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Study

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Office of Industries
U.S. International Trade Commission

Trends in U.S. Inbound and Outbound Direct Investment

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Executive Summary

This study examines trends in inbound and outbound U.S. direct investment during 1999-2004. The United States was both the largest source and largest destination of FDI in the world during 1999-2004. Outbound U.S. direct investment abroad (USDIA) has consistently been larger than foreign direct investment in the United States (FDIUS). In 2004, the USDIA position was \$2.1 trillion, compared with an FDIUS position of \$1.5 trillion. That trend seems likely to continue, as the USDIA position recorded average annual growth of 11.2 percent during the five year period under review, compared with 9.8 percent average annual growth for the FDIUS position.

For both inbound and outbound investment, the European Union and Japan accounted for the majority of total FDI stock, together accounting for 51 percent of USDIA position and 73 percent of FDIUS position. U.S. direct investment stock in China reached \$15.4 billion in 2004, or 0.7 percent of total USDIA stock. USDIA in China recorded average annual growth of 10 percent during 1999-2004, slightly below the average for all countries, but jumped by 33 percent during 2003-2004 alone.

By industry, the service sector accounted for 74 percent of USDIA position in 2004, compared with 21 percent for manufacturing, 5 percent for mining, and a negligible amount for agriculture. Finance and insurance and holding companies comprised the largest shares of service sector investment. In the manufacturing sector, the chemicals industry holds the largest share, with slightly less than half of investment in chemicals directed toward the pharmaceuticals segment of the industry. For FDIUS, services comprised 63 percent of the total investment position, compared with 34 percent in manufacturing and 3 percent in mining. In the service sector, the largest recipients of FDIUS were wholesale trade, insurance and banking. As for USDIA, the chemicals industry, and the pharmaceuticals segment in particular, received the greatest share of foreign investment in the manufacturing sector.

Both inbound and outbound FDI are closely tied to export and import trends. U.S. and foreign firms choose whether to supply markets outside their home countries by exporting or by establishing affiliates and producing goods and services locally in those markets. Affiliates both in the United States and abroad also choose whether to establish local supply chains or to import needed goods and services inputs. In the case of both U.S. deliveries of goods and services to foreign customers, and foreign deliveries to U.S. customers, affiliate sales are a much higher proportion of total deliveries than cross-border exports or imports. Intrafirm exports were 30 percent of total U.S. exports in 2003, while intrafirm imports were 36 percent of total U.S. imports.

More detailed coverage of the broad trends noted above is presented in chapters 2 through 4 of the study. In addition, chapters 5 through 8 illustrate the incentives for USDIA and FDIUS in the mining, agriculture, manufacturing, and service sectors, through detailed analysis of FDI in the copper mining, salmon farming, chemicals, and computer services industries. Chapter 9 shows that FDI by U.S. multinational companies (MNCs) contributes to economic growth in foreign countries by contributing to overall capital formation and by generating higher wages than those paid by many local firms. Chapter 10 assesses the phenomenon of offshoring of services. The study finds that the liberalization of international trade in services, combined with changes to legal and regulatory systems affecting FDI in many countries, have created significant incentives for the offshoring of services. This

offshoring has a positive effect on labor productivity in the home country, and a negative effect on home country employment. However, job losses are small compared to those that occur during a normal business cycle.

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CHAPTER 1

Introduction

Purpose and Scope

Foreign direct investment (FDI), and the enterprises established or acquired as a consequence of such investment, increasingly shapes global commerce. This report addresses questions regarding the extent of U.S. direct investment abroad (USDIA) and foreign direct investment in the United States (FDIUS), the nature of affiliate operations in the U.S. and foreign markets, and the interrelationship between trade and investment.

Multinational corporations (MNCs) are responsible for the majority of FDI through investment in corporate affiliates outside their home countries. MNCs may establish a commercial presence overseas for a variety of reasons, including better access to foreign markets, lower labor costs, access to resources or to a labor force with particular skills, and the ability to more closely monitor proprietary information and manufacturing processes. The benefits of direct investment for host countries include greater access to technology, job creation, and capital with which to fuel economic growth, pursue social objectives, and offset temporary trade imbalances.¹ MNCs can invest through two modes of entry: acquisitions or greenfield investments.² Acquisitions generally make up the largest share of new FDI in developed countries. Greenfield investments are more prevalent in developing countries, where there are fewer established firms that make attractive takeover targets.³ In the United States, for example, an average of 86 percent of all new FDI outlays during 1992-2004 were in the form of acquisitions, with the level reaching 96 percent during 1999 and 2000, due to the large number of mergers and acquisitions, especially in high-technology industries.⁴

