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Changes in Global Business Organization

The organization of global business is rapidly changing in ways that affect the competitive opportunities open to developing countries. A principal feature of business organization is the steady expansion of multinational corporations and their related trade and investment activities. Multinational companies, including many based in other developing countries, are altering the competitive landscape by providing for developing countries a new source of entry into markets. Moreover, by taking advantage of falling communication and transport costs, multinationals have learned to manage different stages of production in multiple, distant locations, thereby creating opportunities for developing countries to produce during those stages of production—often labor-intensive stages—that correspond to their comparative advantage. But tapping into this potential source of competition is not automatic, and not all countries have benefited. Moreover, some observers have openly worried that the recent surge in global mergers among leading multinationals might be dampening competition and creating obstacles for developing countries.

This chapter reviews four recent trends in the organization of global business that affect developing countries' ability to harness foreign investment for greater competition: changes in global business concentration, the rise in service sector foreign direct investment (FDI), the growth of global production

networks, and the growing importance of strong investment climates for the allocation of foreign investment.

Developing countries have benefited from the boom in global trade and investment—

Cross-border trade and direct investment have expanded rapidly over the past three decades. Global exports of goods and services increased from 14 percent of output in the early 1970s to 23 percent by the late 1990s, while global FDI flows have more than doubled relative to gross domestic product (GDP). The surge in FDI flows, with a large boost from cross-border mergers and acquisitions (M&A), accelerated in the late 1990s. FDI rose from \$331 billion in 1995 to \$1.3 trillion in 2000 before falling to an estimated \$725 billion in 2001. Despite the sharp increase in M&A, the share of global economic activity accounted for by the top 50 companies does not appear to have risen significantly during the 1990s. The top 50 companies accounted for 0.8 percent of world GDP, and their aggregate profits amounted to 3.3 percent of global savings in 2000.

—the rise in service sector FDI—

A second change in global business organization creates an opportunity for developing countries to expand productivity-enhancing competition. Foreign investment in services—financial, wholesaling and retailing, real estate, and business services—is accelerating.

Today, services account for more than half of the FDI stock in most major industrial countries. The rise in service sector FDI helps developing countries to introduce new technology, to boost competition in services, and to increase the availability and quality of services. Because many services are essential inputs to production, with multiple linkages to virtually every dynamic part of the economy, increasing their efficiency directly boosts economy-wide productivity. However, many countries still maintain impediments to this new source of competition and technology and, as a result, are at risk of being left behind.

—and the growth of cross-border production networks—

Technological progress in transport, communications, and data processing—coupled with policy reforms—has fueled the growth of cross-border production networks, in which multinational corporations break down the production of final goods into stages that vary in the intensity of capital, skilled labor, unskilled labor, and other requirements, and multinationals produce each stage where it can be done at lower cost. In part, production through networks is accomplished by greater outsourcing of production, as multinationals become less vertically integrated. In part, networks are established through foreign subsidiaries.

Developing countries' increased participation in production networks is seen in the rapid growth in their exports of parts and components, as well as in their increasing importance in intra-firm trade by multinationals. Participation in networks has generated substantial gains for developing countries through improving access to technology, thus increasing the demand and supply of skilled labor, as well as providing the opportunity for moving up the value chain to produce more sophisticated products. However, production for networks is highly concentrated in countries with strong policy regimes, skilled workforces, and adequate infrastructure.

—but a strong investment climate is critical

The policy and institutional framework is an important determinant of whether countries have participated in the rise in FDI. During the 1990s, countries with strong investment climates captured an increasing share of rapidly expanding global FDI flows. The removal of restrictions on private investment in services (particularly infrastructure services) has increased private investment and has improved the quality of services available to firms in developing countries. The lowering of trade barriers and reduction in restrictions on FDI has facilitated developing countries' participation in cross-border production networks. External factors also play a role in determining access to FDI. For example, the recent deterioration of the global business environment has led to a reduction in investment in high-risk projects, and foreign investment in infrastructure has dropped all over the world. Still, those countries with macroeconomic stability, sound governance, and healthy institutions will attract an increasing share of available funds.

The surge in trade and FDI

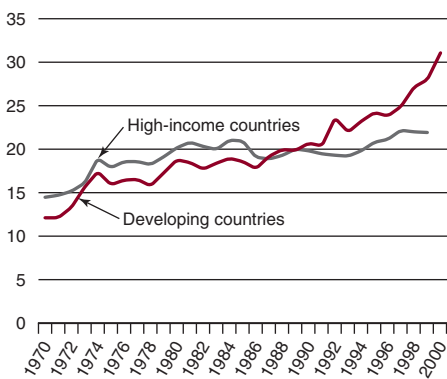
Trade and FDI have grown rapidly since the 1970s—

Cross-border trade and direct investment have expanded rapidly over the past few decades. Global exports of goods and services increased by 5.5 percent per year in real terms from 1978 to 2001, rising from just over 14 percent of output in the 1970s to almost 25 percent of output in 2001. High-income countries account for the bulk of world trade and hence the largest increment to trade flows. Developing countries' exports rose by just under 6 percent per year in real terms from 1978 to 2001, and their aggregate exports-to-GDP ratio increased by more than half over this period (figure 2.1).

Global FDI flows have also expanded rapidly. The surge in FDI flows accelerated in the late 1990s, rising from \$331 billion in

Figure 2.1 Exports-to-GDP ratios have increased since the 1970s

(percent)



Source: World Bank data.

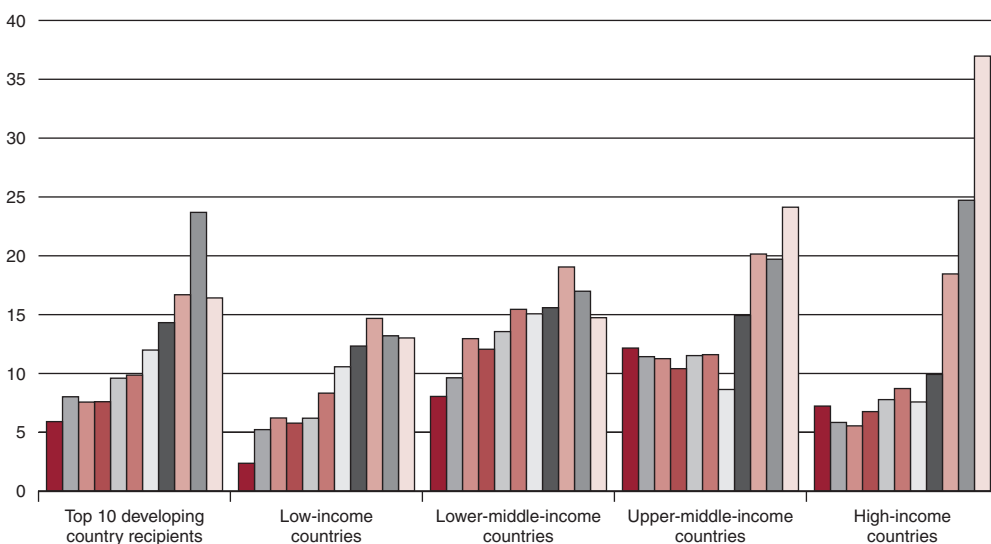
1995 to \$1.3 trillion in 2000 before falling to an estimated \$725 billion in 2001 (UNCTAD 2002a). All income groups experienced a

sharp rise in the average ratio of FDI to investment during the 1990s (figure 2.2), with the largest increase in the industrial countries during the last years of the decade. Low-income countries have seen a five-fold rise in FDI relative to investment, to almost the same ratio as in lower-middle-income countries. FDI flows to developing countries equal about \$160 billion, while domestic investment in developing countries equals about \$1.5 trillion.

The rise in trade and FDI has played an important role in boosting the productivity of firms in developing countries. In part, developing countries may become more productive because trade improves the allocation of resources and because multinational subsidiaries may be more productive than domestic firms. In addition, domestic firms may increase their productivity through participation in trade and contacts with local subsidiaries of foreign firms, although the extent and channels are a matter of considerable debate in the economic

Figure 2.2 All regions have benefited from rising FDI flows

(FDI-to-investment ratios, 1990–2000, in percent)



Note: Each set of bars represents the period 1990–2000; each bar represents one year during that period. The data on FDI include both greenfield and M&A transactions, whereas national income account data on investment represent only new investments. “Top 10 developing country recipients” refers to the 10 developing countries that received the largest inflows of FDI.

Source: World Bank data.

literature. Much empirical work has focused on the potential for technological spillovers through importing, exporting, and FDI (see chapter 3 for a full discussion). On balance, the evidence for technological spillovers through imports is strong, while the evidence that exporting promotes technology diffusion is less robust. Evidence for the existence of technology spillovers from FDI is mixed. Many industry-level studies (for example, Blomström 1986) have documented a positive correlation between FDI inflows and productivity, although the causal direction is unclear. Some firm-level studies have failed to find evidence of technological spillovers in developing countries. The effect of FDI will depend, in part, on the form that FDI takes. FDI directed to heavily protected industries or attracted by very costly incentives may have a low, or even negative, effect on growth and productivity. But FDI used to integrate domestic subsidiaries in production networks could have substantial spillover effects (Moran 2001).

