

# INTERNATIONAL PRODUCTION AND SOURCING: TRENDS AND ISSUES

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## SUMMARY

This paper summarises recent trends in international production and sourcing (purchase of inputs) of goods and services. It focuses on the reasons why firms produce and source outside of their home countries, and some of the constraints on such production and sourcing. This is followed by a survey of the patterns of international production and sourcing and some implications for policy. The paper concludes that firms of varying sizes and most nationalities may benefit from the globalisation process, provided that they continually upgrade their competitive assets and build on the technological and educational resources of locations which are well-endowed with these advantages.

### I. INTRODUCTION

The globalisation of business in recent decades has captured the attention of policy makers, academics, and business managers. Although the term is used loosely, globalisation refers to the growing integration of national economies through trade and foreign direct investment (FDI). As capital becomes more mobile and technology facilitates international communication, national borders become more permeable to economic activity. Reich (1991*b*) conveys a sense of this with an example from the automobile industry: "Mazda's newest sports car, the MX-5 Miata, was designed in California, financed from Tokyo and New York, its prototype was created in Worthing, England, and it was assembled in Michigan and Mexico using advanced electronic components invented in New Jersey and fabricated in Japan."

International production and sourcing entail trade in intermediate products between manufacturing enterprises located in different countries, and usually involve some degree of co-ordination between the enterprises. International production and sourcing differ in that the former refers to transactions within a framework of common ownership and control, while the latter refers to transactions between independent firms. The purpose of this report is to analyse theoretical rationales for international production and sourcing, to examine empirical patterns and trends, and to explore related policy issues.

The trend toward globalisation of production is driven by a number of economic, political, and technological forces. These include higher fixed costs and a resultant need to exploit economies of scale on a global basis, competitive pressures to take advantage of international production cost differentials, and access to markets and supplier capabilities. The reduction of risk and the need for flexibility in the face of volatile markets and technologies also propel firms toward international operations, and, it is argued here, to engage in international alliances and joint ventures. In responding to these pressures for global production, firms have been helped by deregulation and by technological changes that lower the cost and improve the quality of international co-ordination.

Offsetting these forces, there are some important constraints on globalisation. Differences between national markets and the particular needs of their consumers have not disappeared. The costs of integrating a global value chain, such as freight and duty, telecommunications and travel, and the cost of time delays, can be significant impediments to international production and sourcing. In particular, the diffusion of Japanese-style "lean production" systems, including just-in-time delivery and close relationships with suppliers, could restrict, if not reverse, the trend toward geographically dispersed production. On the other hand, the adoption of lean production systems which accelerate the speed of reactions to changing demands can enable new international opportunities to be addressed more readily.

Empirical evidence on international sourcing, strategic alliances, FDI, and intra-firm trade, all demonstrate the growing integration of national economies. Multinational enterprises (MNEs) have played a major role in the integration of trade and production as they have increasingly rationalised their global operations to serve regional or international markets. Nevertheless, the data indicate that the international integration of production is not dominated by transactions within MNEs; the proportion of intra-firm trade in total trade for the United States has fluctuated around 30 per cent for exports and 40 per cent for imports during the 1970s and 1980s. One reason for this is the rapid growth in outsourcing, international joint-ventures, and alliances as organisational forms for co-ordinating production.

International production and sourcing have distinct regional patterns. International transactions are increasingly triadic, centred on the United States, Europe, and Japan (the "Triad"), replacing the earlier predominant role of the United States. Although inter-regional linkages have grown rapidly in absolute terms, there has also been a trend toward the regionalisation of production within North America, Europe, and the Pacific rim. This trend has been fuelled by rising protectionism and perhaps by the spread of lean production systems. As the United States has lost its predominant role, the relative growth of international linkages such as FDI and intra-firm trade has been faster for Europe and Japan than for the United States. In fact, much of the absolute growth in FDI during the 1980s was concentrated in Pacific rim countries. The share of FDI going to developed countries (LDCs) dropped, although average annual flows of FDI to LDCs nearly doubled in absolute terms during the 1980s.

The growth of international production and sourcing promises to transform the contours of international competition in key industries and carries important policy implications for national governments, international institutions, labour, and business. A central concern is the potential effect of integration on national autonomy in setting fiscal, monetary, and exchange rate policy, as well as in other areas such as environmental and labour regulations. Here there is a clear need for international policy coordination. In other areas, the lack of clear theoretical or empirical conclusions concerning the effects of international corporate integration has led to contentious debates over policy issues. The effect of globalisation on employment and wages is a case in point: if integration has an equilibrating effect, it could drag down wages in advanced industrialised economies, but integration could also have a polarising effect, reinforcing strong economies.

At the sectoral level, the present paper cautions about being complacent over competition policy; although globalisation does render national concentration ratios meaningless, in the longer term it could well lead to a shake-out on a global scale, and the emergence of international oligopolies. The issue of competition is closely linked to the subject of national competitiveness and industrial policy. Too much competition can be as damaging to existing local firms as too little, if they do not start from a position of strength.

More generally, if it is recognised that competitiveness results from the dynamic development of clusters of firms, suppliers, and skills in specific regions, national policy makers cannot be indifferent to the market allocation of international activities. Moreover, this paper argues that national ownership still matters in a world of mobile capital, as most MNEs still concentrate their higher-valued activities and their tax payments in their home country.

## II. DEFINITIONS OF INTERNATIONAL PRODUCTION AND SOURCING

In order to discuss the rationales and policy implications of international production and sourcing by firms, the concepts need a clear definition. For the purpose of this paper, international sourcing is defined as a situation where one firm purchases sub-assemblies, components, or processed materials produced by an independent firm located in another country. International production differs in that the transaction is between two units under substantially common ownership or common control. International manufacturing is sometimes used here as a generic term including both international production and sourcing.

These definitions exclude the simple importation of final products ready for sale to consumers, as well as the importation of unprocessed raw materials or agricultural commodities. The significance of international production and sourcing, thus defined, is that it involves trade in intermediate products, and hence some form of ongoing relationship between manufacturing enterprises located in different countries. It therefore

reflects a degree of international economic integration that generally goes beyond a simple, arms-length trading relationship. For example, trade in many intermediate products – particularly in the fabricating sectors – usually entails some degree of coordination regarding technical specifications or production scheduling. International integration can take two forms. Vertical integration refers to the linkages between stages of production of a particular product located in different countries.<sup>1</sup> Horizontal integration refers to a situation where one stage of production uses a number of components manufactured in different countries. Although international production and sourcing reflects the integration of the value chain (also called the supply chain), across countries, this integration can be of an intra-industry or inter-industry nature. The latter occurs when outputs classified as one industry are used as inputs into another.

These definitions of international production and sourcing are not as precise as might be desired. At one end of the value chain, it is not always clear how much processing raw materials and agricultural inputs can undergo before being considered an intermediate product. At the other end of the value chain, a firm importing final products for sale to consumers frequently adds some value, through marketing, distribution, after sales servicing or perhaps customising the product to the local market. In addition to the conceptual problem, there are also practical difficulties with this definition, as international economic statistics for trade and foreign investment do not usually summarise intermediate products as a separate category.

The distinction between international production and sourcing relies on a definition of ownership and control. International production takes place within the organisational borders of an MNE, necessarily involving FDI and intra-firm trade. John Dunning (1981) has in fact defined international production as production undertaken by MNE's and financed by foreign direct investment. A widely accepted definition of FDI is given by IMF (1977):

"Foreign direct investment refers to investment that is made to acquire a lasting interest in an enterprise operating in an economy other than that of the investor, the investor's purpose being to have an effective voice in the management of the enterprise."

It should be noted that this definition emphasises control and the time period of commitment, two key characteristics that distinguish FDI from portfolio investment, and does not even mention the extent of ownership.<sup>2</sup> Not all FDI entails international production as defined here. If foreign subsidiaries of an MNE produce for the local market, or are simply sales operations for imported final goods, the value chain remains within particular national boundaries and there is no international production. Whether FDI involves international production or not is thus a function of the nature and purpose of MNE activity, and the production and sourcing strategy of MNE management (see Porter, 1986).

International sourcing relationships between independent companies are frequently considered as a form of international subcontracting.<sup>3</sup> Germidis (1980, p. 12) cites UNIDO's definition of subcontracting: "when a firm (the principal) places an order with another firm (the subcontractor) for the manufacture of parts, components, sub-

assemblies or assemblies to be incorporated into a product which the principal will sell". This broad definition emphasises the intermediate nature of products. Other definitions of subcontracting stress that subcontracting relationships are usually long-term and that the product is customised (ILO, 1989). For example, Holmes (1986) defines subcontracting as a situation where the subcontractor performs work "according to the specifications or plans provided by the firm offering the subcontract." In the case of Japanese MNEs, a close filial relationship is often enjoyed between the contractor and the contractee, which may extend beyond the production of intermediate products, to their design and development.

International JVs and strategic alliances are hybrid structures of ownership and control that appear to be increasingly important vehicles for international production and sourcing, and blur the distinction between the two. A JV entails some form of equity link between two or more parties; usually, a third entity is formed with partial ownership held by each JV partner. A strategic alliance is a broader concept relating to arrangements in which some control is shared but equity is not necessarily involved. The term "strategic" implies that the alliance is specifically intended to advance the strategic goals of the partner firms. Root (1988), for example, defined international co-operative arrangements "as any form of long-term co-operation between two or more independent firms headquartered in two or more countries that undertake or support a business activity for mutual economic gain." These arrangements might encompass joint product development, marketing, or production.

### III. EXPLAINING OWNERSHIP AND CONTROL

There are important policy considerations attached to the governance structures of firms, within which international sourcing and production is conducted. In order to understand some of the implications of different forms of ownership, it may be helpful to examine the reasons why international economic integration takes one form or another.

Early attempts to understand FDI attempted to explain how a foreign subsidiary competes with indigenous firms when it has to bear extra costs of operating in a foreign environment. Hymer (1960) posited that the MNE must have some firm- or ownership-specific advantage, such as technology, marketing expertise or favoured access to critical inputs. Other authors subsequently tried to specify the conditions under which firms would choose to earn rents on these monopolistic advantages by exporting, undertaking FDI, or licensing the right to use the advantage directly to a foreign firm.<sup>4</sup> Implicit in these theories was the notion that markets for these firm-specific assets did not perform very well. The role of market failure, or transaction costs, has since come to play a central role in most current theories of the way in which firms organise their assets.

The essence of transaction cost theory is that transactions will be conducted within a corporate hierarchy rather than within markets when the cost of market transactions

is too high.<sup>5</sup> This framework has been applied to the study of international production by several authors,<sup>6</sup> but Dunning's "eclectic paradigm" (1981) integrates transaction cost theory with the ownership-specific asset approach. According to Dunning, FDI can be accounted for by the presence of three factors: ownership-specific advantages possessed by a firm, which include both the privileged possession of particular assets, and the ability of firms to govern the use of these assets; locational factors that lead to the establishment of activities in foreign countries in order to earn rents on the ownership-specific advantages; and internalisation of the gains to be derived from internalising the markets for these assets, rather than letting the market, or some kind of co-operative arrangement fulfil this task.

Four types of factors have been identified as raising the cost of market transactions because they create the potential for opportunistic action by one party. The risk is exacerbated where only a small number of buyers and sellers exist, as this increases the inter-dependence of the two parties. In principle, each side could attempt to specify contractually all the possible contingencies that might affect their future relationship, but the cost of doing so rises as the time period of the relationship and the degree of environmental uncertainty increases.

One situation postulated to increase transaction costs is where significant investments in firm-specific assets need to be made. For example, where a supplier has invested in assets dedicated to a particular customer, the customer can opportunistically demand that the supplier reduce its price.<sup>7</sup> A second situation is one in which the value of the contribution by one party, such as quality or after-sales service, is hard to measure. The third type of problem arises from a dependent relationship in which one party stands to suffer significant losses, or "negative externalities", from the poor performance of the other. Even if performance can be accurately measured, a buyer who depends critically upon a single supplier's performance for quality and delivery may want to exercise direct control. Transactions involving technology or other intangibles constitute the fourth category. The market for information is problematic because of its public good nature, so that it is difficult to enforce any restrictions on its use once disclosed. Another problem is the inherent difficulty for the buyer in valuing information before the information is disclosed; the seller may opportunistically misrepresent the value of the know-how.

The transaction cost approach has been successfully employed in several pieces of empirical work that have investigated the choice of ownership form to govern the relationship between two productive entities.<sup>8</sup> The transaction costs approach is not without its critics, however. Buckley (1988) has noted that while attempts have been made to categorise transaction costs, for example, as bargaining, monitoring, and enforcement costs, there have been no direct measurements of these costs. One problem with the theory is the central role played by the threat of opportunism. Studies of comparative organisational modes suggest that such opportunism may not be as widespread as scholars have suggested. For example, the Japanese model of building long-term supplier relationships uses trust, reputation, and mutual dependence to reduce opportunism without the imposition of common ownership (Helper, 1987). This, indeed, is one reason why the percentage of out-sourced intermediate products in

sectors like cars and consumer electronics tends to be considerably higher in the case of Japanese rather than European firms.

Transaction cost theory not only over-emphasises the role of opportunism, but also places too much stress on the ability of common ownership to eliminate divergent interests. Grossman and Hart (1986) employed a principal-agent framework to point out that problems of monitoring performance and motivation still exist inside the firm. In the international context, the limitations and costs of centralised corporate control over foreign subsidiaries are compounded by inherent complexity and by conflicts with national loyalties and authorities, with the result that subsidiaries operate to some extent like independent companies.