Foreign operations account for a significant percentage of many MNCs' business. As of 2003, for example, U.S.-based General Electric (GE), was ranked as the world's top non-financial MNC in terms of total foreign assets (\$258.9 billion) by the United Nations Conference on Trade and Development (UNCTAD), with 40 percent of its sales, 40 percent of its assets, and 49 percent of its employees outside the United States. U.K.-based Vodafone and U.S.-based Ford Motor Company were ranked second and third, respectively. Of the top 100 non-financial MNCs in 2003, as ranked by UNCTAD, 24 were based in the United States, including 6 of the top 25.⁵ Tables 1-1 and 1-2, respectively, present details regarding the international operations of the world's 25 largest non-financial MNCs and 10 largest financial MNCs.

¹ For an extensive review of the determinants of direct investment, see "Examination of U.S. Inbound and Outbound Direct Investment," Staff Research Study No. 26, Pub. No. 3383, Jan. 2001, chapter 2.

² In an acquisition, an MNC acquires an equity stake in an existing firm outside its home country. In a greenfield investment, an MNC starts a new company as a branch or a subsidiary by transferring assets from its home country. (Check BEA definitions).

³ UNCTAD, *WIR 2005*, p. 10.

⁴ USDOC, BEA, *Survey of Current Business*, June 2005, p. 30.

⁵ UNCTAD, *World Investment Report 2005*, p. 267.

The operations of foreign affiliates of MNCs, as measured by affiliate sales, are now more extensive than the level of global cross-border trade. In 2004, according to UNCTAD estimates, global sales by foreign affiliates reached \$18.7 trillion, compared with global cross-border goods and services exports of \$11.1 trillion. Foreign affiliates employed an estimated 57.4 million workers; affiliates' global gross product (value added) was estimated at \$3.9 trillion the same year, equal to 10 percent of global gross domestic product (GDP) (\$40.7 trillion).⁶

The United States is the largest source and destination of foreign direct investment.

The United States consistently has been the world's largest source and recipient of FDI. In 2004, U.S. FDI outflows measured \$229.3 billion, and inflows measured \$95.9 billion.⁷ These capital flows and the operations of affiliate companies that result from such investment have pronounced effects on the economies of the United States and other FDI host countries.⁸ Foreign firms are more likely to supply goods and services to U.S. customers through their U.S.-based affiliates than they are to export to the United States.⁹ In 2003, sales by foreign-owned affiliates in the U.S. market totaled \$2.3 trillion,¹⁰ whereas U.S. cross-border imports of goods and services totaled \$1.5 trillion.¹¹ In 2003, foreign-owned affiliates in the U.S. market accounted for 5.8 percent of U.S. private-sector GDP, 4.7 percent of private-sector U.S. employment,¹² 21 percent of U.S. exports, and 28 percent of U.S. imports.¹³ Likewise, U.S. firms make extensive use of foreign affiliates to meet the demand of foreign customers for U.S. goods and services. In 2003, sales by U.S.-owned affiliates in foreign markets totaled \$3.4 trillion,¹⁴ whereas U.S. cross-border exports of goods and services totaled \$1.0 trillion.¹⁵

⁶ UNCTAD, *World Investment Report 2005*, p. 14.

⁷ By comparison, outbound direct investment flows from the United Kingdom ranked second, totaling \$65.4 billion. The United Kingdom also ranked second in terms of inbound direct investment flows in 2004, with a total of \$78.4 billion, followed by China (\$60.6 billion) and Luxembourg (\$57.0 billion). *World Investment Report 2005*, pp. 303-307.

⁸ See chapter 10 for additional discussion of how FDI affects host countries.

⁹ Both channels of delivery (affiliate transactions and cross-border exports), may be involved in a single transaction. For instance, if a U.S. affiliate sells goods or services abroad and its foreign parent performs some of the work integral to that sale and subsequently bills the affiliate, the sales revenue would be recorded as an affiliate transaction, but the exchange between the affiliate and its parent would be recorded in the U.S. balance of payments as a cross-border import.