—but not all countries have participated equally in the rise in FDI

Among industrial countries, the top five recipients of net FDI flows accounted for 74 percent of total FDI. However, a few of the smaller countries (for example, Ireland and Denmark) have the highest ratio of FDI to GDP. The same pattern can be seen in developing countries, where the top 12 recipients captured 80 percent of total FDI flows, but some smaller countries had FDI-to-GDP ratios that were several times the average ratio. Figure 2.3 compares each developing country's share of total FDI with its ratio of FDI to GDP (the countries are ordered by the share of total FDI). Almost half of the 12 largest recipients of FDI (at the far right of the distribution in figure 2.3) have FDI-to-GDP ratios that are lower than the average. According to a more comprehensive measure developed by the United Nations Conference on Trade and Development (UNCTAD), FDI to developing countries is mildly concentrated: only 30 out of

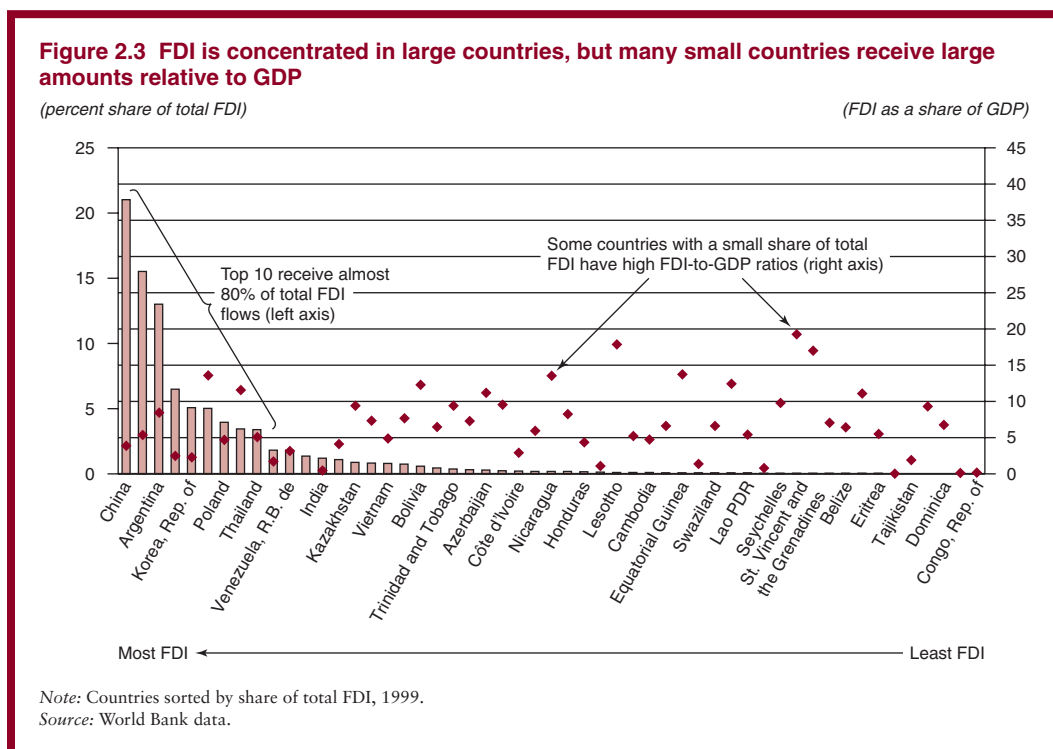
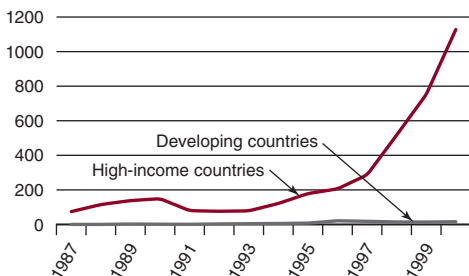


Figure 2.4 The service sector dominated the 1990s mergers and acquisitions boom

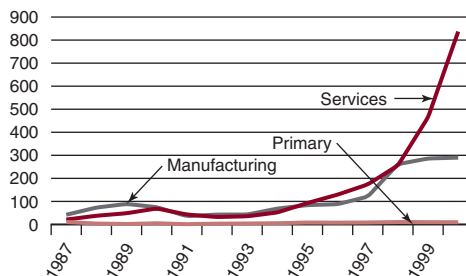
Mergers and acquisitions boomed in the 1990s

(billions of dollars)



Services dominated the mergers and acquisitions boom from 1987 to 2000

(billions of dollars)



Source: UNCTAD (2001).

102 developing countries had shares of FDI that equaled or exceeded their average shares of world GDP, employment, and exports (see box 2.2 in World Bank 2002b). Obviously, many factors other than market size, particularly the policy and institutional framework, are important in determining a country’s attractiveness to FDI.¹

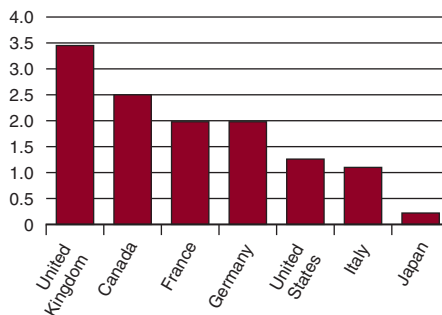
The takeoff in M&A transactions among industrial countries—driven in part by extraordinarily rapid increases in the stock prices of some major corporations and in part by expectations (during the boom) that continuing productivity increases would fuel continued rises in stock prices—was a driving force behind greater FDI (see figure 2.4). Global M&A rose more than five-fold between 1995 and 2000 (after increasing by only 24 percent in the first half of the 1990s) to a peak of \$1.1 trillion in 2000, before dropping by some 45 percent in 2001 with the decline in stock markets and the global economic slowdown.² This experience was not unprecedented: through the 1980s and 1990s, the global economy experienced major waves of corporate mergers.³ The bulk of the cross-border M&A transactions was in service sectors (more than half in finance, transport, storage, and communications alone), which accelerated rapidly beginning in 1998 (see also the discussion of FDI in service sectors, page 10).

Global concentration of ownership does not appear to be increasing

Contrary to popular perceptions, the boom in cross-border M&A does not appear to have had a major effect on the global concentration of ownership. Cross-border M&A transactions in the late 1990s represented only a small fraction of industrial countries’ stock market capitalization. The dollar value of cross-border M&A transactions equaled less than 3 percent of stock markets in most of the top seven industrial countries (figure 2.5).⁴

Figure 2.5 Cross-border mergers and acquisitions are small compared with stock market capitalization

(average value 1997–99, in percent)



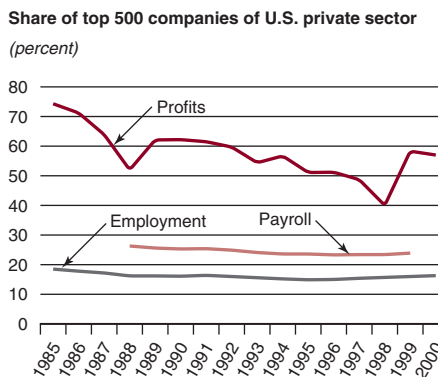
Source: Evenett (2002).

Of course, the M&A boom coincided with the sharp rise in stock market valuations in the late 1990s, particularly in the United States. Thus it is useful to keep in mind that both the numerator and the denominator in figure 2.5 are rising rapidly.

A related concern is whether the concentration of global economic activity, either in individual sectors or in total, has increased for reasons other than cross-border M&A. For social and political reasons, high concentration in an economy may be a matter of concern. For example, 5.5 million corporations are in the United States, with the largest 100 companies accounting for about 11 percent of employment and payroll.⁵ The fabric of the U.S. economic (and socio-political) landscape would surely be different if there were no small enterprises, no start-ups, and no alternative places (beyond a few mammoth corporations) where someone with a new entrepreneurial idea might go to obtain financial support and institutional encouragement. Similar concerns would hold for a high level of concentration in the global economy. There may be an extra element of concern for developing countries in this regard. Few of the largest companies in the global economy are headquartered in and identified with a developing economy.⁶ A global economy that is dominated by a relative handful of giant companies (if that were the case), which are headquartered in a relatively few industrial countries, may raise even greater socio-political concerns in developing countries that feel that they can exert little effective control over these enterprises.

Although the measurement issues involved are enormous, it does not appear that global concentration is high or has been rising significantly during the 1990s.⁷ White (2001, 2002) reports declining or stable aggregate concentration in the U.S. economy from the 1980s through the late 1990s, depending on whether employment, payroll, or profit data are used (figure 2.6).⁸ Note that this measure of aggregate concentration does not provide an indicator of market power in individual markets,

Figure 2.6 U.S. aggregate concentration has held steady



Source: White (2001).

because each firm may participate in multiple markets.⁹

Concentration at the global level appears to remain low, although one confronts enormous data problems and difficult tradeoffs in making such estimates. In 2001, total employment by the largest 50 global companies (as identified by *Forbes*) accounted for 0.3 percent of the world labor force, or 1.6 percent of employment in Organisation for Economic Co-operation and Development (OECD) countries. Those companies' profits amounted to 0.8 percent of world GDP and 3.3 percent of world gross domestic savings.¹⁰ Although it is difficult to say what level of concentration should be viewed as a cause for concern, at least these aggregate data do not reflect a domination of the global or OECD economies by a small number of firms.

Global concentration does not appear to have risen significantly during the 1990s. The share of the top 50 companies (as measured by *Forbes*) in the world labor force and in OECD employment has fallen slightly since 1994 (figure 2.7).¹¹ The declining share of the large companies' employment levels is consistent with the trend for the United States reported by White (2001, 2002). Despite the merger wave of the 1990s, very large companies have

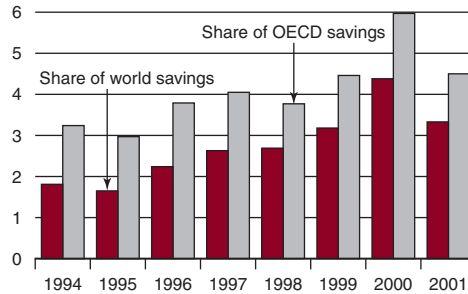
Figure 2.7 Global concentration has not increased significantly

Employment of the top 50 global companies, 1994–2001
(percent)



Source: White 2002b.

Profits of the top 50 global companies, 1994–2001
(percent)



not experienced a significant expansion of employment relative to other companies. This has been partly due to internal rationalizations and cost-cutting by those companies and partly due to significant numbers of spinoffs and divestitures.

The share of the top 50 companies' profits in global savings and OECD savings has risen since the mid-1990s (figure 2.7). The rise in profits among the largest companies is also consistent with the U.S. trend reported by White (2001, 2002a). However, in the United States, economy-wide profits were rising rapidly during the late 1990s; thus the ratio of the largest companies' profits to total profits was relatively constant. Unfortunately, time series data on global profits, or even OECD profits, are not available. Nevertheless, it is likely that OECD profits were rising more rapidly than nominal GDP or savings; hence the share of the top companies' profits may not have increased as much as indicated by the ratios given in figure 2.7. Moreover, the recent accounting scandals affecting telecommunications, energy, and other high-tech companies indicate a significant overstatement of profits in many of the largest companies during the late 1990s. Thus the rise in profits of the top 50 companies relative to global savings may be overstated.

A different approach to the calculation of global concentration is reported by DeGrauwe and Camerman (2002), with similar conclusions. They find that sales of the top 50 industrial corporations from the *Fortune 500* list have grown slightly less rapidly than world GDP from 1980 to 2000. Thus the 2000 sales of the 50 largest industrial corporations were slightly smaller in relation to world GDP than was true for the 50 largest corporations in 1980.¹²

These indicators of global concentration reveal nothing about the concentration of market power in individual sectors. Rising concentration at the sectoral level may reduce competition, thereby increasing prices faced by consumers and suppliers and shifting wealth from consumers and suppliers in competitive industries to producers in more concentrated industries. Unfortunately, comprehensive data do not exist on global sectoral concentration.