The rapid growth of international JVs and alliances during the 1980s has stimulated efforts to extend transaction cost theory to such hybrid ownership arrangements. Rather than view JVs as an intermediate stage adopted when transaction costs are moderate, recent theories have attempted to explain JVs as the result of situations where the inputs from both partners to the joint venture are subject to market failure.<sup>9</sup> Buckley and Casson (1988), however, noted that explaining JVs poses a more complex question. We need to understand why each partner wants some ownership rather than conduct business at arms-length, we need to know why a JV is shared rather than each partner performing the activity separately, and we need to know why the partners do not merge completely. Part of the answer is that partners have ownership-specific and complementary inputs, and the JV activity might be subject to economies of scale.<sup>10</sup>

If international JVs and alliances are strategic responses by firms with limited resources to rapidly changing markets and technologies, then it is possible that they are a temporary aspect of globalisation. Supporting this, Hergert and Morris (1988) found that three quarters of a sample of 839 inter-firm agreements between 1979 and 1985 were in the automobile, telecommunications, computer, and aerospace industries, industries which have been subject to particularly intense technological, market, and regulatory changes. Moreover, studies of the performance of JVs have found that they are very difficult to manage and are very often considered unsuccessful (Harrigan, 1988). As these industries stabilise, the need for awkward hybrid forms of ownership may decline, although new industries could arise to take their place, and it is possible that companies will develop better managerial approaches to these ventures.

At the same time, the sourcing practices of the Japanese MNEs, particularly in the fabricating sectors, are causing economists and organisational theorists to reappraise the linkages between the ownership and control of value added activities. In many respects, the Japanese appear to be reducing the costs of inter-firm transactions, not by internalising the transactions, but by working together with their suppliers to reduce, what may be called, transactional ineffectiveness. Moreover, there is some suggestion that the Japanese are transferring the sourcing techniques and supplier relationships, so successfully practised in Japan, to both the United States and Europe. The 1990s could, then, see some "externalisation" of markets for intermediate products, and new organisational modes of international sourcing.

#### IV. RATIONALES FOR INTERNATIONAL PRODUCTION AND SOURCING

Firms engage in international production and sourcing for a wide variety of reasons. Much will depend on the kinds of value activities in which they are engaged, and in the case of FDI, the rationale for it.<sup>11</sup> Different policy issues are raised by each type of international activity; for example, offshore sourcing of labour-intensive components and stages of production from low-wage countries has been the most controversial form of international manufacturing, primarily because of concerns about the effect on wages and employment in industrialised countries. Very different issues are raised by the rationalisation of production and the strategic acquisition of assets within and between industrialised countries. This section examines some of the strategic and economic rationales for international production and sourcing and the ways in which the factors driving international sourcing have changed in recent years.

##### International production cost differentials

Traditional international trade theory would predict that international manufacturing will result when components and sub-assemblies of the same final product use different factor proportions in their production, so that cost pressures require the location of component production in different countries. This theory offers a convincing explanation for the sourcing of labour-intense components and stages of production in low-wage countries. It is however of little use in explaining intra-industry trade in intermediate productions within the OECD countries. From a corporate perspective, cost, quality, and delivery are generally regarded as the three most important determinants of a company's purchasing decisions. Although cost can never be neglected, the incentive to source offshore is particularly high for products that are subject to intense price competition.<sup>12</sup> In examining production costs in different locations, companies look at the "total landed cost", taking into account production costs, transportation, and any tariffs. Labour costs are only one element of production costs; productivity and the cost of materials and components may far outweigh any wage differential. As much as anything these depend on the geographical distribution of "created" factor endowments and capabilities, notably human skills, organisational competence and transportation and communication infrastructure.

Offshore manufacturing locations are dominated by a limited number of low-wage countries, which can be classified into three groups. The Asian NICs, which have developed a reasonable base of human competencies and infrastructure over the last two decades, tend to specialise in semi-skilled or skilled production of relatively sophisticated components. A group of very low wage countries, including Indonesia, Pakistan, and China, has taken over the role played previously by the Asian NICs as platforms for sourcing the most labour intense and unskilled production tasks, such as assembly of toys, footwear, and apparel. Mexico, with its maquila plants, qualifies as a third type of source country, with a high level of capabilities, low wages, and proximity to the US market. This proximity has enabled maquila plants making automobile components to

be integrated into the just-in-time (JIT) supplier delivery systems increasingly being used by automobile assembly plants in the United States, including Japanese-owned "transplants".<sup>13</sup>

The extent of low-cost offshore manufacturing is the subject of some dispute. Despite survey evidence showing that labour costs are not an important reason for FDI,<sup>14</sup> empirical studies of international sourcing by US-based companies have found that labour intensity, skill level, transportation costs, and the level of competition were among the most important determinants of the import ratio.<sup>15</sup> The rapid build-up of this form of international production has led some observers to believe that mobile capital gravitating to low wage locations would create a "New International Division of Labour".<sup>16</sup> Less developed countries (LDCs) have encouraged this type of sourcing by establishing a large number of Export Processing Zones (EPZs) during the 1970s and early 1980s.<sup>17</sup> The growth of technological capabilities in LDCs has enabled firms based in industrialised countries to source offshore a wider range of more sophisticated products. Shaiken and Herzenberg (1987), after studying the manufacture of automobile engines in Mexico and the United States, concluded that even complex production can be transferred to Mexico, given adequate worker selection and training. Other observers have noted that low-cost, offshore sourcing is a significant phenomenon in only a few industries, and is limited to a few low wage countries.<sup>18</sup>

Many observers have claimed that new technological advances and changing economic conditions will cause a decline in the extent of low-cost sourcing. One argument is that rising wages in some NICs, attributable in part to the equilibrating effect of international sourcing, are reducing the cost differential. Moreover, technological trends that raise capital intensity, increase skill levels, and require a different kind of labour to manage computer-aided design and manufacturing techniques also diminish the incentive to source in a low wage country.<sup>19</sup> Kenichi Ohmae (1985) has estimated that, by the mid 1980s, direct labour accounted for only about 6 per cent of product cost for Japanese car manufacturers, and 5 per cent of product cost in the electronics industry.

The thesis that declining labour intensity and smaller wage differentials will curtail low-cost sourcing needs to be treated with some caution, however. There is no conclusive evidence that international wage differentials are declining. While wages have risen in the Asian NICs, they have declined sharply in Mexico and other countries. And even within developing countries there are large differentials in the real labour cost between the NICs and other countries e.g. Bangladesh and Pakistan, with the result that many of the labour intensive intermediate product sectors have moved from countries like Korea and Taiwan to Bangladesh and Sri Lanka. In any event, wages are likely to rise much more slowly in large countries such as China compared with small economies such as Singapore and Hong Kong.

The influence of technology on labour intensity is also complex. The automobile and electronics industries have both experienced relatively high levels of offshore manufacturing despite high and rising levels of capital intensity. One reason is that these industries contain distinct components and operations that remain labour intense and are physically separable. While technology contributes to rising capital intensity of

production for some stages of production, it also facilitates the separation of the manufacturing process into discrete stages, which can then be located in different countries. For example, the specifications for printed circuit boards are now routinely encoded into electronic files for transmission to offshore fabricators. Even the service sectors are not immune to this trend. The routine and labour intensive parts of banking, insurance and computing services are now being decentralised from the United States to the Caribbean and the Bahamas. Moreover, the disaggregation of a production process will make each stage *appear* less labour intense, because each stage uses as inputs components and sub-assemblies that already embody labour. As a result, the value of direct labour in final product assembly might appear lower as a proportion of product cost, but the total cost of labour used for all stages of production might not have changed.<sup>20</sup>

### Access to supplier technologies and capabilities

In many cases a firm engages in international manufacturing not just to reduce cost, but rather to access specific technologies and capabilities not available domestically. This is especially the case for firms pursuing rationalised production or asset-acquiring strategies. Subcontracting relationships may be built on this need for specialised capabilities, and this has been termed "specialty subcontracting".<sup>21</sup> In the automobile industry, for example, almost all anti-lock braking systems were sourced from Germany during the early 1980s, because that was where the technology was available (Laing and Rahn, 1983). The desire to learn foreign technologies, rather than just source the products, may lead to FDI, JVs, or international alliances. Brech and Sharp (1984) found that one of the attractions of the United Kingdom for Japanese television manufacturers was access to developments in broad-band cable technology. In a similar way, Flaherty (1986, 1989) and Ohmae (1985) have emphasised the importance of being present in all three "Triad" regions in order to access important marketing information on emerging tastes and new products.

The reason why a particular country, or even region within a country, is home to clusters of firms with industry-specific or product-specific capabilities takes us beyond the limited framework of conventional trade theory with its focus on natural endowments. Many scholars have expressed the view that building competitiveness, at the firm as well as at the national level, is a slow, cumulative process of developing skills, infrastructure, and technology. Comparative advantage is built, not given in the form of natural endowments.<sup>22</sup> Competitiveness is embodied in corporate capabilities to develop, produce, and market products and to upgrade human skills and capabilities. National governments may also play an active role in shaping the development of these capabilities and of the educational and technological infrastructure necessary to help create and nurture them (Porter, 1990).

This neo-technological approach to understanding international patterns of trade and investment offers an explanation for patterns of international manufacturing amongst countries that have similar income levels and factor endowments. It carries the important implication that the development of capabilities is location-specific, built

into an existing network of suppliers and supporting services, infrastructure, and skills. The clustering of firms, for example, in the "Silicon Valley" region of California for software and microprocessors, or in Japan for flat-screen computer displays, suggests that positive externalities and linkage effects are strong but operate over a limited geographic area. Further examples are given in Porter (1990) and Dunning (1992).

### Global scale

A desire to take advantage of economies of scale has been cited as a major reason for the growth in international production and sourcing. Two inter-related aspects of economies of scale can be considered here: the globalisation of markets and the rationalisation of production. The globalisation of markets refers to a convergence of national markets in terms of tastes and income levels, and a corresponding strategic response by firms wishing to access these markets by selling the same range of products in each country.<sup>23</sup> Global markets do not necessarily lead to more international production, if products are made locally, or if final products are exported from one central location. The presence of economies of scale, however, provides a strong incentive for MNEs to rationalise their international production facilities, so that their value added activities in each country are more specialised but serve broader regional or global markets.<sup>24</sup>

The rationalisation of production to achieve global scale need not be confined to the corporate borders of MNEs. Hergert and Morris (1988) argue that the primary motive for many international alliances is to share the risks, costs, and rewards of participating in capital intensive industries. There has also been a widely noted trend toward the co-ordination of global purchases from relatively few suppliers, for example, in the US automobile industry (Helper, 1989). In addition to traditional economies of scale in production, Flaherty (1986) has suggested that MNEs can follow a strategy of "global purchasing scale" to exercise more leverage over suppliers and thus obtain preferential terms. It should be noted that MNEs can achieve volume discounts by the co-ordination of bargaining over existing purchases, without necessarily increasing the degree of international sourcing. In fact, sourcing larger volumes from fewer suppliers may induce those suppliers to locate plants close to their major customers, reducing the amount of international sourcing.

Many observers have claimed that the fixed costs of R&D and production facilities, combined with shorter product lives, have increased the importance of achieving economies of scale, and that FDI and the conclusion of strategic alliances are two ways of achieving such economies.<sup>25</sup> In this context, it is important to distinguish economies of scale at the firm, plant, and product level. For instance, if certain products entail high fixed costs for R&D and marketing, a large volume of sales will be needed to amortise these costs, but this production could be spread over several plants. If economies of scale are due to the high cost of building and equipping a plant at efficient scale, then production should be concentrated in fewer plants, each of which would serve larger geographic markets. It is thus economies of scale at the plant and product level which

lead to more international sourcing and production. There is, however, no clear empirical evidence of a trend toward higher economies of scale.

### Risk reduction and flexibility

Although dependence on foreign suppliers is usually thought to increase the risk of adverse exchange rate movements, supply disruptions, or even expropriation, international manufacturing can also serve to reduce and diversify risk. Dual or multiple sourcing of components from different countries reduces the risk of supplies being disrupted due to political or labour causes.<sup>26</sup> In the face of volatile exchange rates, a firm exporting a proportion of its output can reduce its exposure by sourcing components abroad in order to balance revenues and expenses in major currency groups (Lessard, 1986).

Where international operations are organised within MNEs, there are additional opportunities for reducing risk and increasing flexibility. Indeed, a financial theory of FDI posits that MNEs exist in order to obtain the benefits of international diversification, which is difficult and costly for private investors to undertake (Agmon and Lessard, 1977). Selling in multiple national markets reduces the volatility of sales if business cycles are not perfectly correlated. If MNEs respond to exchange rate risk by sourcing components in the countries in which they sell, and also engage in some degree of rationalisation, international production will result from this risk reduction strategy.

Another aspect to risk reduction is the use of foreign subcontractors or subsidiaries to cope with fluctuations in demand, so that domestic plants enjoy more stable production. This would be advantageous to a firm if foreign labour laws and unions provided less security for existing workers. Empirical investigations have concluded that employment is more unstable in MNE affiliates in LDCs, both compared with local indigenous companies and with employment in the parent company. In particular, there is fairly strong evidence that subcontractors and production in export zones are the first to be curtailed in a downturn.<sup>27</sup> The evidence for affiliates in industrialised host countries is both more limited and much less conclusive (Young *et al.*, 1988).