¹⁰ USDOC, Bureau of Economic Analysis (BEA), *Foreign Direct Investment in the United States: Selected Financial and Operating Data of Affiliates, by Industry of Affiliate, 2003*, found at <http://bea.doc.gov/>, retrieved Nov. 21, 2005.

¹¹ USDOC, BEA, *Survey of Current Business*, July 2005, p. 83

¹² USDOC, BEA, *Survey of Current Business*, Aug. 2005, p. 198.

¹³ *Ibid.*, p. 200.

¹⁴ USDOC, BEA, *Selected Data for Nonbank Foreign Affiliates and Nonbank U.S. Parents in All Industries, 2003*, found at <http://bea.doc.gov/>, retrieved Nov. 21, 2005.

¹⁵ USDOC, BEA, *Survey of Current Business*, July 2005, p. 83.

Table 1-1
The world's top 25 non-financial MNCs, ranked by foreign assets,¹ 2003

Corporation	Country	Industry	Foreign assets <i>Millions of dollars</i>	Foreign assets/ Total assets	Foreign sales/ Total sales	Foreign employment/ Total employment
				<i>Percent</i>		
General Electric	United States	Electronics	258,900	40	40	49
Vodafone Group Plc	United Kingdom	Telecom	243,839	93	84	79
Ford Motor Company	United States	Automotive	173,882	57	37	42
General Motors	United States	Automotive	154,466	34	28	35
British Petroleum Co. Plc . . .	United Kingdom	Petroleum	141,551	80	83	84
ExxonMobil Corp	United States	Petroleum	116,853	67	70	61
Royal Dutch/ Shell Group	United Kingdom/ Netherlands	Petroleum	112,587	67	64	84
Toyota Motor Corp	Japan	Automotive	94,164	50	59	34
Total	France	Petroleum	87,840	87	80	55
France Telecom	France	Telecom	81,370	64	41	40
Suez	France	Utilities	74,147	84	75	65
Electricite De France	France	Utilities	67,069	36	32	31
E.On	Germany	Utilities	64,033	45	36	43
Deutsche Telekom AG	Germany	Telecom	62,624	43	38	30
RWE Group	Germany	Utilities	60,345	61	48	42
Hutchinson Whampoa Ltd.	Hong Kong	Diversified	59,141	74	58	83
Siemens AG.	Germany	Electronics	58,463	60	77	59
Volkswagen Group	Germany	Automotive	57,853	38	72	48
Honda Motor Co Ltd.	Japan	Automotive	53,113	68	77	71
Vivendi Universal	France	Diversified	52,421	76	55	65
ChevronTexaco Corp.	United States	Petroleum	50,806	62	60	55
News Corporation	Australia	Media	50,803	92	93	92
Pfizer Inc.	United States	Pharmaceuticals	48,960	42	41	60
Telecom Italia Spa	Italy	Telecom	46,047	46	20	16
BMW AG	Germany	Automotive	44,948	62	74	25

¹ In a number of cases, companies reported only partial foreign assets. In these cases, the ratio of the partial foreign assets to the partial (total) assets was applied to total assets to calculate the total foreign assets. In all cases, the resulting figures were sent for confirmation to the companies.

Source: United Nations Conference on Trade and Development (UNCTAD)/Erasmus University database, from UNCTAD, World Investment Report 2005, Annex table A.I.9.

Table 1-2
The world's top 10 financial MNCs, ranked by foreign assets,¹ 2003

Corporation	Country	Assets, total	Employment, total	No. of affiliates, foreign, total		II ²	Number of host countries
		<i>Millions of dollars</i>					
Citigroup	United States	1,264,032	275,000	320	601	53.2	77
UBS	Switzerland	1,221,066	65,929	344	410	83.9	48
Allianz Group	Germany	1,179,298	173,750	606	852	71.1	48
Mizuho Financial Group	Japan	³ 1,115,081	27,900	41	87	47.1	15
Credit Agricole SA	France	1,102,800	63,140	196	447	43.8	41
HSBC Bank plc	United Kingdom	1,034,216	218,000	573	971	59.0	48
Deutsche Bank	Germany	1,012,554	67,682	469	679	69.1	40
Mitsubishi Tokyo Financial Group	Japan	³ 995,403	37,000	49	82	59.8	37
BNP Paribas SA	France	986,675	89,071	351	641	54.8	48
ING Group	Netherlands	981,740	114,344	429	1098	39.1	34

¹ Two large mortgage companies in the United States, Fannie Mae and Freddie Mac, are excluded from this list since they only operate in their home country. Similarly, the largest cooperative financial group in Japan, Zenkyoren, is excluded from the list.