Sectoral data are available for some major countries, and they do indicate a rise in concentration ratios. The average concentration of industries at the Standard Industrial Classification (SIC) 4 level increased from 1947 to 1992 in the United States, while concentration declined slightly from 1983 to 1992 in Japan

before increasing sharply in 1992–98.¹³ However, sectoral concentration ratios at the country level provide little information on the competitiveness of markets, because most of those companies face competition from imports. Indeed, the rapid rise in world trade over the past two decades, coupled with the emergence of developing-country exporters, indicates that competitive pressures may have increased in many industries.¹⁴

Despite the difficulties in measuring global sectoral concentration ratios and in determining the implications for competition, anticompetitive practices have clearly affected some industries. The 1990s saw the uncovering of a large number of international cartels, in which firms from more than one country made explicit agreements to fix prices, divide up markets, or rig bids for contracts (see chapter 4).

The rise in service sector FDI

FDI flows into services have overtaken those in manufacturing—

Service sector FDI has grown rapidly over the past few decades, and services are now the dominant sector for foreign investment.¹⁵ The stock of FDI in services was only about one-fifth of the total in the 1950s (United Nations 1989), but by the mid-1970s the share of services in the stock of outward FDI of major industrial countries ranged mostly between 30 and 40 percent.¹⁶ By 1990, this share rose to between 45 and 60 percent, and over the past decade, FDI in services has continued to rise more rapidly than FDI in manufacturing in both developing and industrial countries (table 2.1). By the end of the 1990s, services accounted for more than half of the stock of inward FDI in most major industrial countries (figure 2.8). Despite the rapid increase in service sector FDI, the global ratio of FDI to value added in services remains less than half the ratio of FDI to value added in manufacturing, thus indicating the potential for further increases in service sector FDI. The dominance of service sector FDI under-

Table 2.1 FDI inward stocks in services and manufacturing, 1988–99

(growth rate and shares in dollars)

	Growth rate, 1988–99 (percent change per year)	Share, 1999 (percent)
World:		
Total FDI	12.3	
Manufacturing	12.2	41.6
Services	13.8	50.3
Industrial countries:		
Total FDI	9.9	
Manufacturing	9.1	36.4
Services	11.6	55.5
Developing countries:		
Total FDI	21.5	
Manufacturing	19.6	54.5
Services	28.2	37.3

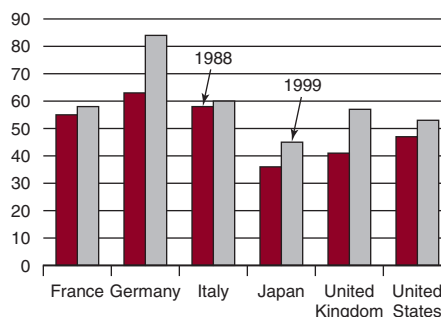
Note: Second column data for France are from 1998, and second column data for Japan are from 1994.

Source: UNCTAD (2001).

lines the importance of an effective regulatory regime, because designing and enforcing an appropriate regulatory framework is more difficult in many service sectors (such as natural monopolies in infrastructure) than in manufacturing.

Figure 2.8 Share of FDI in the service sector increased in major industrial countries

(percent)



Source: OECD (2001) and OECD online database.

—reflecting the rising role of services in the global economy—

FDI in services has increased relative to manufacturing, in part because of the growing importance of the service sector in economic activity. By the late 1990s, the service sector had increased from half of global output in the early 1970s to 64 percent. Income growth has been the driving force behind the rise in services: cross-country comparisons show that the richest countries have the greatest share of services. Services account for 70 percent of output in industrial countries, 55 percent in middle-income countries, and 44 percent in low-income countries. The correlation coefficient between income level and the share of services is 0.6. The relationship between higher income and a greater share of services in part reflects consumer demand, because luxuries such as travel and entertainment often have a large services component. Also, higher incomes permit an allocation of more resources toward protecting assets (insurance and legal services), richer and complex societies require more resources devoted to education and advisory services, and technological advances associated with higher income widen the scope for the protection of health. Finally, the higher labor intensity of services and rising real wages have increased the nominal value of services relative to manufacturing.

—technological changes that have increased the demand and supply of services—

Technological progress has tended to increase the demand for services connected with the production of goods and to facilitate the separation of goods production from services production.¹⁷ The larger scale of production, the greater technological sophistication of goods, and the increased trade in goods and management of enterprises across large distances have all contributed to the greater demand for services. The importance of management, marketing, distribution, and after-sale maintenance has risen relative to the value of manufactured products. Many information-and-knowledge-

intensive services—research and development (R&D), engineering, design, computing and data processing, inventory management, quality control, design, accounting, legal services, personnel services, and so on—have become a critical part of the production process in the manufacturing sector. With modern manufacturing production and distribution becoming increasingly dependent on the processing and dissemination of information, the demand for those producer services is rising rapidly.

Moreover, the growing sophistication and variety of services, coupled with specialization emerging from economies of scale, have led manufacturing firms to rely more on outsourcing than on in-house departments to provide the services necessary for production. The immediate consequence is a statistical effect: the size of the service sector rises when services that were previously classified as manufacturing output are suddenly counted as services. Typical examples of these types of services are accounting, computer services (data processing and software), warehousing, public relations, information technology, and management information systems.

Technological progress has greatly reduced the cost of some services, thus increasing the scope of services that are feasible to supply (for example, mobile telephones, complex financial transactions such as derivatives, and a host of other services facilitated through advanced data processing). Technological progress has also generated new means of delivering services (for example, the dissemination of research over the Internet). This process is similar to what occurred during the industrial revolution, when technological progress and income growth greatly increased the importance of manufactures when compared with the primary sector.

Both the reduced cost of some services and the increased scope of services have increased the tradability of services, a trend that has, in part, been exploited through increased FDI. For example, software can be produced in low-cost locations such as India and sold directly to firms and consumers in the United

States over the Internet. Many multinationals have established centers in developing countries, where wages are low, to handle contacts with consumers in industrial countries. For example, call centers in the Caribbean manage phone calls to multinationals from U.S. clients (this is an example of participation of service firms in production networks; see page 13 for an elaboration of this concept in manufacturing). In some cases, the rising tradability of services may have reduced FDI by enabling firms to provide services at a distance rather than establishing a subsidiary. However, in general, increased tradability has created new opportunities for multinationals' subsidiaries to export services to home markets and, in some cases, to operate as international hubs to supply services to firms in other countries. Because industrial countries are the lead consumers of tradable services, developing countries have benefited from the establishment of subsidiaries to service the richer markets. Technological advances that increase services tradability have also imparted an advantage in service delivery to multinationals relative to domestic firms, thus enabling the former to overcome the natural advantages of proximity and knowledge of the market (Sauvant and Mallampally 1996).

Income growth and technological progress have boosted the provision of services through various forms of cross-border relationships in several sectors: (a) management and franchise contracts in hotels, restaurants, and car rentals (in which performance requirements can often be adequately codified, local managerial input is desirable, and the synergistic advantages of global reservations and referral systems can be obtained without the risks and costs involved in an equity stake); (b) joint ventures in some business services, in recreational activities, in some accounting and legal services, and in civil engineering in turnkey projects (in which individual customization and specialized knowledge of local practices are required); and (c) services in which a local partner is required for marketing and distribution (Dunning 1981). Firms that tend to

provide services through subsidiaries, rather than other kinds of relationships, include (a) financial institutions, in which much of proprietary knowledge is tacit, is expensive to produce, and is complex and idiosyncratic; (b) firms that require control over production to maximize efficiency and to protect the quality of the end product (and thus customer goodwill) for trademarks (for example, in advertising, market research, construction, business consulting, consumer-oriented services, and goods-related personal services such as motor vehicle maintenance and repair); and (c) trade-related service affiliates set up by non-service multinationals to obtain inputs for domestic activities or to supply markets.

—and policy changes that encourage the private provision of services

The removal of restrictions on FDI and regulatory reforms that have improved competition in service sectors have contributed to the rise in service sector FDI. Until recently, many countries (including many industrial countries) prohibited foreign investment in sectors such as transport, communications, banking, finance, utilities, and media. Since the mid-1980s, governments in both industrial and developing countries have been gradually opening up those service sectors to foreign investment.¹⁸

Multinationals can enhance the efficiency of services industries in developing countries by providing services that developing-country suppliers cannot provide, as well as by intensifying competition. In particular, providing producer services (for example, managerial services, engineering, finance, and marketing) that are often subject to economies of scale and that have a much higher cost from a distance can generate important benefits to developing-country firms. Availability of producer services may be an important reason to form industrial complexes and may explain a significant share of the differences in economic performance among regions. Producer services are likely to be provided through FDI (rather, for example, than through training unaffiliated firms) because they involve knowledge-based assets

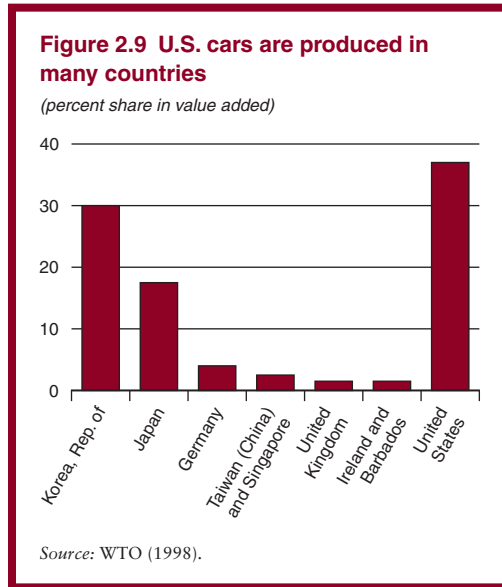
that are easily copied if firms lose control over the knowledge (Markusen, Rutherford, and Tarr 2000). FDI has surged in developing countries' banking sectors, in many cases reducing the costs of financial intermediation, increasing the scope of financial services available to local firms, and transferring skills to workers in developing countries.¹⁹

Global production networks

The globalization of production has helped fuel the growth in global trade

Rapid growth in trade and in FDI flows has reflected, in part, the expansion of production networks.²⁰ The production of many final goods, which formerly took place in one location, has been broken down into discrete steps, with each step moved to locations where it can be performed at the lowest cost (Venables 1999; Kimura 2001). Thus a significant portion of international trade and FDI has shifted from the exchange and production of final consumer goods to the exchange and production of parts and components. This globalization of producing individual goods has progressed to the point that it can become difficult to identify the nationality of some products. For example, the World Trade Organization (WTO [1998]) gives figures for the share of value added in producing a U.S. automobile, with countries grouped by category of production. The United States accounts for only 37 percent of value added (figure 2.9).