In addition to diversifying risks, MNEs can use global strategies to increase their flexibility to take advantage of opportunities and to engage in arbitrage between markets. Tugendhat (1971) has asserted that MNEs benefit from multiple production locations because they can shift production from countries where domestic demand is high, plants are operating near capacity, and input prices are high, to countries where demand is slack and capacity is available. Kogut (1985) extended the argument to include the benefits of shifting profits to low tax locations, debt to wherever interest rates are low, and of moving technological knowledge among subsidiaries.<sup>28</sup>

From a business strategy perspective, MNEs in oligopolistic, globally competitive markets can co-ordinate their international operations on an integrated basis in order to play a "global chess game" with competitors.<sup>29</sup> Rather than treating product lines and national markets as independent, firms should, in this view, co-ordinate and integrate their international operations in order to confront competitors where they are weak, and

deprive them of markets and cash flow. Except for discussing the potential for cross-subsidisation, this approach appears a little weak in describing precisely how these strategies might be pursued. Moreover, the kind of "chess game" played may differ according to the organisational modes most suited to the capabilities of the leading players.

### **Responses to government pressures: incentives and protectionism**

Government policy and pressure can both encourage and constrain international manufacturing. Preferential purchasing, particularly in the defence sector, has frequently been extended to domestic suppliers of components and sub-systems, and the lack of competition facing protected domestic manufacturers has given them little incentive to look beyond their national borders. Deregulation, especially in the telecommunications industry, has reduced these constraints on international manufacturing.

The existence of tariffs and other import barriers provides an incentive to supply a foreign market via FDI rather than exports.<sup>30</sup> It has been claimed that just the fear of protectionism has been an important factor contributing to the surge of Japanese FDI into the United States, particularly in the auto industry. FDI stimulated by tariffs or other barriers to trade is obviously designed to serve the host market, and so does not necessarily entail trade in intermediate products. In some cases, however, such as Japanese "transplants" in the auto industry, a substantial proportion of inputs is imported from the home country.

A reduction of tariff and other barriers is likely to increase international production and sourcing by encouraging international rationalisation and trade in intermediate goods. The example attracting current attention is the creation of a single market in the European Community in 1992. Not only is the large market expected to increase inward investment from US-based MNEs, but many anticipate that European companies will increase their intra-EC investments and trade as they rationalise production on a regional basis. The creation of export processing zones and the *maquiladora* programme in Mexico likewise contribute to the separation of vertical stages of production across national boundaries.

Host governments have often required that MNEs undertake a certain amount of local production and exports as a precondition for operating in the country. The adoption of local content regulations by Mexico and Brazil forced MNEs in the automobile industry to ship intermediate rather than final goods to these markets, initially raising the amount of international production. The value of imported components fell over time, however, as the proportion of local content rose. Later, again under pressure from host governments, Mexico and Brazil became export platforms for engines and other components, increasing the degree of international production within the MNEs.

Regulations of host countries concerning FDI have been generally relaxed since the late 1970s. Japan began to liberalise her policies towards inbound MNE activity during the mid-1970s, though the Foreign Investment Law was not eliminated until 1980. In 1984, Japan actually began encouraging inward FDI with the creation of

JETRO, the Office for the Promotion of Foreign Investment in Japan. Korea followed Japan in liberalising its investment regulations during the 1980s. Many LDCs, including India and Mexico, have also loosened their controls on foreign investment. Industry specific deregulation in the United States, and to a lesser extent in other industrialised countries, has encouraged trade, FDI and international alliances in service sectors such as insurance and banking, as well as in telecommunications.

Overall, the effect of government policy has probably been to encourage international production and sourcing during recent years, primarily as a result of deregulation. At the same time, there has been a trend toward regional protectionism by the three major economic powers, the United States, Europe, and Japan, potentially leading to the integration of production on a regional rather than global basis.

## **V. CONSTRAINTS ON INTERNATIONAL PRODUCTION AND SOURCING**

Despite the general trend toward greater international economic integration, it should be acknowledged that international manufacturing is also subject to serious constraints. Amidst the general enthusiasm over globalisation, very little has been heard about the cost of integrating a geographically dispersed value chain. The growing acceptance of manufacturing techniques such as just-in-time (JIT), as well as differences in the needs of particular markets, serve as constraints on international integration, at least in certain industries. Some of the limits of globalisation, particularly in some of the more traditional manufacturing sectors, have been explored in the literature by analysts such as Baden-Fuller and Stopford (1991) and Doz and Prahalad (1987).

### **The cost of integrating an international supply chain**

The integration of an international value chain requires that management co-ordinate flows of materials and finished goods, technical and financial information, and the movement of people among the various organisational units along the chain. Not only does international distance increase the direct cost of telecommunications, shipping, and travel, but it is also likely to impair the effectiveness of linkages among the dispersed units. For example, shipments can be delayed and telephone calls are less effective for some tasks than face-to-face meetings. Moreover, cultural, linguistic, and even time-zone differences can impede the management of international operations (Levy, 1992).

Technological change that reduces the cost of telecommunications and encourages the diffusion of new modes of communication such as facsimile and teleconferencing, will, of course, facilitate the integration of an international supply chain.<sup>31</sup> There do appear to be limits, however, on the use of technology to overcome the barriers of distance. Some tasks, such as bargaining and conflict resolution, and the resolution of



technical problems, appear to require face-to-face communication.<sup>32</sup> Indeed, technology might actually constrain international production when technological change is rapid, or when technology increases the complexity of products or the production process.

It is conventional wisdom in the business world that international manufacturing is much easier for stable, high-volume, standardised items. In an example from the business press, Curtin (1987) writes: "Remember communication lines will be much longer in an offshore sourcing situation. Therefore, never completely source an immature product or one subject to continual engineering changes." This way of thinking appears to explain why it is the high-volume, standardised end of industries such as footwear, apparel, and printed circuit boards that is largely sourced from low wage countries, despite the fact that these characteristics make it easier to automate production. For these products, profit margins are lower, price competition is more intense, lead times are less important, and there is less need for frequent communication over technical issues. Moreover, the assumption that it is important to be close to the market for emerging, new products implies that it is difficult to transfer marketing information across distance.

### Lean production systems

Several writers have argued that the increasing acceptance of Japanese-style, or "lean production" methods, will constrain the globalisation of production. Lean production refers to the production system pioneered by Toyota that emphasises just-in-time (JIT) delivery, low inventories, and high quality.<sup>33</sup> According to proponents of this approach to manufacturing, the JIT delivery system is not just a method to reduce the cost of carrying inventories; the more important goal is to eliminate inventory buffers that were previously held to cope with production, quality, or delivery problems. This process forces managers to reduce problems at their source, and to be flexible in responding to demand fluctuations. These efforts focus attention on improving quality, keeping tight control over the production process, reducing lead and cycle times, reducing lot sizes, and shortening product development cycles. The result is claimed to be a continuous improvement in quality, productivity, and responsiveness.

Several elements of lean production systems are likely to constrain international manufacturing. The most obvious is the difficulty in implementing JIT delivery across large distances, because of the transportation times involved. Jones and Womack (1985) and Hoffman and Kaplinsky (1988) make this case for the automobile industry, although US automobile assembly plants have integrated Mexican *maquiladoras* into their JIT production systems for such items as radios and seat covers.

Long-term co-operative relationships with suppliers, another important component of lean production systems, are also constrained by distance. These relationships tend to require frequent face-to-face communication over quality, design, and production issues.<sup>34</sup> A third factor is that more flexible manufacturing systems, supported by the application of computers to numerically controlled machinery, enable a firm to make related products on the same line, reducing economies of scale at the product level.

Piore and Sable (1984), amongst others, have argued that a trend away from standardised manufacturing and toward more flexible, specialised production geared toward serving dynamic, fragmented markets, is leading firms to produce for regional rather than global markets.

A final element of lean production with locational implications is that flexible manufacturing and the continuous improvement of quality and productivity requires a more active input of ideas from production workers, who need to be cross-trained for several tasks. Some have argued that the reintegration of conception and execution in production raises the need for skilled labour and diminishes the attraction of manufacturing in low-wage countries.

Despite the current popularity of lean production principles, one needs to be wary about drawing conclusions concerning globalisation. There has been little study of the general applicability or extent of implementation of these production methods outside of the automobile industry. Even within the automobile industry, some companies are adopting JIT delivery from inventories rather than true JIT delivery from the supplier's production line, and most production lines are not very flexible. Moreover, the total cost of a factory equipped for flexible manufacturing would usually be much higher than a conventional plant, increasing economies of scale at the plant level. Finally, the impact of new production methods on worker skills and autonomy is subject to intense debate.<sup>35</sup>

### National differences

Despite claims that national markets are converging, substantial cultural and other differences still remain. Where products need to be tailored to the requirements of different national or regional markets, for example, because of differing tastes or standards, it is difficult to rationalise production on a global basis. Bartlett and Ghoshal (1989) view this need for "national responsiveness" as a force offsetting the factors driving international integration. It should be noted that this is more likely to be a constraint for consumer rather than for producer goods or for intermediate products. It is also more of a constraint on rationalisation to achieve global scale rather than on international manufacturing *per se*. A company serving the local market can still decide to obtain a product from another country if locational advantages exist.

Although the literature (e.g. Porter, 1986 and Doz and Prahalad, 1987) distinguishes between MNEs which pursue globally integrated and nationally responsive product and production strategies, it has given little attention to the extent to which the two groups of firms pursue different sourcing strategies. It is, however, a fact that intra-firm trade in intermediate products tends to be highest in the more globally oriented industries e.g. motor vehicles, pharmaceuticals, consumer electronics and office equipment.

At the same time, between the developed and developing world, there continues to be a great deal of international sourcing in traditional sectors e.g. textiles and apparel, leather goods etc. Frequently such trade is in the hands of multinational buying groups.

Nevertheless, such groups may have a decisive influence over the terms and conditions under which such trade is conducted, and the way in which it is organised. We anticipate such trade in intermediate products is likely to become more rather than less important in the 1990s – particularly as Japanese and NIC MNEs become more important international direct investors.

## VI. PATTERNS AND TRENDS IN INTERNATIONAL PRODUCTION AND SOURCING: EMPIRICAL EVIDENCE

Much of the available data on international transactions deal with trade and foreign direct investment, but do not explicitly match the definitions of international production and sourcing used here. Given that a substantial proportion of international manufacturing either takes place within MNEs, or is controlled by them, this section will examine data on FDI and intra-firm trade, as well as international JVs and alliances, in order to present a comprehensive picture. The final section summarises information on regional patterns.

### International sourcing

The few data that exist on international sourcing point to a distinct upward trend over the last two decades. One approach to the empirical study of international sourcing by US companies has been to examine data on imports into the United States under tariff items 806.30 and 807.00.<sup>36</sup> USITC (1988) estimated that the gross value of imports into the United States increased from \$14 billion in 1980 to \$36.5 billion in 1986, aided in part by the strong dollar.<sup>37</sup> The largest categories were machinery and equipment, textiles and apparel, but automobiles and auto components were the fastest growing items.

Perhaps the most direct evidence on international sourcing is that presented in Wyckoff (this volume), examining the extent of international sourcing of intermediate inputs for six OECD countries (Table 1).

### Foreign Direct Investment

Although FDI grew rapidly throughout the post-World War II period, several observers have noted that growth was more rapid in the 1980s. According to UNCTC (1991, p. 4), world-wide outflows of FDI grew at an annual average rate of 29 per cent between 1983 and 1989, nearly three times faster than trade, and almost four times faster than GNP. FDI flows are also very dependent on the overall strength of the world economy (this of course helps to explain the sharp down turn in FDI with the recession from 1990). Data on total outflows by G-5 countries (US, Japan, Germany, France, UK) show that, after a decline in FDI from a peak of nearly \$50 billion in 1979 to a trough of

Table 1. Ratio of imported to domestic sourcing of intermediate inputs for six OECD countries

	Per cent		
	Early 1970s	Mid/late 1970s	Mid 1980s
France	21	25	38
Germany	n.a.	21	34
United Kingdom	16	32	37
Canada	34	37	50
United States	7	8	13
Japan	5	6	7

Source: OECD (1993).

about \$20 billion in 1983, due to the 1980s recession, FDI rebounded to reach a record \$110 billion in 1987. DeAnne Julius (1990, p. 36) forecast that this growth would continue over the next few years:

“Even under conservative assumptions, the global stock of FDI by 1995 will be more than double (2.2 times) the 1988 stock in real terms. There is a near doubling of current annual flows, which themselves have exploded since 1983. The European Community sees the largest increase in inward investment, but sizeable inflows continue in the United States and, for the first time, Japan is exposed to significant inward investment.”

In a recent paper, Dunning (1992) also painted an optimistic picture of the likely future year course of MNE activity – particularly that in Europe and East Asia; and that emanating from European and Japanese MNEs.

Nevertheless, several authors have pointed out that, in historical perspective and in relation to GNP and trade, recent levels of FDI have not broken new records. Dunning (1983) presented evidence showing that flows from capital-exporting countries actually reached a peak, as a proportion of national income, in 1914, and only in the late 1980s was this level reached again. Lipsey (1989) examined the ratio of overseas to domestic assets and employment of US-based MNEs, and concluded that the relative extent of foreign involvement peaked in the late 1970s. Lipsey noted that the observed decline between the late 1970s and the mid-1980s could be due to the growth of joint-ventures (JVs); MNEs might increasingly be using a lower proportion of ownership to control their foreign subsidiaries. In addition, Lipsey's data do not demonstrate a global trend, as FDI outflows from other countries have grown much faster than those from the United States. Moreover, more recent data suggest that in the late 1980s the sales of US foreign affiliates rose faster than those of their parent companies.

The twentieth century has witnessed substantial changes in the nature of international production.<sup>38</sup> Prior to the 1960s, most FDI was in developing countries, or in the countries of “new settlement” such as Canada and Australia. These investments were

mainly in the extractive or agricultural sectors, driven by the presence of natural resources in these countries and the lack of local capital to exploit them. To a large degree, the country of ownership reflected historic colonial ties and the presence of MNEs engaged in downstream activities who wished to secure stable and cheap inputs (Wells, 1993).