² The Internationalization Index (II) is calculated as the number of foreign affiliates divided by the number of all affiliates (note: affiliates counted in this table refer to only majority-owned affiliates).

³ Data refer to March 2004.

Source: UNCTAD, *World Investment Report 2005*, Annex table A.I.12.

Organization

The remainder of this chapter briefly defines direct investment, discusses the nature and sources of the data used in this report, and defines key terms and concepts used throughout the report. Chapter 2 focuses on USDIA during 1999-2004, examining both the countries and the industries that are important destinations for U.S. investment, and the operations of U.S.-owned affiliates located abroad. Chapter 3 examines the sources of FDIUS during the same time period. The chapter also identifies the principal U.S. industries in which foreign-owned enterprises have invested, and provides information regarding the operations of foreign-owned affiliates in the United States. Chapter 4 examines the relationship between FDI and cross-border trade, analyzing the extent of affiliates' intrafirm and extrafirm trade, how that trade relates to overall U.S. cross-border trade, and how it varies by industry and country.

Chapters 5 through 8 illustrate U.S. direct investment patterns, both inbound and outbound, for four specific industries: copper mining, salmon farming, chemicals manufacturing, and computer systems design services. Taken together, these industry analyses illustrate how factors affecting FDI decisions, such as wage rates, government regulation, geography, natural resources, and market proximity, vary across the mining, agriculture, manufacturing, and service sectors. Chapters 9 and 10 discuss the current literature related to two FDI

special topics: the effects of FDI on host countries, and trends in FDI related to the offshoring of services, compared to the offshoring of manufacturing activities.

Direct Investment Defined

USDIA, or outbound investment, reflects investment by U.S. parent companies in foreign-based affiliate companies, where the U.S. parent owns or controls, directly or indirectly, 10 percent or more of the voting securities of an incorporated foreign business enterprise, or the equivalent interest in an unincorporated foreign business enterprise.¹⁶

FDIUS, or inbound investment, is defined as the ownership or control, directly or indirectly, by one foreign resident of 10 percent or more of the voting securities of an incorporated U.S. business, or the equivalent interest in an unincorporated U.S. business.¹⁷ A foreign parent is the first person¹⁸ outside the United States in a U.S. affiliate's ownership chain that has a direct investment in the affiliate. In certain instances, U.S. data are presented in terms of the ultimate beneficial owner and the foreign parent group.¹⁹

Direct Investment Data

The Bureau of Economic Analysis (BEA) maintains two sets of data that provide information about U.S. and foreign multinational corporations: (1) balance of payments data and associated direct investment position data, and (2) financial and operating data of multinational parents and their affiliates. Balance of payments data report the value of transactions between parents and their affiliates, and are reflected in both the current account and the capital account. Direct investment position, or stock, data reflect the cumulative value of parents' investments in their affiliates.²⁰ In contrast, financial and operating data

¹⁶ A U.S. parent is defined by BEA as a fully consolidated enterprise that consists of (1) the U.S. parent corporation, with a direct or indirect ownership interest of 10 percent or more in a business interest in a foreign business enterprise, (2) any U.S. corporation, proceeding up the ownership chain, that owns more than 50 percent of each corporation below it, and (3) any U.S. corporation, proceeding down each ownership chain from the U.S. parent corporation, that is more than 50 percent owned by the U.S. corporation above it. USDOC, BEA, *U.S. Direct Investment Abroad: Final Results from the 1999 Benchmark Survey*, found at <http://www.bea.gov/bea/ARTICLES/INTERNAT/USINVEST/Meth/usdia99.pdf>.

¹⁷ USDOC, BEA, "Foreign Direct Investment in the United States," *Survey of Current Business*, Sept. 2005, p. 79.

¹⁸ Persons are defined to include business enterprises; religious, charitable, or other nonprofit organizations; individuals; governments; and certain other entities, such as estates and trusts.