There is considerable evidence that the share of global trade accounted for by networks is increasing, although the results vary among countries and studies. Baldone, Sdogati, and Tajoli (2002) estimate that the share of intermediate products in total trade within the European Union (EU) rose only slightly in the 1990s, from 17 percent in 1990 to 19 percent in 1999.²¹ One measure of international outsourcing—the ratio of imported to total intermediate inputs in manufacturing—doubled in the United States from 1974 to 1993 and increased in Canada and the



United Kingdom, although it fell in Japan (figure 2.10). Using input-output tables, Hummels, Rappaport, and Yi (1997) calculate that the fraction of the total value of trade accounted for by inputs that are both imported and then embodied in exports rose in France, the United Kingdom, and the United States from 1970 to 1990, while dropping slightly in Japan.²² Data from the U.N. Comtrade database show that exports of parts and components—a proxy for participation in global networks—increased by almost 2 percentage points faster than exports of total manufactured goods from 1981 to 2000 (table 2.2).²³

The rise in the share of trade accounted for by global networks in part reflects the increasing importance in global production of goods

Table 2.2 Growth of exports of parts and components, 1981–2000

(average annual percentage change in dollars)

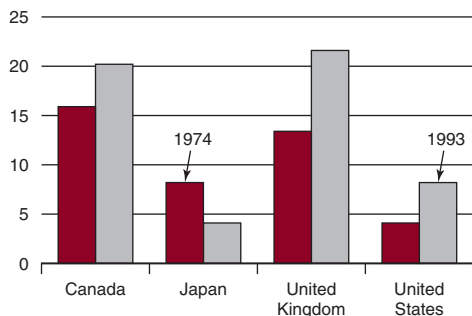
	1981–90	1990–2000
Manufactured exports	10.6	7.2
Parts and components exports	12.1	9.6
Memo item: Share of parts and components	13.2	18.5

Source: U.N. Comtrade database.

Figure 2.10 Cross-border networks capture increasing shares of production and trade

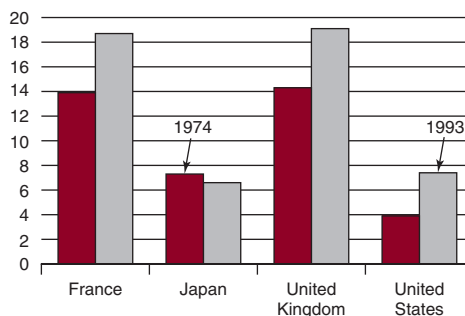
Imports of intermediate inputs increased, 1974–93

(ratio of imported to total intermediate inputs in manufacturing, in percent)



Production through networks increased, 1974–93

(percent share of trade accounted for by imported inputs that are embodied in exports)



Source: Feenstra (1998); Campa and Goldberg (1997); Hummels, Rappaport, and Yi (1997).

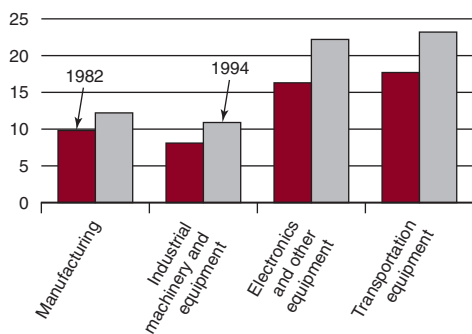
such as electronics, chemicals, and transport equipment and machinery, where trade in components is most important. The share of those sectors in world trade rose from 27 percent in 1986 to 43 percent in 1997 (Schive and Chyn 2001). However, the increase also reflects a rise in components trade within the

product classes. Hanson, Mataloni, and Slaughter (2001) report that the share of U.S. multinational affiliates' imports of intermediate inputs in their total sales rose significantly from 1982 to 1994 in electronics, transportation equipment, and industrial machinery and equipment (figure 2.11).

Figure 2.11 The role of production networks continued to increase through most of the 1990s

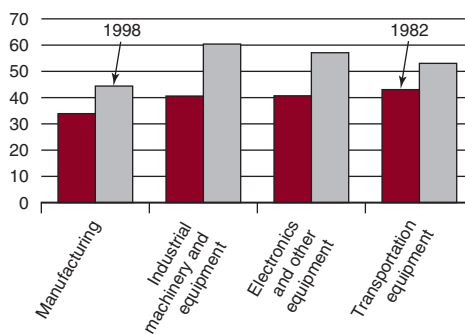
Use of intermediate inputs rose, 1982–94

(percent of U.S. affiliates' imports of intermediate inputs as a share of sales)



Exports by MNCs abroad rose, 1982–98

(percent of U.S. affiliates' exports as a share of total affiliate sales)



Source: U.S. Bureau of Economic Analysis, as reported in Hanson, Mataloni, and Slaughter (2001).

The establishment of global networks has been facilitated by technology—

Technological progress in transport, communications, and data processing has fueled increased FDI flows and the establishment of cross-border production networks. A nearly 70 percent decline in sea freight unit costs between the early 1980s and the mid-1990s (in part caused by a rise in the share of cargo carried in containers; see World Bank 1997)²⁴ and an increased reliance on air shipments, plus the growth of express services (such as overnight and two-day delivery)²⁵ have facilitated the shipment of components for processing in different locations. The low cost of long-distance telephone rates, the development of fax machines, and, most recently, the advent of the Internet have made it easier for multinationals to closely coordinate production at dispersed locations. Those changes have also greatly reduced the costs of finding and evaluating potential suppliers for more arm's-length transactions (Grossman and Helpman 2002). Finally, an increased ability to process and analyze vast amounts of data has facilitated the management of global networks. Electronic data interchange (EDI)

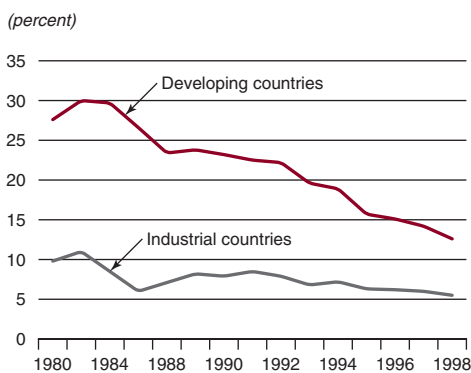
systems greatly reduce the costs of procurement and improve the coordination of production across dispersed factories by automating the processing of routine transactions (Chen 1996).

—policy improvements—

Improvements in economic policies, notably the decline in barriers to trade, have also contributed to forming cross-border production networks. Successive rounds of multilateral negotiations reduced average tariffs on manufactured products in industrial countries from 10 percent in 1980 to 5 percent by 1998. The average tariff rate in developing countries fell from between 25 and 30 percent in the early 1980s to 13 percent by 1998 (figure 2.12). Even relatively low tariff rates can have a significant role in deterring the formation of cross-border networks, because goods often pass through borders several times in the course of production (Navaretti, Haaland, and Venables 2000), and the gross margins of manufacturing companies are often lower than 5 percent.²⁶ Hanson, Mataloni, and Slaughter (2002) find that tariffs are an important determinant of the size of intermediate

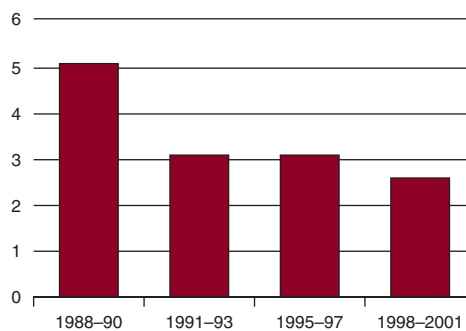
Figure 2.12 Tariff rates fell in the last two decades

Average tariff rates, 1980–98



Industrial countries' tariffs on parts and components, 1988–2001

(average tariff on imports from industrial countries, in percent)



Note: Unweighted average of ad valorem, applied, or MFN rates, whichever data are available for a longer period.

Source: U.N. Comtrade database.

inputs from parent companies relative to the total sales of U.S. affiliates (a direct measure of activity within production networks). Higher tariffs are significantly correlated with less production sharing, with estimated elasticities in the range of 2 to 4. Multinationals may even lobby for reduced tariffs on their inputs so they can reduce the costs of networks. The average tariff rate that industrial countries impose on imports of parts and components declined during the 1990s and was well below the overall average tariff rate by the end of the decade.

Steps toward greater integration between geographically close neighbors with significantly different wage rates have had a particularly important role in stimulating the growth of regional production networks. Before 1990, the export of processed goods from Eastern Europe to the EU was minimal. By 1996, such exports were almost 20 percent of Poland's exports to the EU, 40 percent of Romania's, and well over 10 percent in most other Eastern European countries (Baldone, Sdogati, and Tajoli 2002). Kaminski and Ng (2001) report that the value of Central Europe's total trade in parts grew almost three-fold from 1993 to 1997. The *maquiladora* industry in Mexico has grown spectacularly since introduction of the North American Free Trade Agreement (NAFTA).

Networks have been boosted by special arrangements. U.S. and European tariff provisions encourage production by the subsidiaries of multinationals, because the tariff on a subsidiaries' import is imposed only on the value added in the assembly country, not on the total value of the good (Ng and Yeats 2001).

Reduced restrictions on FDI in developing countries have increased the participation in international production networks. Of the numerous regulatory and policy changes that have affected FDI and that were introduced by developing-country governments during the 1990s, 95 percent were aimed at creating a more open environment for FDI (UNCTAD 2001). Many developing countries have eliminated broad restrictions on FDI and have

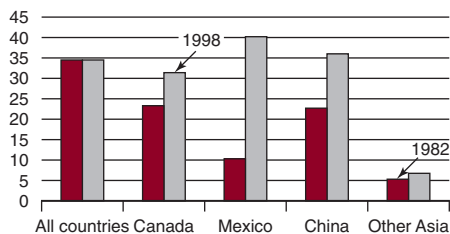
shifted to negative lists (that is, lists specifying a limited number of sectors from which foreign investors are excluded or are subject to a ceiling on the share of the firm that foreigners may own).²⁷ Often, reforms in trade, FDI, and other areas work together to encourage greater participation in global networks. The export-to-sales ratio of U.S. multinational affiliates rose dramatically from 1982 to 1998 in Mexico (following trade and investment reforms in the mid-1980s), in China (after reforms in the early 1990s), and in Canada (after investment reforms of the mid-1980s and the coming into effect of U.S.-Canada free trade agreement in 1989) (figure 2.13).

—and incentives

Countries may affect their attractiveness to global production networks by specific requirements or incentives affecting foreign firms. Moran (2001) examines case studies on the industries cited above as being most heavily involved in global production networks (electronics, machinery, and transportation). He finds that affiliates in countries that impose relatively stringent or widespread performance standards on multinationals (for example, limits on foreign ownership, domestic-content requirements, and various technology-sharing

Figure 2.13 Reforming countries boosted exports through production networks

(exports of U.S. affiliates as a share of total sales, in percent)



Note: Exports from U.S. affiliates in all countries show no rise in the share of sales due to declines in the export shares in primary production.