During the 1960s and 1970s, there was a rapid growth in FDI in manufacturing. Initially, most of this investment was designed to serve the local market in the host country, and these subsidiaries acted largely as independent entities.<sup>39</sup> This FDI tended to be associated with oligopolistic industries characterised by concentration, economies of scale, and high R&D and advertising expenditures. During the 1970s, partly in reaction to a tide of imports from LDCs, firms in industrialised countries began to source products on a large scale in low wage countries, using both direct investment and subcontracting. According to Helleiner (1981), the dollar value of US imports under tariff items 806.30 and 807.00 grew at 26 per cent per annum during the 1970s, and total imports from LDCs grew at 29.5 per cent. This phenomenon was seen particularly in labour intense industries, such as apparel and footwear, and in labour intense stages of production such as automobile wiring harnesses and semiconductor assembly.

MNEs began to recognise the value of co-ordinating their regional or global production capabilities during the 1970s, and gradually moved away from the multi-domestic model toward global rationalisation and integration. This was particularly noticeable in the case of US manufacturing investment in the European Community where massive restructuring took place (Cantwell, 1992). In part, this was an attempt to benefit from economies of scale, but it also provided them with more flexibility, better access to technologies and markets throughout the world, and the ability to compete in a global chess game with other MNEs in oligopolistic markets. Table 2 below shows the result in terms of greater international linkages of foreign subsidiaries of US MNEs, both with the parent company and with other countries. To the extent that these sales are of intermediate products, this also indicates an increase in international manufacturing by the purchasers.

**Table 2. The geographical distribution of the sales of US majority owned affiliates in manufacturing, 1957-1987**

	Per cent				
	1957	1966	1977	1982	1987
Local sales	84.1	81.4	69.2	66.1	61.4
Total exports	15.9	18.6	30.8	33.9	38.6
To third countries	9.9	13.0	21.7	24.2	26.2
To the United States	6.0	5.7	9.1	9.7	12.4

*Source:* Cantwell (1992) p. 203; Original source: US Department of Commerce.

This period also saw an unprecedented build-up of FDI in service sectors, such as insurance, banking, transport, and communications. FDI is a natural way for a firm to exploit any advantage it may possess in these industries because these services generally need direct contact with the customer and so cannot easily be traded. Deregulation of these industries in many OECD countries facilitated this expansion of FDI. "While services represented around a quarter of the total world stock of foreign direct investment at the beginning of the 1970s, by the late 1980s, the share of services was close to 50 per cent, and services accounted for some 55 to 60 per cent of annual flows." (UNCTC, 1991) FDI in services does not, however, contribute much to international production.

### Intra-firm trade

Intra-firm trade results from the international rationalisation and integration of MNEs' activities in different countries. Intra-firm trade is usually evaluated as a proportion of total trade, and is a measure of the ownership structure within which international manufacturing takes place. The proportion of intra-firm trade in total trade therefore indicates the magnitude of international production within MNEs relative to total international production and sourcing.<sup>40</sup>

Evidence on US trade with the rest of the world indicates that while the absolute level of intra-firm trade has increased sharply in recent decades, intra-firm trade as a proportion of total trade has a less clear trend. Hipple (1990) presented data showing that the dollar value of intra-firm US exports grew by 50 per cent from 1977 to 1982, while US intra-firm imports grew by 68 per cent.<sup>41</sup> Nevertheless, intra-firm trade declined as a proportion of total trade for the United States during that period, because of the rapid growth in total trade (Table 3).

One explanation for the decline in the proportion of intra-firm trade for the United States is the growing trend toward outsourcing and international joint-ventures; these arrangements facilitate international sourcing outside the structure of an MNE. More recent data, from Encarnation (1992), indicate that the proportion of intra-firm trade was

**Table 3. Intra-firm trade as a proportion of all US trade, 1977-1982**

	Per cent	
	1977	1982
Manufactures: Exports	40.1	34.3
Manufactures: Imports	50.3	45.2
Non-manufactures: Exports	36.7	26.5
Non-manufactures: Imports	36.5	28.2

*Source:* Hipple (1990).

Table 4. Intra-firm trade as a proportion of all US trade, 1982, 1985, and 1988

	Per cent		
	1982	1985	1988
Exports	33	36	30
Imports	35	40	40

Source: Encarnation (1992) (estimated from graphs)

more mixed during the 1980s for exports, and rose for imports (Table 4). These mixed trends in US intra-firm trade have also been observed in recent OECD analysis. There was no significant increase between 1977 and 1989 in the share of intra-firm trade in total US trade, the share decreasing between 1977 and 1982, but recovering subsequently. But US-based affiliates significantly increased imports from their foreign parents (OECD, 1993).

Evidence of a more persistent trend toward international integration by firms outside the United States comes from data on the activities of foreign affiliates of US MNEs. The data suggest that the strategic role of these foreign affiliates has been evolving from a multi-domestic strategy towards a more globally integrated structure. Little (1987) found that foreign affiliates of US MNEs increased the share of sales going to other parts of the same firm from 24 per cent to 30 per cent between 1977 and 1984, while sales to US parents climbed from 8 per cent to 12 per cent of total sales.<sup>42</sup> Cantwell has presented data indicating that this trend accelerated during the mid-1980s (Table 5). Most of the increase was accounted for by the rising proportion of intra-firm exports to third countries.

Casson (1986) has shown that though the overall proportion of intra-firm trade in total trade has remained more or less stable over time for the United States, the composition of intra-firm trade has shifted. Until the 1960s, a high proportion of trade in minerals and some agricultural products was intra-firm, but under pressure from host governments, much of this is now arms-length. This has been accompanied by the

Table 5. Intra-firm exports as a proportion of total exports by US majority owned foreign affiliates in manufacturing, 1966-1987

	Per cent				
	1966	1970	1977	1982	1987
Total	61.4	64.1	64.6	66.2	73.3
To the United States	83.6	86.8	81.3	85.6	87.9
To third countries	51.9	54.4	57.6	58.3	66.4

Source: Derived from Cantwell (1992), Table 8, p. 206. Original source: US Department of Commerce.

growth of intra-firm trade in manufactured goods during the 1970s, particularly in medium to high technology industries that have undergone rationalisation on a world scale.<sup>43</sup> This trend is reflected in a higher level of intra-firm imports for manufactures compared to other products. Lall (1980) found that in 1977, US imports from related parties were 23.5 per cent for primary products, 37.6 per cent for semi-manufactures, and 53.6 per cent for manufactures. He also found that the proportion of intra-firm imports was much higher for imports originating from other industrialised countries.

### Joint ventures and alliances

A number of authors have noted a surge in corporate alliances and joint-ventures between firms headquartered in different countries, blurring the line between intra-firm and arms-length trade. Gomes-Casseres (1988) observed that the proportion of JVs in US outward investment has followed a cyclical pattern, with troughs in 1955 and 1969. Over the century, there has nevertheless been a clear upward trend. In recent decades, the proportion of JVs in total investments by US MNEs has fluctuated around 40 per cent. In developing countries, many of the controls on foreign ownership that were imposed in the 1960s and 1970s were lifted in the 1980s, and patterns of ownership by MNEs reflected these changes.

Strategic alliances, or collaborative agreements, began to receive attention during the 1980s as a new form of co-ordinating international production. Collaborative agreements, which do not necessarily involve common ownership, may take the form of international licensing, co-operative R&D, marketing agreements, management contracts, franchising, or subcontracting. Hergert and Morris (1988) showed that the number of collaborative agreements by American, Japanese, and European firms has grown dramatically in the 1980s. Nearly 75 per cent of these agreements were in the automobile, computer, telecommunications, and aerospace industries, suggesting that the main motive is a need to share risk and resources in these capital- and technology-intensive industries. A study of the computer industry by Gomes-Casseres (1993), using a broad definition of alliances, found that the number of agreements increased from under four per year before 1980 to an average of twenty-six per year in the 1985-1989 period. Of these alliances, about one-third were primarily supplier relationships, while in nearly half of the cases a supply agreement constituted at least one element of the alliance. It should be noted that most of these arrangements are primarily among large MNEs based in industrialised countries.<sup>44</sup>

An example of one such arrangement is the alliance formed between Kobe Steel of Japan and Alcoa of the United States. Kobe was seeking to apply its process technology increasingly in areas where the demand for lighter material was growing. It had already established ties with automakers which had enabled it to capture a large share of the market for lightweight body panels; but it needed a secure source of aluminium. This is what the alliance with Alcoa provided, and in 1991 KSL Alcoa Aluminium was formed as a joint venture, based on the supply of raw material but also embracing some joint R&D and technology development.

Some attention is now being paid by MNEs to joint ventures with partners in NICs, although this is less common. Nestle has invested \$100 million in five joint ventures in the ASEAN countries in order to gain access both to the region's 300 million people and to its supply of valuable raw materials (especially cocoa, soya grains and vegetable oils).

### Regional patterns

The greatest bulk of international flows of trade and FDI are among the major industrialised countries. Julius (1990) presents data from the last twenty years to show that the leading sources of FDI (the G-5) are also the leading recipients, with the exception of Japan. FDI has been increasingly concentrated within "Triad" countries, namely the United States, Japan, and the European Community. According to UNCTC (1991, p. 36) "in 1980, the stock (of FDI) within the Triad accounted for 30 per cent of the world-wide stock of inward investment; by 1988, intra-Triad stock had increased to an estimated 39 per cent of world-wide inward stock. Intra-Triad trade also grew more rapidly than world trade, increasing from 13 per cent to 17 per cent of world trade over the period."

Host country patterns for FDI reflect a long-term change in the nature of foreign investment. LDCs declined from around two-thirds of world stock in pre-World War II years to less than one-third now, because of the decline in mineral and agricultural investments. For similar reasons, Canada, which had been the largest single recipient of FDI in the world, declined from nearly one-quarter of the world's stock in 1960 to approximately 12 per cent by 1978.<sup>45</sup> The decline in the importance of LDCs and Canada as host countries has been matched by an increase in manufacturing investments in Europe and the United States. Europe served as the destination for around 8 per cent of FDI in pre-World War II years, increasing to more than one-third by 1978.

The expansion of low-cost sourcing during the 1970s and the relaxation of restrictive regulations on FDI were not enough to offset the long-term decline in the share of FDI going to LDCs. While average annual flows of FDI to LDCs nearly doubled in absolute terms during the 1980s, from \$12.5 billion in 1980-84 to \$22.2 billion in 1985-1989, the share of FDI going to LDCs dropped from 25.2 per cent to 18.6 per cent over the same time period.<sup>46</sup> Moreover, most of the absolute growth in FDI was concentrated in Pacific rim countries. The continuation of debt problems increased the risk that MNEs located in LDCs would be unable to repatriate profits, and domestic austerity, often imposed in the context of IMF and World Bank structural adjustment policies, reduced the attraction of many LDC markets. FDI to LDCs also lagged because much of the growth of FDI was in services for which LDC markets are limited and country-based advantages are small. In the early 1980s, there was some expectation that growing FDI from LDCs would increase the international economic integration of those countries. FDI from LDC-based firms grew from around 0.3 per cent of world total 1970-72 to nearly 2 per cent of world total in 1978-80, but declined thereafter due to lower oil-prices, recession, and debt problems (Wells, 1983).

Until the 1970s, one country tended to dominate outward flows of FDI during any given period. The United Kingdom was the primary source in the early years of the century until World War II, after which it was replaced by the United States. During the latter 1970s and early 1980s, FDI flows became more multi-directional. The regional pattern of FDI could be characterised as bi-polar during this period, as the European Community and the United States were the major sources and destinations for FDI. By the latter 1980s, the rapid growth of Japanese FDI had led to a tri-polar distribution of FDI. The regional pattern of FDI is shown in Table 6.

The United States has remained the primary destination for FDI, probably because of its status as the world's largest single market. Its share of outflows has, however, slipped dramatically. In recent years, Japanese outward FDI has grown remarkably, reflecting both its capital surpluses and a change in strategy for serving international markets. Until the 1970s, Japanese firms had pursued global markets primarily by exporting from a centralised home base. Since 1983, outflows of Japanese FDI have, on average, nearly doubled every two years, and by the latter 1980s Japanese outflows exceeded those of the United States. In the earlier years of the decade, a large proportion of these outflows were directed toward the Asian NICs, which served as low-wage export platforms as domestic labour costs rose.<sup>47</sup> In the latter 1980s, Japanese FDI has been directed more towards Europe and the United States, although more recently there has also been renewed Japanese FDI in the Dynamic Asian Economics and in China. In Europe, the United Kingdom was the major recipient of Japanese FDI during the 1980s. In sharp contrast to the surge in outward FDI, inflows have not increased significantly, at least in relative terms.<sup>48</sup>

The growth of Japanese FDI has strong implications for international production, as several studies have found that foreign affiliates of Japanese firms have a high propensity to intra-firm trade. Lecraw (1984, 1985) found that Japanese affiliates directed 79 per cent of their exports to related units compared to 68 per cent for US

Table 6. Regional distribution of foreign direct investment, 1980-1989  
(Share of world total, excluding intra-EC FDI)

	Per cent					
	Outward FDI Stock		Average Annual Inflows		Average Annual Outflows	
	1980	1988	1980-1984	1985-1989	1980-1984	1985-1989
European Community	33	34	23	19	41	37
United States	46	35	41	46	31	17
Japan	4	11	1	<1	10	23
Triad	84 <sup>1</sup>	81	64	65	82	77
World (per cent)	100	100	100	100	100	100
World (US\$ billion)	474	974	45	100	44	105

Source: UNCTC (1991), p. 32

firms and 65 per cent for European firms. He found a similar pattern for affiliate imports. Dunning (1986), in a study of Japanese FDI in the United Kingdom, found that 85 per cent of affiliate imports and 80 per cent of exports are intra-firm.