¹⁹ The ultimate beneficial owner (UBO) of a U.S. affiliate is that person, proceeding up the affiliate's ownership chain, that is not more than 50 percent owned by another person. Therefore, it is possible for the affiliate, the foreign parent, and the UBO to be established in three separate countries. There are also cases where a U.S. affiliate is owned by a foreign parent, which is owned in turn by a UBO in the United States. If the foreign parent is not owned more than 50 percent by another juridical person (corporation), the foreign parent and the UBO are the same. The foreign parent group consists of (1) the foreign parent, (2) any foreign person, proceeding up the parent's ownership chain, that owns more than 50 percent of the person below it, up to and including the UBO, and (3) any foreign person, proceeding down the ownership chain of each of these members, that is owned more than 50 percent by the person above it. USDOC, BEA, "Foreign Direct Investment in the United States," *Survey of Current Business*, Sept. 2005, p. 79.

²⁰ Historical cost data, which reflect the value of investments at the time of investment, are the only direct investment data that provide country- and industry-specific detail. This report presents these data in nominal terms only; the data are not corrected for inflation. For a discussion of issues regarding the deflation of these data, see USDOC, BEA, "Valuation of the U.S. Net International Investment Position," *International Direct Investment: Studies by the Bureau of Economic Analysis* (Washington, DC: USDOC, 1999), pp. 3-15.

track sales, assets, wages, employment, and various other indicators pertaining to the operations of both parents and affiliates. Data pertaining to the operations of affiliates reflect the entire affiliate company, not just the equity share of the foreign parent.

BEA generally collects data through mandatory surveys. Benchmark surveys, conducted every 5 years, collect both types of data and cover virtually all multinational corporations. BEA also conducts quarterly and annual sample surveys, with balance of payments and direct investment position data collected in the former, and financial and operating data collected in the latter. Sample surveys are not mandatory for small affiliates,²¹ but BEA estimates the data for these affiliates by extrapolating from the most recent benchmark survey.²² Data regarding FDI capture a complex set of financial flows. More information on these flows, and their relationship to the U.S. balance of payments accounts, is presented in appendix A of “Examination of U.S. Inbound and Outbound Investment,” a previous Commission study on this topic.²³

The time series for this study begins in 1999, the year for which BEA began to present USDIA data by industry according to the North American Industry Classification System (NAICS). Due to the change in classification systems, industry data for prior years are not directly comparable to data presented for 1999 and later.²⁴ The most recent available data reflect 2004 direct investment position and flows, and 2003 affiliate operations, including sales, assets, employment, and other indicators. Much of the data relating to affiliate operations are available only for affiliates that are majority-owned by their parents, rather than for all affiliates (those for which parents control at least 10 percent of equity). While this may introduce slight data discrepancies, indicators for majority-owned affiliates represent approximately 90 percent of the total for all affiliates (table 1-3), and trends tend to be very similar.

The data presented throughout this report use a consistent set of countries and industries to illustrate direct investment trends. The countries presented in the tables were chosen as a cross-section of countries from different geographical regions, and from both the developed and developing countries. These countries include those that represent important sources and destinations of U.S. FDI, as well as those whose FDI relationship with the United States is not as strong. Data for the European Union include the EU-25 countries for 2004, and the EU-15 countries for earlier years. BEA does not publish data for all of the individual EU member countries, so it is not possible to present consistent data across all years. However, the share of the 10 new EU member countries in overall EU inbound and outbound U.S. investment is presumed to be small.

The industries presented in the tables generally reflect the major industry groups as defined by BEA. For the purposes of this study, the service sector is defined in the tables as the total for all industries, minus the manufacturing, agriculture, and mining sectors. The industry groups included within the service sector thus include wholesale trade; retail trade;

²¹ Affiliates are required to respond only if they have assets, sales, or net income greater than \$3 million. USDOC, BEA, *Survey of Current Business*, Aug. 1999, p. 23.

²² USDOC, BEA, “A Guide to BEA Statistics on U.S. Multinational Companies,” *International Direct Investment*, pp. 199-200.

²³ See USITC, *Examination of U.S. Inbound and Outbound Investment*, Pub. No. 3383, Jan. 2001.

²⁴ FDIUS data by industry using the NAICS system is available from 1997, but this report begins its analysis from 1999 for the sake of comparability with the USDIA data.

