinha interpret this to mean that Japanese firms have not invested in Asia under threat of trade barriers. Rather, they have gone in search of efficient production and low-cost inputs.

Reviewing changes in the pattern of Japanese FDI since 1972, Kojima (1995) shows both a changing composition of investments, and a geographical broadening of those investments throughout Asia. The concentration in manufacturing has declined, with a rapid increase in service investment; the average labour skill requirements have increased correspondingly. Broadening also took place significantly, with investment spreading in waves from early host countries to neighbours. In 1972, for example, the top three Asian locations for machinery manufacturing (Singapore, Taiwan, and Korea) held 81.5 percent of total Japanese investment stock in machinery manufacturing in Asia. By 1989, the top three (Thailand, Singapore, and Taiwan) held only 51.3 percent of the total. And Thailand, which held 5.1 percent of the total in 1972, moved up to first place by 1989, with 18.6 percent.

4.3: Europe's Outward FDI:

Table 3 summarises the European Union 15's outward FDI flows between 1992 and 1994. The first thing to notice is the enormous share of intra-European investment flows. More than two-thirds of FDI flows stayed within Europe during those years, although this share appears to have peaked in 1992, falling to 44 percent in 1997.

This peak likely was related to the EU's Single Market Program. Barrell and Pain (1997), based on Pain (1997) and Pain and Lansbury (1997), report that UK and German investment to the rest of the EU from the 1980s through 1992 rose sharply in those sectors that previously had the highest barriers to cross-border market entry. Among the EU 12, intra-EU investment averaged 29.9 percent of total outward investment from 1984 to 1988, and 61.7 percent during the next five years, to 1993 (European Commission 1995, 1997).

Table 3. European Union 15: Direct Investment Flows Abroad
(Billions of US Dollars of Percent)

Area	Flows Abroad 1994	Flows Abroad 1993	Flows Abroad 1992	Average Share by Region 1992-1994
All Countries	76.0	75.4	87.1	100.0
Advanced *Of which:*	61.4	64.3	81.7	86.6
European Union 15	50.3	47.1	64.0	67.4
United States	7.7	16.1	9.0	13.9
Developing *Of which:*	14.6	11.1	5.4	13.4
Latin America *Of which:*	5.7	3.0	3.9	5.3
Argentina	0.6	0.3	0.4	0.5
Asia *Of which:*	3.5	2.3	1.6	3.1
Malaysia	0.5	0.7	0.5	0.7
Greater China	0.2	0.4	-0.2	0.2
Africa *Of which:*	0.6	0.1	0.9	0.7
Morocco	0.3	0.2	0.1	0.2
South Africa	0.1	0.2	0.4	0.3
Middle East	0.3	0.1	0.3	0.3
East Europe and FSU *Of which:*	4.0	4.2	3.1	4.8
Czech Republic	1.1	1.0	1.0	1.3
Hungary	1.0	1.4	1.3	1.6
Poland	0.7	0.9	0.3	0.8
Russia	0.4	0.1	n.a.	0.2

Notes: Greater China is China and Hong Kong. FSU is Former Soviet Union. Levels may not sum to total for all countries and shares may not sum to 100 because of rounding.
Source: European Commission (1997). Figures are for equity and other capital outflows to affiliates and do not include reinvested earnings.

EU policy measures have affected more than just the level of intra-EU flows. Baldwin,

Forslid, and Haaland (1996) reported above-trend increases in investment into Spain and Portugal

after those two countries joined the EU in 1986. Furthermore, during the early years of the creation of the Single Market, foreign investment fell in the European countries not participating, in particular the countries of the European Free Trade Area. After it became clear that many of them would link to the EU through the European Economic Area, investment recovered.

What then can we say about horizontal and vertical investment by the Europeans? Excellent firm-level data exist for Swedish multinationals, and these have become almost as heavily researched as US multinationals.[11] Regarding horizontal investment, Ekholm (1998) found that distance and plant-level scale economies were negatively related to the decision to serve a market through affiliate sales, rather than exports. However, once this decision had been made affirmatively, distance was positively correlated with the level of affiliate sales relative to total Swedish sales (affiliate sales plus exports). Higher transport costs were also weakly related to higher affiliate sales, even after taking account of distance.

Ireland presents a compelling case study of vertical and horizontal investment by Europeans and by outsiders into Europe. As Barry and Bradley (1997) show, more than 85 percent of the gross output of foreign-owned manufacturing plants is exported, and more than 65 percent of intermediates used by these plants is imported, emphasising that these plants are firmly in a vertical chain of production. However, the destination of exports shows that some are clearly horizontal, while others are likely vertical. For example, UK-owned plants export only 39 percent of their output, but of this, almost 60 percent goes to the UK. US-owned plants export 96 percent of their output, but only 7.9 percent goes back to the US – less than the share of total Irish manufacturing exports to the US. Instead, almost 80 percent stays within the EU (including Ireland).

One aspect of Ireland's role as an export platform is the importance of agglomeration economies. Barry and Bradley report that surveys of executives in the computer, instrument engineering, pharmaceutical, and chemical sectors show that their decision to locate in Ireland is strongly influenced by the presence of other key firms in their industries.

At the eastern end of the EU, Central and Eastern Europe (CEE) is now integrating into European production networks. European investors are the dominant participants in these newly opened economies, particularly investors from Germany and Austria. The total direct investment position at the end of 1995 in the Czech Republic, Hungary, and Poland was $24 billion, of which 68.7 percent came from the EU 15, with 34 percent from Germany and Austria alone.