Although writers such as Ohmae (1985) have argued the strategic benefits for MNEs of being active in all of the "Triad" regions, North America, Europe, and the Pacific Rim, patterns of international production suggest a trend toward integration within rather than between regional blocs. The progressive unification of European Community economies and the likely agreement on a North American Free Trade Area would tend to reinforce this trend. Data on trade and FDI both indicate strong regional effects (Tables 7 and 8). Moreover, recent data indicate that intra-EC FDI flows are growing faster than flows from the European Community and Japan into the United States (Julius, 1990). Canada and the United States are especially strongly linked by intra-firm trade flows.

Table 7. Proportion of total exports from European Community and North America to countries in same region

	European Community	North America (United States, Canada, Mexico)
1969-1971	50.1	-
1975-1977	50.6	
1978-1980	53.4	
1981-1983	51.3	38.4
1984	53.8	42.0
1986	56.7	42.0
1989	59.8	40.3

Source: UNCTAD (1988) pp. 60-67; IMF (1990), *Directory of Trade Statistics Yearbook*, for data after 1983.

Table 8. Intra-EC export share of sales of US majority owned affiliates in manufacturing located in EC, 1977-1982

Per cent

	1977	1982
As proportion of total sales:		
Total intra-EC exports	21.8	28.0
Unaffiliated intra-EC exports	6.8	8.8
Affiliated intra-EC exports	15.0	19.2
As proportion of total exports:		
Total intra-EC exports	56.5	66.8
Unaffiliated intra-EC exports	17.6	21.1
Affiliated intra-EC exports	38.9	45.7

Source: Cantwell (1992), pp. 206-208. Original source: US Department of Commerce.

The degree of regionalisation should not be overstated; paradoxically, it can even encourage inter-regional linkages. Anticipation of the unification of EC markets in 1992 is part of the explanation for the wave of Japanese FDI into the European Community, and the fear of protectionism in both the EC and the United States has also stimulated inward FDI in recent years. In addition, MNEs have strategic motives for maintaining a presence in each region of the "Triad", for market access, for access to resources and technologies, and to confront competitors on a global basis.

## VII. POLICY IMPLICATIONS

The globalisation of business activity raises issues of concern for governments, business, and labour in countries and industries affected. Outward flows of investment and offshore sourcing raise fears that jobs are being exported and that the domestic industrial base is being eroded. Inward flows of investment are sometimes perceived as signifying a loss of domestic control. Increasing economic integration presents companies with new competitive challenges, and threatens to undermine the autonomy of national governments in setting economic policy. In the face of these concerns, most economists assert that international production generally offers the same benefits as international trade, namely specialisation, economies of scale, and more competition. This section addresses these issues by examining some of its policy implications.

### International investment and trade

The trend toward international manufacturing is accompanied by higher levels of both international trade and investment. The dispersion of vertical stages of production across several countries results in intra-firm and intra-industry trade, trade in intermediate products, and FDI in component, assembly, and distribution facilities. Concern has been raised that the trade effects of FDI are unlikely to be neutral. Foreign subsidiaries, especially Japanese-owned manufacturing subsidiaries, are frequently alleged to have a bias toward importing components compared with domestically-owned plants. The effects of FDI are not simple to predict, and a perennial problem is evaluating the counterfactual case. Outward FDI is frequently seen as replacing domestic exports, but by sourcing low cost inputs from offshore, or investing in foreign distribution, a firm may increase domestic production and exports. Inward FDI may replace imports, but this could be partially offset by the import of components.

Julius (1990) has noted that governments may be concerned that international economic integration involves some loss of control over the trade balance. A company that engages in production and sales in many countries is more insulated from exchange rate movements than a company involved in simple exporting. Intra-firm trade is thus likely to be less sensitive to exchange rate policy. Julius claims that under these conditions, because they do not serve their equilibrating function, floating

exchange rates are far more volatile. Volatile rates, in turn, deter international rationalisation of production. This has given rise to calls to stabilise exchange rates, by using adjustable fixed rates or crawling peg systems.<sup>49</sup> It needs to be pointed out that an opposite argument can also be made; MNEs which pursue international production strategies in order to gain flexibility, as argued by Kogut (1985), may be *more* willing and able to shift production among existing facilities in response to macroeconomic changes.

Given the growing importance of FDI in international economic relations, but a lack of institutional arrangements mirroring GATT in international trade, there have been increasing calls for international agreements that would limit restrictions on FDI.<sup>50</sup> Bale (1986) has advocated three approaches for US policy. At a multilateral level, institutions such as GATT, the OECD and the World Bank could extend their responsibilities to address investment constraints. Attempts at doing so have been partially responsible for the delays in completing the Uruguay round of GATT negotiations. GATT could potentially serve this function because of the trade implication of investment policies. For example, in 1982, the United States initiated an action against Canada alleging that Canada's local content and export requirements on foreign investors violated GATT principles. A second approach is bilateral; since 1981, the United States has tried to negotiate bilateral investment treaties with a number of countries, most notably Canada and Mexico. It has developed a standardised draft document containing provisions for national and Most Favoured Nation (MFN) treatment of investments, restriction of performance requirements, unconstrained repatriation of profits, compensation for expropriation, and arbitration of disputes. Finally, the United States has exerted unilateral pressure, using leverage such as the General System of Preferences (GSPs) countervailing duties, section 301 investigations, and GATT actions.

### National competitiveness

Despite the vast literature on competitiveness, the term does not have a clear and generally recognised meaning. Trade balances are frequently used to indicate competitiveness, but these are influenced by macroeconomic forces, primarily exchange rates; a country could always depreciate its currency until its exports are competitive on a price basis. Competitiveness has more meaning at the sector, or industry level; we can compare the performance of a domestic industry with foreign competition at the existing level of wages and exchange rates. Share of world markets and of world exports are two frequently used indicators of competitiveness. This notion of competitiveness is closely related to the concept of comparative advantage.

A further problem in assessing competitiveness is that FDI causes a divergence between the competitiveness of a country as a geographic entity and the competitiveness of firms headquartered in that country. Whereas the former could be measured using ordinary trade data, the latter requires an examination of the global operations of domestically-owned firms.<sup>51</sup> If a domestic company decides to source components from an independent company in another country rather than from a domestic supplier, competitiveness will decline according to both measures. If such international produc-

tion takes place within the structure of an MNE, imports will still increase but the ownership-based measure will not be affected.

Which measure of competitiveness should be used depends on whether one thinks that ownership matters. Julius (1990) clearly favours an ownership-based measure of competitiveness, implying that the home country benefits from domestic ownership of MNEs even if much of their activity is overseas. These benefits might derive from remittances of profits, domestic taxation, the concentration of higher-skilled, higher-paying jobs in the home country, or more general complementarities between foreign and domestic operations.<sup>52</sup> Similarly, an ownership-based measure of competitiveness assumes that domestic sales by affiliates of foreign MNEs are equivalent to imports, implying that they have a detrimental effect. Subsidiaries of foreign firms could potentially displace local investment and stifle competition, be biased towards imports and hence create less local linkages, use outmoded technology, and not invest in much training. Mirroring the arguments made for outward investment, it has been alleged that subsidiaries are likely to leave the high value-added activities in the home country, pay little taxation, and even benefit from local subsidies (Howes, 1991).

The problem with the ownership-based measure is that counter-arguments exist, at least on theoretical grounds, suggesting that outward investment is harmful and inward investment is beneficial. Outward investment can potentially hurt labour and the trade balance, as discussed above. Inward FDI brings a package of capital, technology, managerial skills, and access to foreign markets, which together could be expected to increase competitiveness. Several studies have found that Japanese investment in the United Kingdom has a positive "demonstration effect" on local firms, stimulating them to improve their production methods.<sup>53</sup> Which measure of competitiveness is preferable, and by implication, whether an open-doors policy promotes competitiveness, is therefore an empirical issue. Despite considerable investigation, the research on the effects of inward and outward investment on industrialised countries is not conclusive.<sup>54</sup> One major problem in conducting such research is establishing the counter-factual case, meaning what would have happened in the absence of investment. A second difficulty is in finding a sample of domestic- and foreign-owned firms in the same industry which are really comparable. The better controlled studies have generally found that foreign-owned firms behave little differently from domestic firms. Moreover, foreign-owned firms tend to grow more similar to domestic firms over time.<sup>55</sup>

Although a decision to switch from a domestic source of supply to an independent foreign one increases imports and reduces market share for domestically-owned firms, it does not necessarily follow that long-term competitiveness will be impaired. The foreign supplier could well have a cost or technological advantage that helps the purchasing company to remain competitive in world markets; after all, a decision to source from offshore is presumably made on rational grounds. The real concern about international manufacturing, from the point of view of the importing country, is that sourcing decisions could be myopic, or do not take into account externalities. The result could be a "hollowing out" of the capabilities of domestic manufacturers. Markides and Berg (1988), amongst others, have argued that cost-driven offshore sourcing is often an ill-conceived response to competition. Writers using this line of argument frequently

make unfavourable comparisons between the allegedly short-sighted strategies of US-based MNEs and Japanese companies that have invested heavily over sustained periods of time to increase productivity in the face of rising domestic wages.

The other element of the "hollowing out" argument is that the existence of domestic suppliers generates significant externalities for each other and for downstream industries. Even when activities sourced offshore are labour-intensive and relatively low-skilled, it has been claimed that the erosion of the supplier base can have severe detrimental effects downstream.<sup>56</sup> Moreover, Cohen and Zysman (1987) have argued that a loss of manufacturing in industrialised countries does not just signal a smooth transfer into high-value service sectors, because these sectors depend on the domestic industrial base. It is important to note that these arguments assume that positive linkages are constrained geographically and cannot transcend national borders.

Economic integration is associated with greater mobility of capital and plants, which raises policy issues relating not only to labour but also to national competitiveness. Reich (1991a) contends that productive activities are becoming so mobile that they will move to wherever conditions are most favourable. A country should thus be more concerned with its competitiveness as a geographic entity rather than ownership. The implication for policy is that, in order to attract high-value, high-paying activities, government should maintain an ownership-neutral, open-doors policy and promote investment in national assets such as education, technology, and infrastructure.

There are several problems with Reich's argument. First, the world economy is not nearly as integrated nor are productive activities as mobile as he claims, despite trends in that direction. Moreover, ownership cannot be ignored. Almost all MNEs have a clearly identified home base which dominates the company's operations in terms of production, markets, R&D, and, to an even greater extent, management and ownership.<sup>57</sup> A more fundamental problem with Reich's analysis is that, for a given level of national skills and infrastructure, he implicitly accepts that the bundle of economic activities allocated to a country by the international market is the best that country can achieve. He neglects the dynamic contribution of existing firms to the development of national competitiveness. In reality, economic integration can lead to polarisation, as high-valued activities gravitate to countries that already have complementary industries and skills. A country thus cannot be assured that the market determination of its position in the international division of labour is the best that it can hope for. A country may find itself stuck with a set of economic activities that matches its current capabilities but which contributes little to their development.<sup>58</sup> Some industries may be more important than others for the whole economy, due to externalities, linkage effects, their high growth rate, or the availability of global rents. According to Tyson and Zysman (1983, p. 24) "The outcomes of trade competition not only reflect but also actively shape the lines of national development. A dominant position in vital, expanding industries may give long-term advantage to the whole economy."<sup>59</sup>

Policy makers in the EC have recognised that, with increasing regional economic integration, the concept of competitiveness perhaps needs to be conceived at the regional level. In the latter 1980s, the EC developed two programs, ESPRIT and Eureka, to promote competitiveness in selected "strategic" sectors by funding trans-

European collaborative R&D. The issue of ownership again caused dissent, as European policy makers disagreed on whether subsidiaries of foreign-owned firms should be allowed to participate. IBM, in particular, argued for inclusion on the basis of its large R&D operations in Europe and the high level of local content of its products sold in Europe. Sharp has claimed that selective involvement of foreign companies could enhance European competitiveness. "We haven't got the indigenous competence in Europe to work entirely in isolation. We ought to 'buy in' the foreign technology instead of trying to reinvent it."<sup>60</sup> Taking a contrary view, Arnold and Guy (1986, p. 106) argued that including IBM "is about as sensible as dosing David with anabolic steroids, and then deciding it is only fair to give some to Goliath, too."

### Supplier strategies

The trends discussed above are likely to have a profound impact on supplier strategies. The trend toward international sourcing exposes suppliers to international competition. If MNEs want access to sources of technology in several countries, low cost sourcing for labour intense products, and economies of scale for products with high fixed costs, suppliers need to organise themselves to offer these benefits directly to multinational customers.

The growing presence of Japanese affiliates in the United States and Europe provides opportunities for local suppliers, but also puts pressure on them to conform to what is perceived to be "best practice". It was noted earlier that Japanese affiliates have a high propensity to import components from their existing suppliers. It is possible that this is a temporary phenomenon; many of these subsidiaries are new and may find it simpler, in the short term at least, to maintain their existing relationships with suppliers. Over time, they might be expected to develop relationships with local suppliers. On the other hand, it is quite possible that cultural and linguistic ties, as well as experience effects with existing suppliers, may outweigh the disadvantages of being distant from these suppliers. Moreover, Japanese suppliers have shown a propensity to follow their major customers to new production locations, at least in the automobile industry in Europe and the United States, placing greater pressure on existing local suppliers.