Table 1-3
Majority-owned affiliates as a share of all affiliates, selected indicators, 2003

	Number of affiliates	Assets	Sales	Employees
		<i>(million dollars)</i>		<i>(thousands)</i>
USDIA				
All affiliates	25,112	8,194	3,383	9,878.9
Majority-owned affiliates	23,201	7,469	2,909	8,363.9
Majority-owned affiliates as a share of total	92.4%	91.1%	85.9%	84.7%
FDIUS				
All affiliates	5,409	5,812	2,340	5,735.0
Majority-owned affiliates	4,716	5,094	2,137	5,253.0
Majority-owned affiliates as a share of total	87.2%	87.6%	91.3%	91.6%

Source: USDOC, BEA, U.S. Direct Investment Abroad, Table 2.A.1 and 3.A.1, and Foreign Direct Investment in the United States, Table 2.A.1.

information; depository institutions; finance and insurance; professional, scientific, and technical services; utilities; and other services.²⁵

Except where specifically noted, the data used in the study reflect values presented at historical cost. These data have not been adjusted to account for inflation, shifts in exchange rates, or market valuations of company assets. Such adjusted data are not available at the level of industry and country detail presented here. Where possible, the industry discussions in chapters 5 through 9 present similar data, to facilitate comparison of FDI trends across industries. However, the available data vary by industry, so direct comparisons are not always possible.

The BEA data are supplemented in this report with data from UNCTAD and the World Bank, for purposes of cross-country comparison. UNCTAD and the World Bank collect data from official country statistical agencies, and through annual surveys of investment experts and industry representatives.²⁶ Throughout the report, data from these sources are supplemented by data from individual country statistical agencies, private databases, company information, and press reports, as appropriate. Chapters 9 and 10 also rely on the available economic literature relevant to particular aspects of foreign direct investment.

²⁵ Includes construction; transportation and warehousing; real estate; rental and leasing; management of nonbank companies and enterprises, including holding companies; administration, support, and waste management; health care and social assistance; accommodation and food; education; arts, entertainment, and recreation; and other miscellaneous services.

²⁶ See UNCTAD, *World Investment Report 2005*, Annex B, pp. 297-302.

CHAPTER 2

U.S. Direct Investment Abroad

Summary of Key Findings

The majority of U.S. direct investment abroad (USDIA) is invested in the developed OECD economies, with the EU-25 accounting for 46 percent of the USDIA position in 2004 and Canada accounting for 10 percent. Middle and low-income countries as a group accounted for 19 percent of USDIA position. Sales by U.S.-owned foreign affiliates were highest in the United Kingdom and Canada, but sales by affiliates located in China, Russia, Luxembourg, and Bermuda recorded the fastest growth, all in the range of 20 percent per year, on average, between 1999 and 2004. U.S. affiliates employ the greatest number of people in the United Kingdom, Canada, and Mexico.

The service sector accounts for 74 percent of USDIA stock, with the finance industry accounting for the greatest share. Investment in the finance industry includes funds destined for holding companies, which are generally reinvested in other sectors, but data on the final industry destinations are not available. The manufacturing sector accounts for 20 percent of USDIA stock, with the chemicals industry taking the largest share, followed by computers and electronic products. However, manufacturing affiliates accounted for 47 percent of sales by foreign affiliates, implying that much of the funding invested in holding companies is eventually destined for the establishment of manufacturing affiliates. The manufacturing sector also accounts for 51 percent of employees of foreign affiliates, with the largest share in the transportation equipment industry.

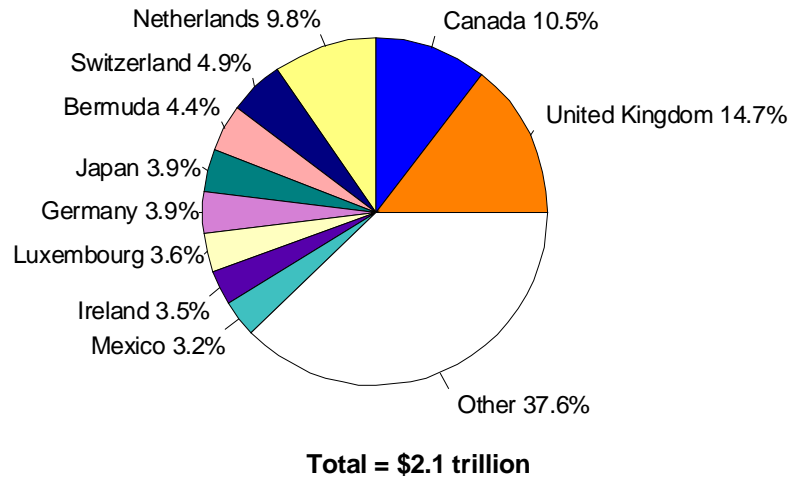
Which countries have attracted the most U.S. direct investment abroad (USDIA)?