Source: Hanson, Mataloni, and Slaughter (2001).

mandates) are much less productive, use older technology, and take longer to introduce new processes and products than affiliates in countries that do not impose such requirements. Thus, FDI to countries with strict requirements is more likely to be directed at local markets, because participation in networks often requires the latest technology.

Global networks can be structured in many ways

Global networks are achieved through a range of ownership structures, from conducting arm’s-length transactions (for example, trade in standardized parts sold in organized markets) to establishing a subsidiary for producing components that are custom-made for

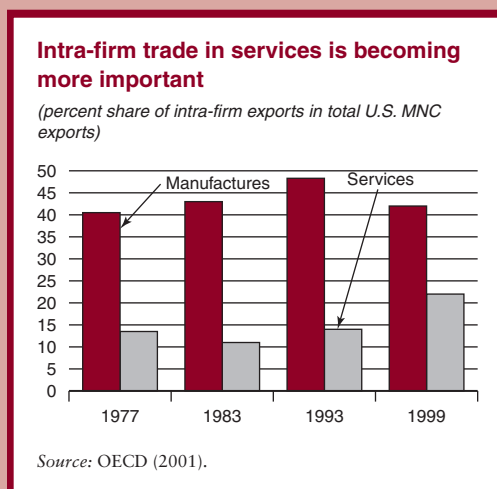
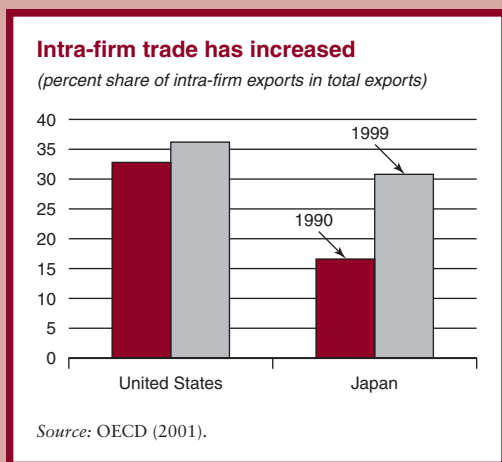
particular products (Arndt 2001). A spectrum of choices exists, and each involves some form of relationship between supplier and purchaser.²⁸ The major advantage that multinationals have over local firms is typically technology, and protecting that advantage is a key consideration in determining the structure of a global network (Ethier and Markusen 1996).²⁹ Because it can be difficult to maintain control over technology in arm’s-length arrangements, FDI is often the preferred choice (Hoon and Ho 2001).³⁰ This preference is reflected in the rise in the share of intra-firm trade in multinationals’ exports, at least as far as developing countries are concerned (box 2.1).

There are disadvantages, however, to establishing a network through FDI. Securing

Box 2.1 Intra-firm trade increases worldwide

The boom in FDI flows during the 1990s was associated with only a small rise in the share of intra-firm trade in U.S. exports during the 1990s (see box figure 1).³¹ By contrast, the share of intra-firm exports in Japanese trade almost doubled during this period. The failure of U.S. outward FDI flows (the stock of which nearly tripled in the 1990s) to result in a sharper increase in the share of intra-firm trade probably reflects the dominance of M&A trans-

actions rather than greenfield investments. The transfers of ownership involved in such transactions would not necessarily have a significant effect on trade flows. If one looks at longer time series, there is some evidence that intra-firm trade has become more important for U.S. multinationals, particularly in services (box figure 2).



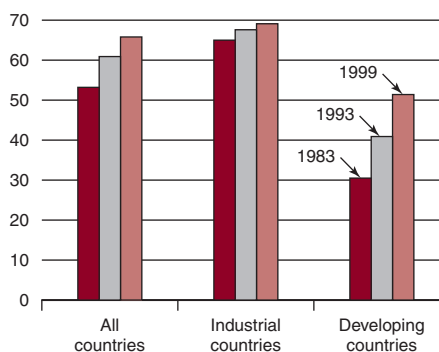
Box 2.1 (continued)

Intra-firm trade includes production that is shared among locations in global networks, as well as trade in finished products for marketing and distribution in foreign countries. There is some evidence that production through networks has become more important over time. The share of exports of intermediate goods to overseas manufacturing affiliates in total Japanese exports rose from 20 percent in 1994 to 29 percent in 1999. Products intended for further processing increased from 57 percent of U.S. multinationals' exports to foreign-owned affiliates in 1989 to 68 percent in 1999 (Mataloni and Yorgason 2002). Trade among foreign affiliates of U.S. multinationals has also expanded, which probably indicates that networks have become more complex over time. The share of intra-firm exports of foreign subsidiaries accounted for by exports to other subsidiaries (rather than to the parent company) rose from 53 percent in 1983 to 66 percent in 1999 (box figure 3). This rise is almost totally due to an increase in foreign affiliate trade among developing countries, from 30 percent of U.S. multinationals' intra-firm trade in 1983 to 51 percent in 1999. Production networks appear to be less important in intra-firm trade among industrial countries, given their more similar labor costs. For example, 90 percent of intra-firm exports from foreign multinationals to U.S. affiliates are finished goods for direct distribution to the U.S. market. The picture that emerges is that total intra-firm exports

by U.S. multinationals have increased only slightly more rapidly than have total U.S. exports. However, a growing share of this trade is devoted to production networks, which increasingly involve developing countries.

Trade among U.S. affiliates is rising in the developing world

(percent share of intra-firm exports in total U.S. MNC exports)



Source: OECD (2001).

intermediate inputs through contracts with local firms often entails lower administrative costs than establishing a subsidiary. The multinational is free to specialize in providing technology, marketing, and distribution services, while a local partner may be better situated to handle the personnel and regulatory issues involved in establishing a company. Moreover, some multinationals outsource a substantial share of manufacturing, because contract manufacturers may be better placed than multinationals to absorb the risk from rapid product obsolescence (Ernst 2002). Contract manufacturers that produce components for well-known multinationals grew rapidly dur-

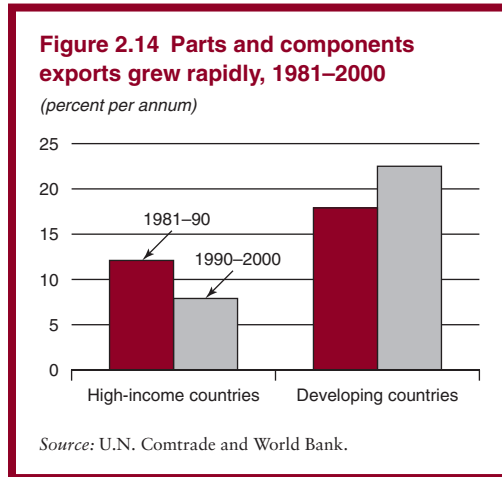
ing the 1990s and now account for 20–30 percent of total electronics production.

Developing countries have increased their participation in global networks

Developing countries have been increasingly involved in the international networks that manage the production and trade of intermediate goods. Differences in wage levels have led firms to locate in developing countries those portions of the production chain that are intensive in manual labor, while locating at home the technically skilled labor (such as that involved in R&D, management, and marketing)

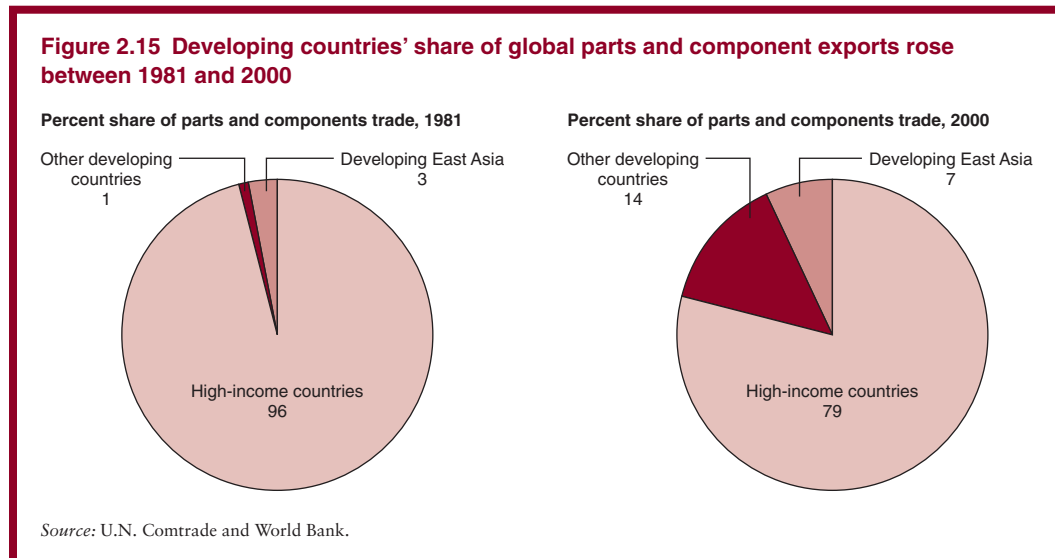
(Hanson, Mataloni, and Slaughter 2001; Filipe, Fontoura, and Saucier 2002). Multinationals operating in developing countries are more likely to be part of a network (as opposed to supplying the host market) than are multinationals in industrial countries. The share of U.S. affiliate production that is sold back to the United States is more than twice as high for developing countries as it is for industrial countries (Shatz and Venables 2000).

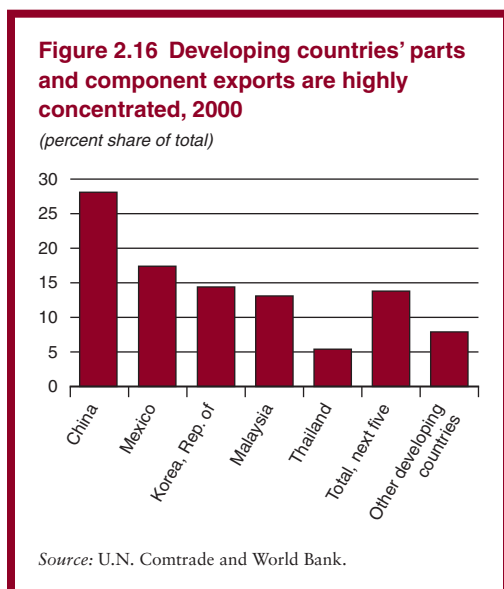
Data on parts and components exports, which are a proxy for participation in networks, confirm the growing participation of developing countries.³² Their exports of parts and components increased by almost 18 percent per year in the 1980s and by 22.5 percent in the 1990s (in U.S. dollar terms), almost three times more rapidly than such exports of high-income countries in the latter period (figure 2.14). As a result, the share of developing countries in global parts and components exports increased from 4 percent in 1981 to 21 percent in 2000 (figure 2.15). By contrast, the share of developing countries in exports of world manufactures rose much more slowly, from 16 percent in 1981 to 22 percent in 2000, while developing countries' share of total trade fell slightly (largely caused by the fall in commodity prices).