Although there has been very little research into supplier responses to these pressures, Helper (1989) has reported on supplier trends in the US automobile industry. Her data do indicate a demonstration effect. In addition to exchanging more information with their customers compared to five years ago, more suppliers were participating in product design. As part of the process of developing closer relationships with their suppliers, customers had reduced the number of rival suppliers supplying similar products from an average of 2.3 to 1.9. At the same time, average contract length almost doubled to 2.3 years. Clearly, customers are becoming more dependent on fewer suppliers, and are single sourcing in a substantial proportion of cases. This dependence carries its own risks, particularly in an international context where supply lines are more subject to disruption (McClenahan, 1990). Offsetting this risk, customers are working to improve the performance of suppliers; Helper found that suppliers are being pressured to show improvements in quality, delivery, as well as price. Concern-



ing delivery, customers demanded more frequent shipments of smaller lot sizes, but suppliers were meeting this pressure by using local warehouses rather than local production on a JIT basis. It may be that customers will be satisfied with this arrangement, but it is possible that this is a temporary strategy, and demands for "true" JIT really will constrain international manufacturing in the future.<sup>61</sup>

Lamming (1988 and 1989) has given the term "The Post-Japanese Model" to the two-tier supplier structure he sees emerging in the automobile industry. The first tier comprises a small number of technologically sophisticated suppliers that co-operate closely with their customers. These suppliers have a multi-market presence to serve their multinational customers, enjoy economies of scale in production, and engage in low-cost sourcing themselves where appropriate. These suppliers would have the design and manufacturing capabilities to provide complete modular systems, such as cooling or anti-lock brake systems. The need for technical co-operation and JIT delivery would force these first-tier suppliers to have production and engineering facilities close to their major customers. The second tier of suppliers would comprise many more, but smaller, firms supplying more standardised and less complex components to the first-tier suppliers, as well as directly to the automobile assemblers. Production locations for these suppliers would be less constrained, as technical communication is minimal and delivery can take place from stock. While it is still unclear how far these trends will progress in the automobile industry, let alone other sectors, the opportunities and threats facing existing local suppliers are an important policy concern.

### Employment and labour

The growth of international integration, especially of low-cost sourcing during the 1970s, led some observers to the conclusion that employment and wages could be jeopardised to a serious extent in industrialised countries. In this view, as capital becomes more mobile, it would gravitate to low-wage locations for labour-intensive products creating a "New International Division of Labour".<sup>62</sup> According to Grunwald and Flamm (1985, p. 254), "The significance of the international reorganisation of product flows within a single industry is that the present high wages for unskilled labour in the United States will no longer be insulated from international competition."<sup>63</sup> Not all workers are affected equally by the globalisation of production. Some industries are more international in scope than others. Within industries, some occupations are related to tasks which are inherently more mobile than others. For example, assembly work is more likely to be mobile internationally than clerical work.

The response of neo-classical economists to these trends has been that both industrialised and developing countries stand to gain from such an international division of labour. Consumers in industrialised countries would benefit from lower prices, and these countries would specialise in more sophisticated stages of production which can support higher wages. In reality, smooth adjustment is not assured, and the costs of disruption are born socially rather than privately.<sup>64</sup> In the absence of institutional arrangements at a national level for retraining, low-skilled workers in industrialised countries are likely to remain unemployed or see their wages fall. This is precisely why

some economists see a critical role for government in providing the necessary structural adjustment assistance so as to minimise the social costs of economic and technological change. In this respect, there are suggestions that Far Eastern governments have co-operated with their firms to restructure their value added activities more positively and more successfully than their European or US counterparts.

### Competition policy

As has been widely noted, the process of globalisation exposes national firms to more intense competition from firms located in other countries. As a result, country-based concentration ratios are rendered meaningless, as they seriously understate the degree of competition faced by local firms. Many observers have taken the advent of international competition as a signal that anti-trust policy can be safely neglected. The tendency for international production to be associated with oligopolistic industries should, however, serve as a warning. While the short term effect of economic integration would usually be a greater degree of competition, the result of that competition might well be a shake-out on an international level, leading to the emergence of an international oligopoly.

The potential impact of globalisation on suppliers also raises some concerns for competition policy. If the emerging structure of suppliers to the automobile industry, described by Lamming (1988 and 1989), is a harbinger of future trends, the production of intermediate goods will tend to become concentrated in the hands of large multinational "first tier" suppliers with substantial research and design capabilities and able to serve their customers from multiple production locations. If some locations are particularly advantageous for the production of certain products, some *stages* of production could become highly concentrated in just a few countries, raising the potential for anti-competitive behaviour.

Despite these concerns, governments have shown that they are just as worried about too much competition as about too little, especially when that competition is from abroad. The fear that foreign competition would damage or even eliminate domestic firms has, in the past, led European countries to promote "national champions" such as ICL in the United Kingdom or Bull in France. Although most of these efforts were unsuccessful and have now been abandoned, governments have, in recent years, shown a willingness to ignore concerns about anti-competitive behaviour, and to tolerate and even encourage co-operative efforts among national or regional firms, particularly in R&D intensive industries. While most policy makers accept the point made by Porter (1990) about the importance of domestic rivalry to the strength and dynamism of an industry, they also recognise a need to allow intra-industry co-operation in order to sustain a competitive national or regional industry in the face of international competition.

There is no clear answer to the question of how much competition is necessary to keep domestic firms competitive without overwhelming them. According to Cantwell (1989, 1992), the effect of competition from foreign MNEs on national firms depends on the existing competitive state of those firms. If domestic firms are strong, they are likely

to benefit from exposure to foreign MNEs, because the latter are more likely to build up domestic technical skills and supplier capabilities. Moreover, the foreign presence is likely to stimulate the innovative activities of local firms. JVs between foreign firms and strong local partners can be used to complement each others strategic strengths for mutual advantage. When local firms are very weak, they have little to lose from foreign competition. Cantwell argues that competition from foreign MNEs is most likely to be harmful when domestic firms are moderately strong, but have been insulated from foreign competition in the past. Under these conditions, entry of world class competitors is likely to take market share from domestic firms and pre-empt any attempt to move into the front ranks.

The issue of cross-border mergers and acquisitions blurs the line even further between competition policy and issues of national competitiveness. Decisions are more likely to be influenced by the nationalities of the buyer, the seller, and the remaining competitors, than by considerations of potential anti-competitive behaviour. Clearly, in a world of global competition, competition policy needs to be formulated and co-ordinated at an international level.

#### **National economic autonomy**

If national borders are losing their meaning as economic boundaries and national economies are progressively becoming more integrated, there are important implications for the ability of governments to set economic and industrial policy in an autonomous manner. Macroeconomic tools to stimulate or restrain the economy will be blunted if national borders lose their force as economic boundaries. Julius (1990), for example, contends that the mobility of production within MNEs will tend to synchronise the business cycles of OECD economies. MNEs will have an arbitrage effect in shifting production from countries where domestic demand is high, plants are operating near capacity, and input prices are high, to countries where demand is slack and capacity is available.<sup>65</sup> Julius has also argued that exchange rate policy is relatively ineffective when most trade takes place within the corporate borders of MNEs. Mayer (1986) has noted that fiscal policy is less effective when a higher portion of domestic spending goes to imports. He estimated that the US multiplier was 2 to 2.5 in the early 1960s, but has now declined to somewhere between 1.5 and 2. When exchange rates float and capital is fully mobile, it can be shown that fiscal and monetary policy is totally ineffective for small countries. This makes global policy co-ordination an important issue.

Complex networks of international production influence economic policy at the sectoral as well as at the macro-economic level. To the extent that a country is more dependent on both imports and exports, there is a greater exposure to retaliation if a country tries to impose trade barriers on imports. Moreover, with high levels of foreign manufacturing and investment, unexpected constituencies can emerge to exert political pressure on policy.

Capital mobility and international integration also constrain the ability of national governments to regulate in a wide range of areas, including environmental controls, workplace conditions, and corporate taxation. Capital mobility forces governments to

compete in setting regulations that are attractive to business, even if social costs are incurred. Moreover, multilateral arrangements to ensure free trade and investment can be used to challenge national regulations that are considered discriminatory.<sup>66</sup> As in other areas, there is clearly a need for international co-ordination of regulatory policy.

### **VIII. CONCLUSIONS**

International production and sourcing are part of the international division of labour. As the factors influencing this division change, so is it likely to reflect on the subcontracting behaviour of firms. At one time, the international allocation of economic activity was determined primarily by the distribution of national resources *e.g.* land and untrained labour. However, in the 1980s and 1990s the two most important fashioners of international production are:

- The technological and organisational capabilities of firms; and
- Government (including regional government) sponsored action.

These have affected and are affecting:

- The range and nature of the products produced by firms, and the way in which they are produced;
- The distribution of value added activities between industrial sectors, and the ease with which intermediate and final products can be transported across national boundaries;
- The organisation of international sourcing via subcontracting arrangements between independent firms (*e.g.* by markets, co-operative arrangements or hierarchies).

Clearly the extent, pattern and form of international sourcing (as opposed to production) will be influenced by the competitive (or ownership) advantages of the parties to the exchange; the competitive (or locational) advantages of particular countries as production sites; and the comparative transactional costs of organising the cross-border trade of the intermediate products through external markets, co-operative arrangements or hierarchies (internalisation advantages). Each of these variables will, in turn, be dependent on the resource endowments and technological competencies of the particular countries engaging in trade, the kind of products traded and the characteristics of the trading firms.

Our report has suggested that recent technological developments have had an ambivalent effect on the propensity of firms to engage in international sourcing. While advances in organisational techniques, lower real transport costs, the emergence of new sources of intermediate products and intensive cost-reducing pressures have tended to make for more cross-border subcontracting, there are forces working in the opposite direction too. The reduced number of parts and components going into some

fabricated products, the lower labour and materials content of finished products, advances in computer-aided design production techniques, the growing value placed on flexible manufacturing processes and just in time deliveries, and the need of firms to draw speedily upon several different technologies to produce a particular product, have all tended to encourage more agglomeration or clustering of value activity (Porter, 1990).

Similarly new (or sometimes resurrected) organisational techniques – especially those being implemented by the Japanese – are affecting the mode of international sourcing. It will seem that in the 1980s and early 1990s, some MNEs at least are finding it less necessary to own their suppliers in order to control the quality, price, and delivery of their output. In some sectors – especially autos and electronic components – the degree of domestic and vertical backward integration appears to be increasing. On the other hand, initially at least, much import-substituting FDI seems to lead to more international sourcing. The proportion may then fall as the local content of production increases, but as firms restructure or rationalise their foreign production (e.g. as in the European Community) cross-border sourcing is likely to increase again.

Virtually all government-related influences over the last decade have had a positive effect on the international division of labour. By removing barriers to trade and competition, the liberalisation of markets and regional integration have led to more product and process specialisation, and enhanced trade in both intermediate and final goods and services.<sup>67</sup> Data on intra- and inter-firm trade published by the US Department of Commerce and the Japanese Ministry of Finance would suggest that the former has risen faster than the latter. Inter alia, this reflects the increasing participation of MNEs in the world economy, and the more intensive cross-border specialisation of products and processes practised by them. Part of the growth of inter-firm trade arises from the increased propensity of firms to conclude international strategic alliances, although one suspects that such alliances only marginally affect the sourcing of the participating firms.

More certainly, as MNEs become more pluralistic in their origin, as they produce in more countries, and as they seek to adopt more globally integrated product and production strategies, so their foreign sourcing partners are likely to be drawn into their network of activities. Moreover, technological developments would seem to suggest that, far from becoming more arms length, the sourcing transactions of firms will demand an increasingly “hands on” relationship with their suppliers. Although this is much less evident in US and European than in Japanese industry, one foresees an increasing interaction between suppliers and their industrial customers in the design and innovation not only of the intermediate goods produced by the former but also of the final products produced by the latter. In other words, international subcontracting – especially in the fabricating sectors and in those producing goods for the more discriminating international purchasers – will increasingly take on the characteristics of a co-operative production agreement.

More generally, as production technologies increasingly pass across traditional industrial boundaries, and as the advantages of multinational groups become based on their ability to co-ordinate the activities along and between value added chains, which

spread out from their core competences, one can see traditional diadic relationships and transactions between suppliers and industrial customers being replaced by a network of multidimensional sourcing relationships. In some cases, the interactions will be vertical and/or hierarchical; in other cases they will be horizontal *i.e.* between firms supplying the same customers or markets. In some cases, such interaction will be within a single country; in others, between two or more countries. As the relationships become more multidimensional, so likely too are the organisational forms which govern these relationships.

We think it likely that firms of varying sizes and of most nationalities might be able to benefit from this new global division of labour. The key ingredients of participation are entrepreneurship, an ability and willingness to continually upgrade their assets and to respond to the demands of change, a total dedication to quality and efficiency, and an ability and willingness of firms to work as part of an integrated network (or networks) of value added activities.

As a policy footnote, we would add that in a world in which resources and capabilities are becoming increasingly mobile across national boundaries, it is the countries who provide the kind of technological, educational and attitudinal environment necessary for these kinds of firms that are likely to be the economic winners of the 1990s and beyond. In other words, we foresee the ability of countries to be attractive locations for the production of intermediate goods and services (including those originating from R&D laboratories) becoming an increasingly significant ingredient of national competitiveness.