Hungary offers the best example of the relationship between FDI and trade in Eastern Europe. It has been the primary spot for investment in the CEE, attracting the largest absolute and relative (to GDP) flows, on average five percent of GDP annually from 1990 to 1997 (Kaminski and Riboud, 1999). Kaminski and Riboud show that foreign-invested firms have been the driving forces behind Hungary's increasing exports. In 1989, these firms were responsible for 10.4 percent of Hungary's exports. By 1997, they were responsible for 74.2 percent. The authors speculate that many of the exports by foreign-invested firms are actually intra-firm, since many of the firms locating in Hungary are subsidiaries of large multinationals with known international production networks. For example, exports of piston engines leaped from $85 million in 1993 to $1.5 billion in 1997. Not coincidentally, between those two years Volkswagen established Audi Hungaria Motor as a greenfield investment to assemble piston engines. Although not quite as dramatic, other networks have been established, particularly in electronics with subsidiaries of Philips and IBM. One other result of the integration of Hungary with production networks is that exports to the EU have changed from natural resource- and unskilled labour-intensive in 1989, to technology- and skilled labour-intensive in 1997.

One other aspect of European investment deserves special mention. Given the number of Europe's countries with imperial histories, patterns of European FDI show the importance of cultural linkages and colonial heritage. For example, between 1992 and 1994 France's cumulative flows of FDI to Morocco totalled $287 million, while cumulative flows to South Africa totalled $56 million. In contrast, the UK's flows to Morocco totalled only $90 million, while flows to South Africa measured $1.3 billion.

5: Conclusions:

The patterns of FDI and the results of empirical research produce several areas of agreement among scholars regarding the geography of international investment. Distance and market size are extremely important in determining where firms establish their foreign affiliates. Adjusting for market size, a large share of investment stays close to home, and adjusting for distance, a large share of investment heads toward the countries with the biggest markets. In fact, the majority of the world's direct investment is horizontal, designed to serve customers in a host-country market rather than in the worldwide market. As a result, most investment can be found in the advanced industrial countries.

However, the direction of investment has shifted in the 1990s, with a larger share heading toward developing countries. Of these, China dominates. Relative to developed-country investment, much of this is vertical. As seen in the cases of US and Japanese investment, affiliates in developing countries sell a larger share of their output to their home countries than do affiliates in developed countries. Even so, on average, affiliates in developing countries sell a majority of their output in their host economies.

Recently, the competition for FDI inflows has grown fiercer, with the transition countries and other developing countries making efforts to attract multinationals. In addition, technological change and an open world trade environment allow firms to split production processes more easily. Combined with the fact that multinationals are active traders – exports from parents and affiliates together dominate world trade – these patterns raise a number of issues for the future. One is whether the developing countries will continue to attract an increasing share of investment flows. Another is how much higher vertical investment will rise as a share of total investment. The final pattern to watch will be the growth of developing country multinationals. Developing countries control only a small portion of world outward direct investment stock, but their share is rising. Their future activities will confirm what we know about distance, host country market size, and the dominance of horizontal investment, or suggest new questions about the location of multinational firms.

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Endnotes:

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[1]Much of the data mentioned come from a special extract of the UNCTAD FDI/TNC Database (UNCTAD, 1999). The investment flows measured here generally include equity flows and debt between a parent company and an affiliate in which the parent holds at least a 10 percent ownership interest, as well as retained earnings of the affiliate. However, both the components and threshold differ for some reporting economies.

[2]Caves (1996) gives a comprehensive description of the characteristics of firms that go multinational and in which industries they are most likely to be found.

[3]We classify countries in this section according to UNCTAD (1999) with minor changes. Advanced countries include the European Union 15, Gibraltar, Iceland, Norway, Switzerland, Canada, the US, Australia, New Zealand, Japan, and Israel. Developing countries comprise the rest of the world, including the transition economies of Central and Eastern Europe, as well as South Africa; UNCTAD classifies the transition economies as a separate group and South Africa among the advanced countries.

[4]This result is model-specific. Cournot oligopolists will reduce their sales. Bertrand oligopolists will increase their sales.

[5]See Venables and Limao (1999) for analysis of this.

[6]See Fujita, Krugman, and Venables (1999) for the analysis of agglomeration patterns created by inter-firm demand and supply linkages.

[7]Wheeler and Mody did not note the vertical sales intensity of the electronics industry. However, Shatz (1999) shows using US Bureau of Economic Analysis data that US affiliates in the electric and electronic equipment industry in developing countries sold more than 43 percent of their output back to the US between 1986 and 1995. This is the highest proportion of vertical sales of any of the broad industry classes in the data.

[8]The labour cost findings of Shatz and Wheeler and Mody do not appear in every analysis, however. In an early paper investigating vertical investment in the 1960s, Kravis and Lipsey (1982) found a negative association between labour costs and the level of exports in most industries investigated, but this relationship was never statistically significant. Rather, market size regularly emerged as statistically and economically significant, though there was no elasticity computation. Kravis and Lipsey took this finding to imply that there were economies of scale in export production that made output cheaper to produce in larger markets.

⁹When oil, finance, and real estate investments are excluded from the totals (not shown), Singapore's share of output sold back to the US leaps to almost 36 percent, while Mexico's increases to nearly 41 percent.

¹⁰See also Barrell and Pain (1999) for Japanese investments and trade restraints. The experience of Japanese multinational expansion into the US and Europe points to one other determinant of location, the real exchange rate. A number of authors have found a correlation between a home-country appreciation and increased investment into the market with the depreciated rate, and Japanese investment into the US is one example of this (Drake and Caves, 1992). When assets become cheaper, buyers emerge. For further research, see especially Blonigen (1997) and Froot and Stein (1991).

¹¹The Industrial Institute for Economic and Social Research (IUI) completed six surveys between 1970 and 1994. An early and important study based on these surveys was Swedenborg (1979). The papers in Braunerhjelm and Ekholm (1998) are among the latest making use of these surveys.

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