Access to networks among developing countries is highly concentrated

Developing countries' participation in global networks is highly concentrated, particularly in East Asia. The top five developing-country exporters of parts and components (China, Mexico, Republic of Korea, Malaysia, and Thailand) accounted for 78 percent of developing countries' exports of parts and components, and the next five largest developing countries accounted for about 14 percent (figure 2.16). Developing countries outside the top 10 made up only about 8 percent. By contrast,





the top 10 countries accounted for 63 percent of developing countries' total exports and 75 percent of their manufactured exports. Thus trade of parts and components is much more concentrated than total or manufactures trade. All top 10 countries (except Brazil) either are from East Asia or are participating in regional arrangements—with the United States or the EU—that provide for low trade barriers and long-term arrangements to increase trade integration. By contrast, countries that have limited ties to major industrial country markets, that lack adequate infrastructure (particularly transport facilities) or a sufficiently educated work force, that are subject to high risks as a result of poor governance or weak institutions, or that have pursued policies that erode incentives for private sector investment have minimal participation in global networks. South Asia, Sub-Saharan Africa, and the Middle East and North Africa together account for only 2 percent of developing countries' parts and components exports (and two-thirds of that amount is from South Africa and India), compared with 11 percent of developing countries' total manufactured exports.

Networks help improve the allocation of resources

Global production networks break the production of a given final good into a set of constituent activities that vary in the intensity of capital, skilled labor, unskilled labor, and other production requirements. Instead of making entire products, developing countries can be involved in just those stages of products (for example, labor-intensive stages) that best suit their mix of endowments. This approach enables developing countries to shift more resources to activities in which they have a comparative advantage, particularly the fast-growing segments that require large labor inputs in one or more stages of the manufacturing chain. Developing countries' participation in global networks has enabled those countries to increase their share of the world's fastest-growing export products (transistors and semiconductors, computers, and computer and office machine parts) from 2.4 percent in 1980 (about the same as the share of those products in global exports) to 16.3 percent by 1998 (almost 7 percentage points higher than the share of such products in global exports) (table 2.3).

Participating in networks may help dampen the effect of adverse shocks. Multinationals may have an interest in maintaining the operations of firms with which they have close ties, either in the form of investment or long-term contracting relationships. Some authors have argued that intra-firm trade is less responsive to changes in relative prices than is trade between firms, because multinationals will be concerned with the effect of their production

Table 2.3 Export activity for product groups with the fastest growth in world exports, 1980–98
(percent)

	1980	1998
Share in world exports	2.6	9.7
Share in developing-country exports	2.4	16.3

Source: UNCTAD (2002).

decisions on the survival of foreign affiliates (Cho 1990; Helleiner 1978).³³ Thus multinationals may lend funds to subsidiaries suffering temporary shocks or may provide the backing necessary for them to access credit markets.

Long-term contracts that have been entered through networks may help firms survive severe shocks. For example, exports from the Philippines maintained double-digit growth rates in 1998, while other countries in the region saw outright declines in exports because of the crisis. This performance was principally due to the high growth in electronics exports (while exports of consumer goods languished), and almost all of the Philippines' electronic exports come from affiliates of multinationals. The arrangements in place meant that a substantial share of the Philippines' production was booked well in advance (typically one year), which helped the country maintain output growth during the downturn in demand (World Bank 1999).

Networks may boost access to technology—

Participating in global networks may improve developing countries' access to technology. Multinationals typically possess knowledge assets such as patents, proprietary technology, trademarks, and so forth that can be deployed in plants outside the parent country (see Dunning 1981). Blomström and Kokko (1998) describe how multinationals typically have proprietary technology that enables them to compete against local firms, which presumably have superior knowledge of local markets and business practices. Approximately 90 percent of the world's R&D is carried out in five countries (the United States, the United Kingdom, France, Germany, and Japan) that are among the largest source countries for world FDI flows (Keller 2001).

—which may be an important source of growth potential

Access to technology is particularly important for developing countries, which tend to import

a large share of technical advances. Using international patent data, Eaton and Kortum (1999) find that even the major industrial countries (the United States, Japan, Germany, the United Kingdom, and France) generally adopt from one-half to three-fourths of their innovations from abroad, and that the United States is the only country that derives most of its growth from its own innovations (see also Keller 2001). Because developing countries spend a lot less than industrial countries on basic research, they are even more dependent on foreign sources of technology. Thus the potential for increasing access to technology as a result of participation in trade and FDI may be great (Keller 2002).

In part, benefits from the transfer of technology are directly captured by the local firm or subsidiary participating in a network. Technology is transferred from the parent to a subsidiary, or a local exporter may purchase technology as a condition of participating in a network. One piece of microeconomic evidence consistent with rising intra-firm knowledge transfer is the rising share of multinationals' R&D performed by foreign affiliates. The U.S. Bureau of Economic Analysis (BEA) reports that, in 1982, affiliates of U.S. multinationals performed 6.4 percent of worldwide R&D for these firms. By 1994, that share had nearly doubled, to 11.5 percent. This form of technology transfer may increase domestic productivity, but the benefit is fully reflected in market prices: the local subsidiary or independent firm pays for the technology through profit repatriation or expenditures on technology. In addition, local firms may absorb technology from networks in ways that are not entirely reflected in market transactions (referred to as *spillovers*; see discussion in chapter 3). Rodriguez-Clare (1996) illustrates how multinational spillovers from participation in global production networks may work: affiliates increase a host country's access to specialized varieties of intermediate inputs, the improved knowledge of which raises the productivity of domestic producers.

Networks may help increase the supply and demand for skilled labor

Networks help improve access to technology, which tends to stimulate demand for more-skilled workers relative to less-skilled workers. Increased capital available through FDI may also increase the demand for skilled workers (see the survey in Hamermesh 1993). Feenstra and Hanson (1996) show that the transfer of technology and capital accumulation associated with global networks can raise the demand for more-skilled labor in both industrial and developing countries, and Feenstra and Hanson (1997) estimate that FDI into Mexico's *maquiladoras* has contributed to rising demand for skilled labor. Slaughter (2002) finds a robust and positive correlation between skill upgrading and the presence of U.S. foreign affiliates. This correlation is more than twice as large for the subsample of developing countries when compared with the subsample of industrial countries.

Participation in global production networks may raise the supply of skilled labor in developing countries. One channel can be the short-term activities by which individual firms interact with host-country labor markets through on-the-job training or support for local educational institutions. Multinationals might directly affect labor supplies, because their transferred knowledge might boost the skills of their employees (and, with labor mobility, the skills of the employees of domestic firms as well). They might indirectly affect labor supplies (for example, by influencing the educational infrastructure of host countries in terms of curriculum choices and vocational training). As Hanson (2001) reports, Intel recently chose to establish a large assembly and testing facility in Costa Rica, in part thanks to Costa Rica's agreement to expand high school training in electronics and English (see also Moran 2001). Also, to the extent that FDI inflows and trade increase the supply of attractive employment opportunities, they may inhibit the emigration of more-educated workers to industrial countries. For example, the 1990s boom in Ireland, caused in large part

by inward FDI, resulted in a surge in labor supply driven largely by the reverse migration of young Irish people back to Ireland.

If the presence of multinationals raises the demand for skilled labor more than the supply, then wage rates for skilled labor may increase relative to those for unskilled labor. This change implies a widening of income inequality in countries with a large pool of unskilled labor. However, multinationals' demand for labor is likely to raise the level of income of all workers, regardless of the effect on relative wages. Several studies have found that multinationals pay higher wages than do domestically owned establishments, even when controlling for a wide range of observable worker or plant characteristics such as industry, region, and overall size. The magnitudes involved are significant. Doms and Jensen (1998) document that for U.S. manufacturing plants in 1987, wages in foreign affiliates exceeded wages in domestically owned firms by a range of 5 to 15 percent, with larger differentials being enjoyed by production workers than by nonproduction workers.³⁴ The premium could be accounted for by higher worker productivity as a result of multinationals' superior technology or capital. It could also be a result of other factors, such as higher worker productivity caused by unobservable worker qualities, or of multinationals being more profitable and therefore more able to share more rents with workers. Whatever the case, the bottom line is that global production networks are likely to present high-wage opportunities for both more-skilled and less-skilled workers.

The benefits from networks can contribute to growth and structural transformation

Improved allocation of resources, access to technology, and increases in skilled labor can, in principle, make important contributions to raising productivity and to facilitating the transition from primary commodities to producing products with higher value added and greater potential for growth. However, the extent of benefits from participation in networks

is an empirical question. Local firms may not capture the benefit from the transfer of technology and increased productivity through networks if multinationals have a wide choice of production locations and a monopsonist position in the purchase of supplies. In this situation, competition among suppliers may drive prices down, and the benefits of local firms' productivity improvements will accrue to the multinational.³⁵

Some observers have argued that the benefits from network participation have been limited for most countries, with the important exception of a few of the most successful East Asian countries (see UNCTAD 2002b). Rising manufactured exports through networks may not be accompanied by increased value added in manufactures, and network participation may simply mean the continued use of unskilled labor in low value added activities rather than the development of the manufacturing sector. For the 20 developing countries with the largest exports of parts and components (a proxy for network participation), the average share of GDP devoted to manufactures has shown no increase over the past 20 years (table 2.4).³⁶ However, average manufacturing value added (at constant prices) has increased by more than 5 percent per year in these countries, a very respectable performance over a 20-year period, and 2.5 percentage points more rapidly than the average of developing countries with limited or no

participation in networks.³⁷ The failure of manufacturing value added to rise as a share of GDP reflects the rapid rise in services as income rises, particularly in these fast-growing economies. That network participants did achieve significant structural change is indicated by the rapid fall in the share of agricultural value added in GDP, from 17 percent in 1980 to 10 percent in 2000. These data do not demonstrate that network participation was a major cause of growth and structural change in these economies, but they do indicate that participation in networks has been consistent with such progress.

Sectoral studies indicate that networks have enabled countries to move from low-value to relatively high-value activities. For example, the global apparel industry contains many examples of industrial upgrading by developing countries.³⁸ Several countries have shifted from assembling apparel from imported inputs (which requires only low-wage labor) to filling orders from global buyers. This latter role requires the ability to make samples; to purchase or manufacture the needed inputs for garments; to meet international standards in terms of price, quality, and delivery; and to assume responsibility for packing and shipping the finished items. A few East Asian countries made this transition in the 1970s, then began to set up their own international production networks in the 1980s using low-wage countries in Asia and elsewhere. Since then, several countries (for example, India, Mexico, Romania, Turkey, and Vietnam) have developed expertise in managing apparel production chains. Their role is likely to expand greatly as the apparel quotas under the Multi-fibre Arrangement are phased out in 2005.