## NOTES AND REFERENCES

1. Although the focus here is on manufacturing industry, it is possible to consider an analogous situation in service industries. In the insurance industry, for example, forms containing handwritten information are routinely sent from the United States to Caribbean countries for data entry, and electronic files are then returned to the United States by modem.
2. In fact, countries differ in rules for reporting FDI data. The United Kingdom and France use a 20 per cent rule, Germany uses 25 per cent, while the United States and Japan use 10 per cent, the OECD guideline.
3. Subcontracting relationships can also include arrangements in which the principal has some ownership stake in the subcontractor.
4. See, for example, Hirsch (1976) and Buckley and Casson (1988). In this framework, the decisions would be determined by weighing up transportation costs, economies of scale, tariffs, and the cost of operating in a foreign market.
5. Though intellectually indebted to Coase (1937) and Alchian and Demsetz (1972), it is Williamson (1975, 1985) who is generally regarded as having put transaction costs squarely on the agenda as an important determinant of ownership structure.
6. See, for example, Buckley (1983) and Hennart (1982).
7. A parallel argument can be made in the case of dedicated investments by the buyer.
8. See, for example, Anderson and Schmittlein (1984) and Cho (1990).
9. See, for example, Hennart (1988) and Gomes-Casseres (1989).
10. See Contractor and Lorange (1988) and Buckley and Casson (1988).
11. For an examination of the different motives for FDI see especially Chapter 3 of Dunning (1992). Dunning distinguishes between resource seeking, market seeking, efficiency seeking and strategic asset acquiring FDI.
12. For examples of the purchasing management literature, see Burt (1984) and Scheuing (1989).
13. For example, GM operates "maquiladora" plants for carburetors, radios, wiring harnesses, and seat covers.
14. See Group of Thirty (1984) and Schneider and Frey (1985).
15. See Moxon (1973) and Jarrett (1979).
16. See Frobel, Heinrichs, and Kreye (1980), and Grunwald and Flamm (1985).
17. According to ILO (1988), employment in EPZs grew from around 50,000 in 1970 to over 1.3 million in 1986. In 1970, there were ten LDCs with at least one EPZ, but this grew to 46 in 1986. Another 12 countries had EPZs planned or under construction in 1986.
18. This even includes some writers on the left of the political spectrum, such as Gordon (1988) and Sayer (1986).
19. See Flaherty (1989), Markides and Berg (1988) concerning the arguments over wage differentials and capital intensity. The impact of technology on skill levels is the subject of some debate. See Bright (1958), Braverman (1974), Zuboff (1988), and a collection of articles on the subject edited by Wood (1989).
20. A measure of labour intensity that is independent of the level of disaggregation would be labour cost as a proportion of value added.
21. ILO (1989) and Sharpston (1975).
22. Tyson and Zysman (1983) and Porter (1990) make this argument.
23. Levitt (1983) advocates this view.
24. This drive for economies of scale was reflected in the "world car" concept developed by Ford in the latter 1970s. See Jones and Womack (1985).
25. For example, see Ohmae (1985) and Bartlett and Ghoshal (1989).
26. The vulnerability caused by extreme global rationalization was well illustrated by a strike at British Ford plants in 1969, which forced the layoff of 1500 workers in Ford Belgium because of a lack of components. See Carlson (1974).
27. See, for example, Helleiner (1981), Tiano (1987), and ILO (1981).
28. See also Flaherty (1986) on the advantages of co-ordinating global production, and Lessard (1986) on financial arbitrage.
29. Hamel and Prahalad (1985) and Hout, Porter, and Rudden (1982) discuss this approach to international strategy.
30. According to Group of Thirty (1984), avoidance of tariffs was the third most important reason for engaging in FDI.
31. This argument has been made by many writers, including Antonelli (1984) and Reich (1991a).
32. Zack and McKenney (1988) discuss four attributes of information that make electronic communication more difficult: uncertainty, ambiguity, complexity, and equivocality.
33. I prefer the term "lean production", which was used by Womack, Jones, and Roos (1990), to JIT or Japanese-style production because JIT is only one aspect of the system, and it is no longer confined to Japan. See also Hall (1983) and Hayes and Wheelwright (1984).
34. See Helper (1989) and Levy (1992).
35. See Wood (1989) for a collection of articles on this debate.
36. These tariff items allow for re-importation into the United States of products that originated in the United States and were sent offshore for processing; duty is payable only on the value added offshore. The data have two major drawbacks: they do not include the value of imports of products sourced abroad that have very little US content, and they do not include imports that do not need these special provisions because they are not subject to significant tariffs in any event.
37. Approximately half of these imports were intra-firm, so should be considered international production rather than sourcing, according to the definitions used here.
38. For a detailed discussion, see Dunning (1981), (1983), and (1988).
39. This is the "multi-domestic" model described by Porter (1986).

40. It should be remembered, however, that trade data include trade in both raw materials and in final goods, so they do not exactly match the definitions of international production and sourcing used here.
41. US intra-firm trade includes trade conducted between US parents and their subsidiaries abroad, and between non-US owned MNEs and their US subsidiaries. There is much less data on intra-firm trade for other countries.
42. These statistics are for sales by MNE affiliates, and so are not directly comparable to the figures given above on intra-firm trade in total trade.
43. Industries with high levels of intra-firm trade include motor vehicles, household appliances, radio and television, office machines, instruments, and drugs. See also Cho (1988).
44. One exception is subcontracting, which is more usually associated with low-cost sourcing from LDCs or NICs, or with a need to increase flexibility in the face of volatile demand. There is little systematic data on subcontracting, primarily because of its vague definition, and because it includes both intra- and inter-firm trade. See Sharpston (1975), Holmes (1986), and ILO (1989).
45. Dunning (1983) provides this historical data.
46. Data are from UNCTC (1991, p. 11)
47. See Kojima (1982) for a discussion of the differences between this type of FDI from Japan and FDI from the US or Europe.
48. Julius (1990) presents data showing that the international integration of the Japanese economy declined between 1977 and 1986, when measured as the proportion of sales, employment, and assets accounted for by foreign-owned firms. The reasons she offers are the rapid growth of the Japanese economy compared to inward FDI, and the fact that growth of inward investment started from a very small base.
49. See Bergsten (1988) and Kennen (1988).
50. See Bergsten (1986), pp. 154-156.
51. Julius (1990, p. 81) proposes a composite "ownership-based" measure of a country's competitiveness. This measure represents total exports, including foreign sales of domestic MNEs, less total imports, where imports include domestic sales of subsidiaries of foreign MNEs. Using this measure, the US net foreign trade position in 1986 turns from a deficit of \$144 billion on the traditional measure to a surplus of \$57 billion. Japan's surplus is transformed from \$32 billion on the conventional measure to \$42 billion.
52. These complementarities relate back to some of the strategic reasons why firms engage in multinational operations in the first place: larger market share, access to low-cost labour, technology etc.
53. Oliver and Wilkinson (1988) showed that over 90% of a sample of British-owned manufacturing firms were attempting to introduce various aspects of Japanese-style management techniques. Brech and Sharp (1984) found that the establishment of Japanese subsidiaries in consumer electronics, and in colour TV in particular, has stimulated UK industry to improve production methods.
54. For a general discussion, see Caves (1982). On the effect of inward FDI on the UK, see Young, Hood, and Hamill (1988), Oliver and Wilkinson (1988), and Brech and Sharp (1984).
55. Cantwell (1989) found that firms which have been multinational for a longer time tend to move higher-value added activities to subsidiaries, including R&D. The high propensity to import of Japanese affiliates has been falling over time.
56. Markides and Berg (1988) make this argument. Lawrence (1984) makes the standard economic counter-argument.
57. Although Cantwell (1989) and Graham and Krugman (1989) have found that foreign affiliates in the United States perform a similar amount of R&D compared to domestic firms, Ronstadt (1977) found that 75 per cent of the foreign R&D units of US MNEs were primarily transferring parent technology to local markets; core research and development work was kept in home country.
58. This is similar to the classic "infant industry" argument. See Amsden (1989) for an intensive study of the role of the Korean government in steering that country's development. In the context of industrialised countries, the argument is related to concerns over becoming a "branch-plant economy".
59. The notion that some sectors are more important than others has been developed formally in the strategic trade literature. See Krugman (1989) for a comprehensive review. It is, of course, challenged by conventional economists who assert that even if some sectors are more important than others, the government is unlikely to do a good job of picking the right ones and promoting them in an effective way. For a summary of this critique, see Grossman and Hart (1986).
60. Margaret Sharp quoted in the *Wall Street Journal* (1985), Nov. 5, page 34.
61. McClenahen (1990) gives examples from other US industries of JIT delivery from local warehouses rather than true JIT production.
62. See Frobel, Heinrichs, and Kreye (1980) for a theoretical overview and case studies of several industries.
63. Holmes (1986), amongst others, has argued that firms source offshore not only to reduce wages, but also to circumvent and weaken unions that are only organised on a national level
64. See Hood and Young (1982), and Bluestone and Harrison (1982).
65. It should be noted, however, that FDI could exacerbate the differences between countries if FDI is primarily motivated by the search for foreign markets, as was found by the Group of Thirty (1984). Companies would invest abroad when domestic demand was low and the foreign market was attractive.
66. For example, a US ban on Mexican tuna, ostensibly to protect dolphins, has been challenged by Mexico as a violation of GATT principles (reported in *Boston Globe*, 5.21.91).
67. According to the UNCTC (1991) the average growth of world trade in the 1980s considerably outpaced that of the world output, while the growth of FDI was greater than that of both trade and output

## BIBLIOGRAPHY

- Agmon, T. and D. Lessard (1977), "Investor Recognition of Corporate International Diversification", *Journal of Finance*, Vol. 32, (September): pp. 1049-1055.
- Alchian, A. and H. Demsetz (1972). "Production, Information Costs, and Economic Organization", *American Economic Review*, 62 (December), pp. 777-795.
- Amsden, A.H. (1989), *Asia's Next Giant: South Korea and Late Industrialization*, Oxford University Press, Oxford.
- Anderson, E. and D. Schmittlein (1984), "Integration of the Sales Force: an Empirical Examination", *Rand Journal of Economics*, Vol. 15, No. 3 (Autumn).
- Antonelli, C. (1984), "Multinational Firms, International Trade and International Telecommunications", *Information Economics and Policy*, 1, 4, pp. 333-343.
- Arnold E. and K. Guy (1986), *Parallel Convergence*, Quorum Books, Westport.
- Baden-Fuller, C. W. F. and Stopford, J. M. (1991), "Globalisation Frustrated: The Case of White Goods", mimeo, Bath and London.
- Bale, H.E. (1986), "Trade Policy Aspects of International Direct Investment Policies". in R.E. Baldwin and J.D. Richardson (eds.), *International Trade and Finance*, Third Edition, Little, Brown and Co., Boston.
- Bartlett, C.A. and S. Ghoshal (1989), *Managing Across Borders: The Transnational Solution*, Harvard Business School Press, Boston.
- Bergsten, C.F. (1986), *America in the World Economy: A Strategy for the 1990s*, Institute for International Affairs, Washington DC.
- Bergsten, C.F. (1988), "The Case for Target Zones", in Bergsten *et al.* (eds.), *The International Monetary System: The Next Twenty-Five Years*, IMF, Washington DC.
- Bluestone, B. and B. Harrison (1982), *The Deindustrialization of America*, Basic Books, New York.
- Braverman, H. (1974), *Labor and Monopoly Capital*, Monthly Review Press, New York.
- Brech, M. and M. Sharp (1984), *Inward Investment: Policy Options for the United Kingdom*, Routledge/Royal Institute of International Affairs, London.
- Bright, J. (1958), "Automation and Skill", *Harvard Business Review*, July/August.
- Buckley, P. (1983), "New Theories of International Business", in M. Casson (ed.), *The Growth of International Business*, George Allen and Unwin, London.
- Buckley, P.J. (1988), "The Limits of Explanation: Testing the Internalization Theory of the Multinational Enterprise", *Journal of International Business Studies*, Summer.

- Buckley, P F and M. Casson (1988), "A Theory of Cooperation in International Business", in F.J. Contractor and P. Lorange (eds.), *Cooperative Strategies in International Business*, Lexington Books, Lexington, Mass.
- Burt, D.N. (1984), *Proactive Procurement*, Prentice-Hall, Englewood Cliffs, NJ.
- Cantwell, J. (1989), *Technological Innovation and Multinational Corporations*, Basil Blackwell, Oxford.
- Cantwell, J. (1992), "The Effect of Integration on the Structure of Multinational Corporation Activity in the EC", in Klein, M. W. and Welfens, P. J. (eds.), *Multinationals in the New Europe and Global Trade*, Springer-Verlag, Berlin and New York.
- Carlson, J. (1974), "Wage Determination and Collective Bargaining", in J. Dunning (ed.), *Economic Analysis and the Multinational Enterprise*, George Allen and Unwin, London.
- Casson, M. *et al.* (1986), *Multinationals and World Trade: Vertical Integration and the Division of Labor in World Industries*, George Allen and Unwin, London.
- Caves, R.E. (1982), *Multinational Enterprise and Economic Analysis*, Cambridge University Press, Cambridge.
- Cho, K.R. (1988), "Determinants of Intra-firm Trade: A Search for a Theoretical Framework", *The International Trade Journal*, Winter, pp. 167-185.
- Cho, K.R. (1990), "The Role of Product-Specific Factors in Intra-Firm Trade of U.S. Manufacturing Multinational Corporations", *Journal of International Business Studies*, Second Quarter, pp. 319-330.
- Coase, R.H. (1937), "The Nature of the Firm", *Economica*, 4 (November), pp. 386-405.
- Cohen, S.S. and Zysman, J. (1987), "Why Manufacturing Matters: The Myth of the Post-Industrial Economy", *California Management Review*, Vol. 24, No. 3, Spring, pp. 9-26.
- Contractor, F.J. and Lorange, P. (1988), "Why Should Firms Cooperate? The Strategy and Economics Basis for Cooperative Ventures", in F.J. Contractor and P. Lorange (eds.), *Cooperative Strategies in International Business*, Lexington Books, Lexington, Mass.
- Curtin F.T. (1987), "Global Sourcing: Is it Right For Your Company?", *Management Review*, Vol. 76, August, pp. 47-49.
- Doz, Y. and Prahalad, C. (1987), *The Multinational Mission*, Free Press, New York.
- Dunning, J. (1981), *International Production and the Multinational Enterprise*, George Allen and Unwin, London.
- Dunning, J.H. (1983), "Changes in the Level and Structure of International Production: The Last One Hundred Years", in M. Casson (ed.), *The Growth of International Production*, George Allen and Unwin, London.
- Dunning, J.H. (1986), *Japanese Participation in British Industry*, Croom Helm, London.
- Dunning, J.H. (1988), *Explaining International Production*, Unwin Hyman, London.
- Dunning, J.H. (1992), *Multinational Enterprises and The Global Economy*, Addison Wesley, Reading, Mass.
- Encarnation, D. (1992), *Rivals Beyond Trade: America versus Japan in Global Competition*, Cornell, Ithaca.
- Flaherty, T. (1986), "Coordinating International Manufacturing and Technology," in Porter, M. (ed.), *Competition in Global Industries*, Harvard Business School Press, Boston, Mass.