Global production networks have been a central feature in the development and upgrading of Asia's large, dynamic electronics sector. While the East Asian newly industrializing economies—Hong Kong (China), Korea, Singapore, and Taiwan (China)—were the first participants, the major Southeast Asian countries of Indonesia, Malaysia, the Philippines, and Thailand have taken places directly below

Table 2.4 Rapid growth and structural change experienced by network participants

	1980	2000
Share of manufacturing value added in GDP	22.8	23.2
Share of agriculture value added in GDP	17.3	10.3
Memo item: average annual growth rate of manufacturing value added, 1980–2000	5.3	

Note: Data represent the 20 developing economies (including Taiwan [China]) with largest exports of parts and components.
Source: World Bank staff.

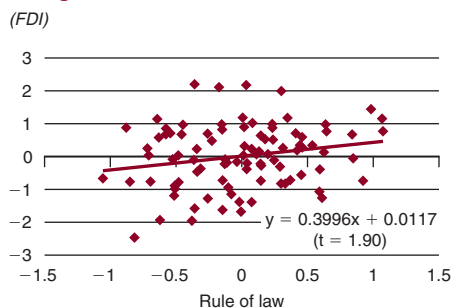
them in the production chain, including working in design and setting up their own production networks. More recently, China has been evolving from a provider of low-wage, assembly operations to the leading producer of electronics across a wide range of industries (Borrus, Ernst, and Haggard 2000). Finally, exporters of fresh vegetables in Kenya and Zimbabwe have benefited from their relationship with U.K. supermarkets, first through assistance in meeting production standards, and more recently in taking on higher value added activities within the production chain. These activities have included packaging and applying barcodes; investing in state-of-the-art methods for cold storage; adopting just-in-time management techniques (including information technology) to reduce the time between harvesting, packing, and delivery; and expanding to joint ventures with freight forwarders to gain more control over the distribution process (Dolan and Humphrey 2000).

Of course, participating in networks has not always been accompanied by progress to higher value added activities. Survey evidence indicates that East Asian firms participating in networks have experienced an increased propensity to innovate as they draw on foreign expertise (as well as increased export growth), compared with firms in the same sectors that did not participate in networks (World Bank 2002a). However, networked firms did not show faster growth in employment or value added, on average, than non-networked firms. The World Bank (2002a) also found that few East Asian firms were able to move up the value chain through participation in networks. However, these observations are consistent with countries benefiting from network participation through spillovers and production by multinational subsidiaries.

Good policies attract FDI

The quality of the policy regime is an important determinant of the allocation of FDI flows among developing countries. Macroeconomic stability, corruption, rule of

Figure 2.17 Strong rule of law attracts foreign investors



Note: Partial correlation for developing countries controlling for size, income, openness, inflation, education.
Source: World Bank staff.

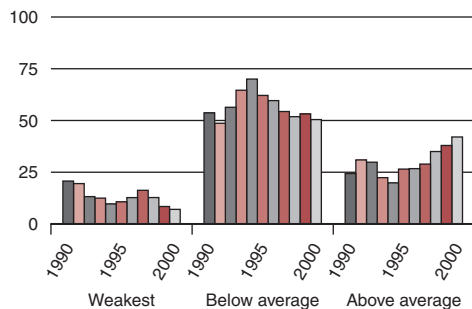
law, and effectiveness of the regulatory regime have been shown to be significant determinants of the location of foreign investment, after controlling for other variables (Stein and Daude 2002). For example, figure 2.17 shows that a ranking of countries according to the rule of law (see Kaufman, Kraay, and Zoido-Lobaton 2000) is significantly related to the level of FDI inflows, after controlling for size, income, openness to trade, inflation, and educational attainment. By this measure, increasing the rule of law by one standard deviation (for example, from the level of Bangladesh to that of Turkey, or from the level of Turkey to that of Chile) would raise FDI inflows by 40 percent.

Time series analysis underlines the importance of governance and institutional quality for the allocation of FDI. Countries with better investment climates—as indicated by the level of corruption, voice (political openness), rule of law, quality of the regulatory regime, government effectiveness, and political stability—tended to receive an increasing share of total FDI over the 1990s (figure 2.18).³⁹ The importance of each dimension of the investment climate used in figure 2.18 varies considerably. Countries that have strong rankings for regulatory quality, government effectiveness, or political instability consistently received more than half of all the FDI to developing countries, with little change in their share of FDI

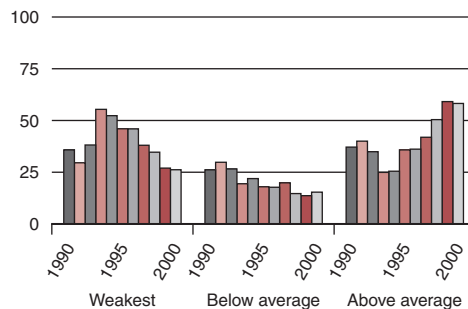
Figure 2.18 Foreign investors have been shifting away from weaker investment climate locations

(percent annual shares of total FDI to developing countries)

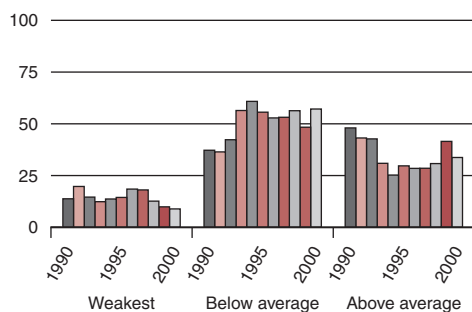
Anticorruption



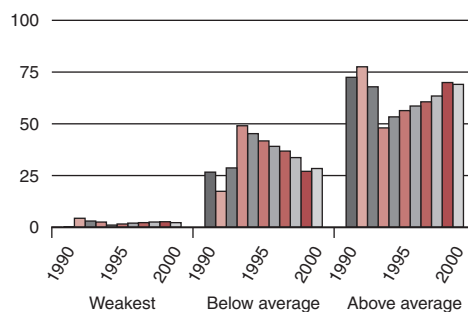
Voice



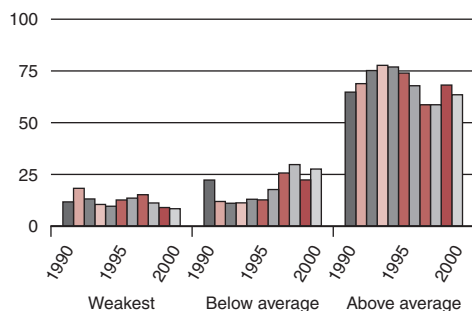
Rule of law



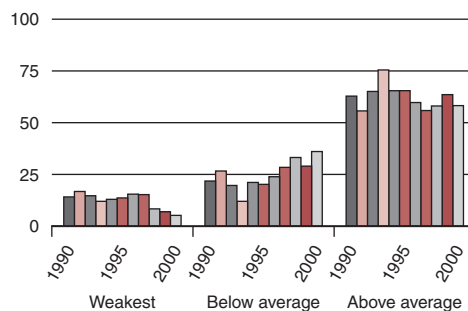
Regulatory quality



Government effectiveness



Political stability



Source: World Bank staff.

by the late 1990s when compared with earlier in the decade. In contrast, the extent of political openness has not been strongly associated with the share of FDI received. And although countries with relatively poor rankings for rule of law and anticorruption received substantial

shares of FDI, the shares tended to decline in the latter half of the 1990s. For example, countries with below average anticorruption efforts received 70 percent of developing-country FDI in 1994, but only 50 percent in 2000, while those with above-average ratings doubled their

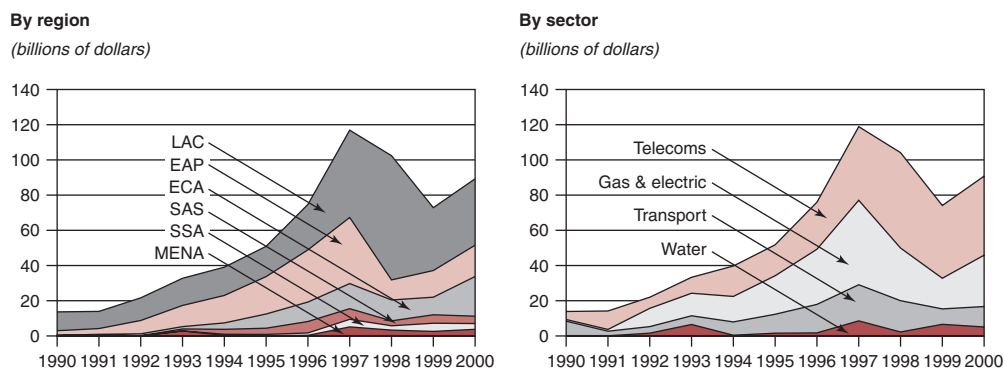
share from 20 percent to just over 40 percent. If one holds other determinants of FDI allocation (including market size, openness, inflation, and education) constant, corruption is significantly related to the share of FDI in the late 1990s, but not in the early 1990s.

Why should the share of FDI going to countries with better investment climates have increased during the 1990s? Remember that total FDI flows to developing countries increased very rapidly during this period. One possibility is that countries with high levels of corruption or weak rule of law had other attractions (such as high tariff barriers or incentives programs) that made them desirable locations for investment in particular sectors, while they remained relatively undesirable locations for FDI in general. Countries that offered such attractions for FDI were unlikely to share equally in the FDI boom during the 1990s, which generally responded to the liberalization of economic policies and improvements in macroeconomic stability in several countries. That is, countries with poor governance may have attracted a substantial amount of FDI during the 1990s because of costly incentives. However, they would be unlikely to attract increasing amounts of FDI unless they were able to continually raise in-

centives. Another hypothesis is that investors became more concerned about risk in reaction to the crises of the late 1990s, and that countries with weak governance were viewed as relatively risky. Indeed, risk premiums on junk bonds and on emerging market debt jumped sharply toward the end of 1998, indicating a shift toward increasing risk in the global environment.

The boom in private infrastructure investment during the 1990s highlights the importance of a policy for attracting foreign investment. Private infrastructure investment in developing countries surged during the 1990s, rising from \$14 billion in 1990 to a peak of \$117 billion in 1997, before easing to \$89 billion by the end of the decade (figure 2.19).⁴⁰ Foreign investors were involved in some 80 percent of recorded private infrastructure transactions from 1990 to 1998, although foreigners accounted for only about 30 percent of the dollar value of total private infrastructure financing (Sader 2000). The boom in private infrastructure investment responded to improvements in the investment climate in several of the largest developing countries. Privatization programs opened infrastructure sectors to private investment, and total privatization proceeds in infrastructure jumped

Figure 2.19 Private infrastructure investment surged in the 1990s



Note: MENA is Middle East and North Africa, ECA is Europe and Central Asia, SSA is Sub-Saharan Africa, EAP is East Asia and Pacific, SAS is South Asia, and LAC is Latin America and the Caribbean.
Source: World Bank staff.

from \$10 billion in 1990 to \$40 billion in 1998, before falling off sharply to \$12 billion in 1999 (World Bank 2001). More generally, efforts in several countries to open their economies to trade and investment and to establish more stable macroeconomic environments encouraged the surge in infrastructure investment.

The decrease in foreign investment in infrastructure projects among developing countries since 1997 largely reflects a reduced demand for infrastructure services, owing to the crises in East Asia, Russia, Brazil, and Argentina. For example, in East Asia and the Pacific, private infrastructure investment collapsed from a peak of \$38 billion in 1997 to an average of less than \$15 billion per year from 1998 to 2000. In Latin America, private infrastructure investment in 1999–2000 was halved from the 1998 peak of \$71 billion. The drop-off affected all sectors, with peak-to-trough declines of 63 percent in gas and electricity, 57 percent in transport, and 24 percent in telecommunications.

Although comprehensive data are unavailable, foreign investment in developing-country infrastructure projects has likely continued to decline in the past two years. The overall deterioration in the international economic environment has driven a sharp decline in commercial bank lending to developing countries (net long-term lending from the banks fell to a negative \$32 billion in 2001), and funds for project finance have dried up. Also, the key investors in infrastructure sectors, utilities (in the Europe and United States), equipment manufacturers, and specialized venture capitalists have seen their profits collapse, and in some cases the firms have gone bankrupt. Most of those firms are under pressure to recapitalize and are reluctant to devote their limited resources to high-risk ventures in developing countries. Finally, the scandals involving energy deregulation and the spectacular losses of privatized telecommunications firms may have reduced support for the deregulation of service sectors, a key step toward providing infrastructure services by the private sector.

Notes

1. A country's location may have an important role in attracting FDI flows. For example, Caribbean countries benefit from their proximity to the United States.

2. Data are from UNCTAD 2001. The data on cross-border M&A already introduced are not comparable to the data on FDI. For example, M&A is reported on a transactions basis, while actual payments that are reported as FDI may be spread over several years. Also, the local financing share will be reported as part of an M&A transaction but will not be reported as FDI. Thus it is not useful to compare the magnitude of M&A flows with FDI.

3. Documentation and discussion of those merger waves can be found in Golbe and White (1988, 1993), Black (2000), Holmström and Kaplan (2001), White (2001), and Pryor (2001a).

4. Analysis based on Evenett (2002).

5. These data are from White (2001, 2002). The number of corporations refers to 2000. The share of the top 100 refers to 1999.

6. In the *Fortune* list of the largest 500 global companies in 2000 (as measured by revenues), 12 were headquartered in China (including Hong Kong); 11 in Korea; 3 in Brazil; 2 each in Mexico, Russia, and South Africa; and 1 each in India, Malaysia, and the República Bolivariana de Venezuela. The remaining companies were headquartered in Japan, North America, or Western Europe.

7. Choosing the appropriate indicator of concentration is difficult. Value added is clearly the superior all-around measure of aggregate concentration, but it is not regularly reported by companies in their public financial statements or in government data. Accounting profits will depend on depreciation and amortization rates that vary across firms, and on corporate income tax rules that vary by country. Data on sales will significantly distort the relative importance of retail firms (with large ratios of sales to value added) versus manufacturing firms. Measuring concentration in terms of assets would imply double counting for financial intermediaries. Moreover, reported asset values would depend on alternative accounting treatments for M&A; changes over time in accounting and tax treatment of asset depreciation, amortization, and write-offs; and changes in the treatment of expensing versus write-off for various categories of costs. To avoid these inconsistencies and definitional problems, we use employment data to analyze global concentration, but we also look at indicators that are based on profits.

8. White (2001) also reports a rise in aggregate concentration in manufacturing alone from the 1940s to the 1980s, and then a decline in the 1990s, based on value added measures; a decline in economy-wide aggregate concentration in the 1970s, as shown by

employment and profit data; and a decline in aggregate concentration from the 1950s through the 1980s, based on assets. Somewhat similar conclusions are reached by Pryor (2001b).

9. The only antitrust concern that might be raised would be that of multimarket contacts among the largest companies. For discussions of the potential and actual influence of multimarket contacts, see Feinberg (1985), Rhoades and Heggstad (1985), Bernheim and Whinston (1990), and Evans and Kessides (1994).

10. The *Forbes* "Super 50" list is based on a composite calculation of sales, profits, employment, and market value.

11. The time series analysis is based on the *Forbes* list, which provides comparable data from 1994 to 2001. The *Fortune 500* list was not used because it included several government-owned businesses. In particular, it extended in the latter years to a few state-owned Chinese companies, thereby distorting the comparison with the mid-1990s.

12. As stated above, calculations of aggregate concentration should not be based on sales data because of the wide range of ratios of sales to value added found in different corporations. But this calculation is based on changes over time, and presumably differences in the growth rates of sales and value added are not as disparate as the levels.

13. World Bank computations are based on data from the U.S. Bureau of Census and the Japan Ministry of International Trade and Industry.

14. Even if data were available, global trends in the number of companies in major oligopolistic industries would provide only limited information concerning changes in the degree of competition. On the one hand, declining numbers of firms may be consistent with rising competition, as lower transportation and communication costs enable formerly regional firms to enter global markets. On the other hand, little change in the number of firms may be consistent with reduced competition (for example, resulting from strategic alliances with the goal of coordinating prices or sharing out markets) (OECD 2001).

15. Services are products that are to a large extent intangible, nonstorable, and nontransportable. Intangibility implies that the quality of services is uncertain because of their high and variable human content and "one-off" nature of production. Therefore, services generally require proximity and close interaction between the producer and the consumer to ensure a satisfactory level of quality. Nonstorability and nontransportability imply that services must be produced and consumed at the same time and at the same location. However, some services can be embodied in goods or stored and transmitted through electronic means. Services include such economic activities as wholesale

and retail trade; travel; transportation; storage and warehousing; telecommunications; banking, finance, and insurance; entertainment; real estate; accounting and auditing; data processing; research and development; law; health; education; public relations; personal assistance (such as auto and house repair, haircutting, and laundry); and public administration.

16. See UNCTAD (1992), table I.3, p. 18. For Germany and Japan, the initial year is 1976.

17. Services are becoming increasingly interlinked with goods, especially in high-tech products in which the use of hardware requires various software and maintenance service contracts.

18. Williamson and Mahar (1998) detail moves toward liberalization of banking sectors.

19. The importance of foreign bank participation in developing countries has been discussed by several authors (see Roldos 2002).

20. See World Bank (1997) for a discussion of the globalization of production and the developing countries.

21. The share declined from 1996 to 1999 because of the abolition of tariffs under the EU's Association Agreements, which resulted in companies switching from EU to Eastern European firms for intermediate inputs.

22. This is a narrow definition of the share of trade conducted through networks; it excludes imported inputs that are processed and sold as a final good in the domestic market.

23. Hummels, Ishii, and Yi (2001) attributed one-third of the growth in world trade over the past 25 years to trade in parts and components, rather than trade in final goods.

24. Containerized shipment allows for better tracking of cargo, more efficient and reliable port services, and greater ease of switching to land transport.

25. The volume of cargo shipped by airlines increased by 6 percent per year from 1978 to 1998, and the share of revenue from international cargo in total air shipments rose from about 40 percent to well over half (Air Transport Association 1999).

26. Deardorff (1998) points out that tariffs can either deter or stimulate participation in global networks, depending on where they are imposed and whether they are on final or intermediate goods.

27. The easing of restrictions on FDI flows in developing countries has been discussed in various editions of *Global Development Finance*.

28. Chen (1996) lists alternative forms of production relationships, including wholly owned affiliates, joint ventures, foreign minority holdings, fading-out agreements, licensing, franchising, management contracts, turnkey ventures, contractual joint ventures, and subcontracting. See also Grosse (1996) for an alternative categorization.

29. FDI requires some advantage by the multinational over home production to compensate for domestic firms' superior knowledge of local markets, consumer preferences, and business practices (Blomström and Sjöholm 1998).

30. The example is given of a Singaporean company in which some technology was transferred to a local subcontractor, but critical components were unlikely to be outsourced.

31. One concern is whether these data are distorted because multinationals may not report "true" prices of goods traded among affiliates, but they will instead increase the price (and therefore profits) of goods from low-tax locations and will reduce the price of goods from high-tax locations. There is some evidence that U.S. firms have followed this practice; however, the overall patterns of prices are similar to the pricing of goods traded between firms (Clausing 2001). Thus these data may provide a reasonably accurate picture of trends in intra-firm trade.

32. These data refer to product categories identified as parts and components in the Standard International Trade Classification (SITC) Revised 2 system. This trade is a proxy for, but is not identical to, production through networks. On the one hand, such trade may also reflect the export of relatively undifferentiated inputs to arm's-length purchasers. Conversely, many goods that are parts to consumer products are not identified as such in the SITC system. On balance, the data probably understate the extent of trade through networks (see Kaminski and Ng 2001).

33. However, Rangan and Lawrence (1999) argue, on the one hand, that the costs of search and assessment of reliability involved in choosing suppliers and outlets will mean that even arm's-length relationships can be relatively insensitive to changes in relative prices in the short term. On the other hand, multinationals face smaller search and assessment costs because of greater international experience, so they are more likely to switch production rapidly in response to relative exchange rate changes. They provide some empirical support for this view.

34. For additional U.S. evidence, see Howenstine and Zeile (1994). Griffith (1999) presents similar evidence for the United Kingdom; Gliberman, Ries, and Vertinsky (1994), for Canada; Aitken, Harrison, and Lipsey (1996), for Mexico and the República Bolivariana de Venezuela; and Te Velde and Morrissey (2001), for five African countries.

35. Conceivably, all sectors may be perfectly competitive, and the benefits of increased productivity will accrue to consumers.

36. This calculation excludes a few network participants that lack adequate time series data on manufacturing value added.

37. Excluding Korea, Malaysia, and Taiwan (China) from this set reduces the group's average growth rate of manufacturing value added to 4.3 percent per year, still much higher than other developing countries.

38. General information on apparel is mainly drawn from Gereffi (1999) and the apparel chapters in Gereffi and Korzeniewicz (1994) and Gereffi and Kaplinsky (2001).

39. The countries are classified into three categories: the worst group (more than half a standard deviation from the average), below average (half a standard deviation or less from the average), or above average.

40. Technological innovation also helped boost investment in infrastructure over the 1990s. For example, flows to the telecommunications sector rose with the dramatic reductions in the price of long-distance service.

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