- Flaherty, T. (1989), "International Sourcing: Beyond Catalog Shopping and Franchising", in K. Ferdows (ed.), *Managing International Manufacturing*, pp. 95-124, Elsevier Science, North Holland.
- Frobel, F., J. Heinrichs and O. Kreye (1980), *The New International Division of Labor*, Cambridge University Press, Cambridge.
- Germidis, D. (1980) (ed.), *International Subcontracting: a New Form of Investment*, OECD, Paris.
- Gomes-Casseres, B. (1988), "Joint-Venture Cycles: The Evolution of Ownership Strategies of U.S. MNEs, 1945-75", in F.J. Contractor and P. Lorange (eds.), *Cooperative Strategies in International Business*, Lexington Books, Lexington, Mass.
- Gomes-Casseres, B., (1989) "Ownership Structures of Foreign Subsidiaries", *Journal of Economic Behavior and Organization*, 11, pp. 1-25.
- Gomes-Casseres, B. (1993), "International Trade, Competition, and Alliances in the Computer Industry", in D. Yoffie (ed.), *The Dynamics of Global Competition*, HBS Press, Boston.
- Gordon, D. (1988), "The Global Economy: New Edifice or Crumbling Foundations?", *New Left Review*, April/May, pp. 24-64.
- Graham, E.M. and P.R. Krugman (1989), *Foreign Direct Investment in the United States*, Institute for International Economics, Washington DC.
- Grossman, S. and O. Hart (1986), "The Costs and Benefits of Ownership: a Theory of Vertical and Lateral Integration", *Journal of Political Economy*, 94, pp. 691-719.
- Group of Thirty (1984), *Foreign Direct Investment 1973-1987: A Survey of International Companies*, Group of Thirty, New York.
- Grunwald, J. and K. Flamm (1985), *The Global Factory: Foreign Assembly in International Trade*, Brookings, Washington DC.
- Hall, R.W. (1983), *Zero Inventories*, Dow Jones-Irwin, Homewood, Ill.
- Hamel G. and C.K. Prahalad (1985), "Do You Really Have a Global Strategy?", *Harvard Business Review*, July-August, pp. 139-148.
- Harrigan, K.R. (1988), "Strategic Alliances and Partner Asymmetries", in Contractor, F.J. and P. Lorange (eds.), *Cooperative Strategies in International Business*, Lexington Books, Lexington, Mass.
- Hayes, R. and S. Wheelwright (1984), *Restoring our Competitive Edge*, Wiley, New York.
- Helleiner, G.K. (1981), *Intra-firm Trade and the Developing Countries*, Macmillan, London.
- Helper, S.R. (1987), "Supplier Relations and Technical Change: Theory and Application to the US Automobile Industry", Ph.D. Dissertation, Harvard University, Ann Arbor, Michigan, U.M.I.
- Helper, S.R. (1989), "Automotive Supplier Relations: Results of the 1989 Survey", IMVP International Policy Forum, MIT.
- Hennart, J.F. (1982), *A Theory of Multinational Enterprise*, University of Michigan Press, Ann Arbor.
- Hennart, J.F. (1988), "A Transaction Costs Theory of Equity Joint Ventures", *Strategic Management Journal*, Vol. 9, No. 4, pp. 361-374.
- Hergert, M. and D. Morris (1988), "Trends in International Collaborative Agreements", in Contractor, F.J. and P. Lorange (eds.), *Cooperative Strategies in International Business*, Lexington Books, Lexington, Mass.
- Hipple, F.S. (1990), "Multinational Companies and International Trade: The Impact of Intrafirm Shipments on U.S. Foreign Trade 1977-1982", *Journal of International Business Studies*, Third Quarter, pp. 495-504.
- Hirsch, S. (1976), "An International Trade and Investment Theory of the Firm", *Oxford Economic Papers*, Vol. 28, July, pp. 258-269.
- Hoffman, K. and R. Kaplinsky (1988), *Driving Force*, Westview Press, Boulder, Colorado.
- Holmes, J. (1986), "The Organization and Locational Structure of Production Subcontracting", in A. Scott and M. Storper (eds.), *Production, Work, Territory*, George Allen and Unwin, Boston.
- Hood, N. and S. Young (1982), *Multinationals in Retreat: The Scottish Experience*, Edinburgh University Press, Edinburgh.
- Hout, T., M.E. Porter, and E. Rudden (1982), "How Global Companies Win Out", *Harvard Business Review*, September-October, pp. 99-106.
- Howes, C. (1991), "The Benefits of Youth: The Role of Japanese Fringe Benefit Policies in the Restructuring of the US Motor Vehicle industry", *International Contributions to Labour Studies*, October.
- Hymer, S.H. (1960), "International Operations of National Firms - A Study of Direct Foreign Investment", Ph.D. Dissertation, published in 1976 by MIT Press.
- ILO (1981), *Employment Effects of Multinational Enterprises in Developing Countries*, ILO, Geneva.
- ILO (1988), *Economic and Social Effects of Multinational Enterprises in Export Processing Zones*, ILO, Geneva.
- ILO (1989), "Multinational Enterprises and Subcontracting in the Third World", ILO MNE Programme Working Paper No. 58, Geneva.
- IMF (1977), *Balance of Payments Manual*, Fourth Edition, IMF, Washington DC.
- Jarrett, J.P. (1979), "Offshore Production and the Internalization of International Trade within the Multinational Organization", Ph.D. Dissertation, Economics, Harvard University.
- Jones, D.T. and J.P. Womack, (1985), "Developing Countries and the Future of the Automobile Industry", *World Development*, Vol. 13, No. 3, March, pp. 393-407.
- Julius, D. (1990), *Global Companies and Public Policy: The Growing Challenge of Foreign Direct Investment*, Pinter/Royal Institute of International Affairs, Chatham House Papers, London.
- Kennen, P.B. (1988), *Managing Exchange Rates*, Routledge/Royal Institute of International Affairs, London.
- Kogut, B. (1985), "Designing Global Strategies: Profiting from Operational Flexibility", *Sloan Management Review*, Fall, pp. 27-38.
- Kojima, K. (1982), "Macroeconomic versus International Business Approach to Direct Foreign Investment", *Hitotsubashi Journal of Economics*, Vol. 23, No. 1, pp. 1-19. Reprinted in P.J. Buckley (1990) (ed.), *International Investment*, Edward Elgar, Aldershot.
- Krugman, P.R. (1989), "Industrial Organization and International Trade", in Schmalensee and Willig (eds.), *Handbook of Industrial Organization*, Vol. II, Elsevier Science, North Holland.
- Laing, S. and R. Rahn (1983), "Foreign Outsourcing by US Auto Manufacturers", Economist Intelligence Unit, Special Report No. 151, London.
- Lall, S. (1980), *The Multinational Corporation: Nine Essays*, Macmillan, London.

Lamming, R. (1988), "The International Automotive Components Industry: The Next Best-Practice for Suppliers", IMVP International Policy Forum, MIT.

Lamming, R. (1989), "The Post-Japanese Model for International Automotive Components Supply", IMVP International Policy Forum, MIT.

Lawrence, R. (1984), *Can America Compete?*, Brookings, Washington DC.

Lecraw, D.J. (1984), "Pricing Strategies of Transnational Corporations", *Asia Pacific Journal of Management*, Vol. 1, pp. 112-119.

Lecraw, D.J. (1985), "Evidence on Transfer Pricing by TNCs", in A.M. Rugman (ed.), *Transfer Pricing and the Multinational Enterprise*, Croom Helm, Beckenham.

Lessard, D.R. (1986), "Finance and Global Competition: Exploiting Financial Scope and Coping with Volatile Exchange Rates", in M. Porter (ed.), *Competition in Global Industries*, HBS Press, Boston.

Levitt, T. (1983), "The Globalization of Markets", *Harvard Business Review*, May-June.

Levy, D.L. (1992), "The Costs of Coordinating International Production", Harvard Business School Doctoral Thesis.

Lipsey, R.E. (1989), "The Internationalization of Production", NBER Working Paper# 2923, NBER, Cambridge, Mass.

Little, J.S. (1987), "Intra-firm Trade: An Update", *New England Economic Review*, Federal Reserve Bank of Boston, May/June, pp. 46-51.

Markides, C.C. and N. Berg (1988), "Manufacturing Offshore is Bad Business", *Harvard Business Review*, September-October, pp. 113-120.

Mayer, J.L. (1986), "Global Interdependence and Domestic Economic Policy", in *Implications of Internationalization of the U.S. Economy*, Dept. of Commerce, Washington DC.

McClenahan, J.S. (1990), "Sources of Frustration", *Industry Week*, 9.1.90, pp. 74-81.

Moxon, R.W. (1973), "Offshore Production in the Less Developed Countries by American Electronics Companies", Doctoral thesis, Harvard Business School.

Ohmae, K. (1985), *Triad Power*, Free Press, New York.

Oliver, N. and B. Wilkinson (1988), *The Japanization of British Industry*, Basil Blackwell, Oxford.

Piore, M.J. and C.F. Sabel (1984), *The Second Industrial Divide*, Basic Books, New York.

Porter, M.E. (1986) (ed.), *Competition in Global Industries*, HBS Press, Boston, Mass.

Porter, M.E. (1990), *The Competitive Advantage of Nations*, Free Press, New York.

Reich, R. (1991a), *The Work of Nations: Preparing Ourselves for 21st Century Capitalism*, Alfred A. Knopf, New York.

Reich, R. (1991b), "Who is Them?", *Harvard Business Review*, March-April, pp. 77-88.

Ronstadt, R. (1977), *R&D Abroad by U.S. Multinationals*, Praeger, New York.

Root, F.R. (1988), "Some Taxonomies of International Cooperative Arrangements", in F.J. Contractor and P. Lorange (eds.), *Cooperative Strategies in International Business*, Lexington Books, Lexington, Mass.

Sayer, A. (1986), "Industrial Location on a World Scale: The Case of the Semiconductor Industry", in A. Scott and M. Storper (eds.), *Production, Work, Territory*, George Allen and Unwin, Boston.

Scheuing, E.E. (1989), *Purchasing Management*, Prentice Hall, Englewood Cliffs, NJ.

Schneider, F. and B.S. Frey (1985), "Economic and Political Determinants of Foreign Direct Investment", *World Development*, Vol. 13, No. 2, pp. 167-175.

Shaiken, H. and S. Herzenberg (1987), "Automation and Global Production", Center for US-Mexican Studies, University of California, San Diego, Monograph No. 26.

Sharpston, M. (1975), "International Sub-contracting", *Oxford Economic Papers*, Vol. 27, No. 1, March, pp. 94-145.

Tiano, S. (1987), "Maquiladoras in Mexico", in V. Ruiz and S. Tiano (eds.), *Women on the U.S.-Mexico Border*, George Allen and Unwin, Boston.

Tugendhat, C. (1971), *The Multinationals*, Eyre & Spottiswoode, London.

Tyson, L. and J. Zysman (1983), "American Industry in International Competition", in J. Zysman and L. Tyson (eds.), *American Industry in International Competition: Government Policies and Corporate Strategies*, Cornell University Press, Ithaca.

UNCTAD (1988), *Handbook of International Trade and Development Statistics*, United Nations, New York.

UNCTC (1991), *World Investment Report*, United Nations, New York.

US Department of Commerce (1991), *1989 Benchmark Survey on US Direct Investment Abroad*, US Department of Commerce, Washington DC.

Wells, L.T. (1983), *Third World Multinationals*, MIT Press, Cambridge, Mass.

Wells, L.T. (1993), "Companies, Governments, and Trade in Minerals", in D. Yoffie (ed.), *The Dynamics of Global Competition*, HBS Press, Boston.

Williamson, O.E. (1975), *Markets and Hierarchies, Analysis and Anti-Trust Implications*, The Free Press, New York.

Williamson, O.E. (1985), *The Economic Institutions of Capitalism*, The Free Press, New York.

Womack, J.P., D.T. Jones, and D. Roos (1990), *The Machine that Changed the World*, Rawson-Macmillan, New York.

Wood, S. (1989), *The Transformation of Work?*, Unwin Hyman, London.

Wyckoff, A. (1993), "The Extension of Networks of Production across Borders", *STI Review*, No. 13, Paris, p. 61.

Young, S., N. Hood, and J. Hamill (1988), *Foreign Multinationals and the British Economy*, Croom Helm, New York.

Zack, M. and McKenney, J.L. (1988), "Characteristics of the Organizational Information Domain: An Information Processing Perspective", Harvard Business School Working Paper, No. 89.027.

Zuboff, S. (1988), *In the Age of the Smart Machine*, Basic Books, New York.