Between 1999 and 2004, developed OECD economies received the greatest share of USDIA, suggesting that U.S. firms invest abroad, in part, to establish and maintain a presence in large, well established markets.¹ In 2004, the United Kingdom was the leading host country of USDIA, followed by Canada, the Netherlands, Switzerland, and Bermuda (figure 2-1). U.S. direct investment in large OECD countries conforms to well established investment patterns, while investment in Bermuda reflects the island's status as a major offshore financial center and the large amount of capital moving through resident financial institutions. The leading destinations for USDIA did not change significantly between 1999 and 2004, although some movement among country rankings did occur (table 2-1). Notably, France and Brazil dropped out of the top ten and were replaced by Luxembourg and

The European Union held almost half of USDIA from 1999 to 2004.

¹ Among leading host countries of USDIA, Canada, France, Germany, Ireland, Japan, Luxembourg, Mexico, the Netherlands, Switzerland, and the United Kingdom are OECD member countries. Organisation for Economic Co-operation and Development, *OECD Member Countries*.

Figure 2-1
USDIA: Direct investment position, by country, 2004



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, Sept. 2005, pp. 152-154.

Ireland.² Brazil fell from the top ten, in part because of negative currency-translation adjustments resulting from the strengthening of the U.S. dollar against the country's currency.³ U.S. direct investment in Luxembourg and Ireland increased dramatically from 1999.⁴ Investors in Ireland have cited several explanations, including a highly educated, English-speaking population; low corporate tax rates; recent infrastructure investment; and Ireland's access to the EU market. There are about 580 U.S.-based firms in Ireland, operating primarily in chemicals, bio-pharmaceuticals and healthcare, computer hardware and software, electronics, and financial services.⁵ As noted in chapter 9, FDI in Luxembourg is primarily in holding companies, destined for final destinations in other countries and industries.

² While USDIA in Brazil decreased from 1999 to 2004, the stock of USDIA in France increased, albeit too slowly to retain its status as a top ten host country of USDIA. U.S. and foreign companies often note the very high payroll and income taxes, pervasive regulation of labor and products markets, and sometimes negative attitudes toward foreign investors as disincentives to investing in France. U.S. Department of State, "2005 Investment Climate Statement: France."

³ U.S. Department of Commerce (USDOC), Bureau of Economic Analysis (BEA), "Direct Investment Positions for 2002 - Country and Industry Detail," 27.

⁴ Industry sectors within Ireland experiencing the greatest average annual increase in USDIA during 1999 to 2004 include wholesale trade (51.0 percent), finance and insurance (45.8 percent), computer and electronic products (42.5 percent), and chemicals (25.7 percent). Industry sectors with the most regressive average annual change in USDIA during the same period included primary and fabricated metals (-15.6 percent) and machinery (-25.1 percent). USDOC, BEA, *U.S. Direct Investment Abroad, 2002*, 118; and USDOC, BEA, *U.S. Direct Investment Abroad, 2004*, 134.

⁵ U.S. Department of State, "2005 Investment Climate Statement: Ireland."

Table 2-1

USDIA: Direct investment position on a historical-cost basis, by country, 1999 and 2004

Country	1999		2004		Average annual growth, 1999-2004	Gross domestic product, 2004
	Millions of dollars	Percent of total	Millions of dollars	Percent of total	Percent	Million dollars
All countries	1,215,960		2,063,998		11.2	23,129,494
Australia	35,386	2.9	² 48,858	2.4	6.7	631,256
Belgium	21,756	1.8	27,761	1.3	5.0	349,830
Bermuda	50,847	4.2	91,265	4.4	12.4	3,966
Brazil	37,184	3.1	33,267	1.6	-2.2	604,855
Canada	119,590	9.8	216,571	10.5	12.6	979,764
Chile	10,177	0.8	10,196	0.5	0.0	94,105
China	9,401	0.8	15,430	0.7	10.4	1,649,329
France	43,120	3.5	58,927	2.9	6.4	2,002,582
Germany	53,399	4.4	79,579	3.9	8.3	2,714,418
Hong Kong	22,759	1.9	43,743	2.1	14.0	163,005
Hungary	2,409	0.2	3,285	0.2	6.4	99,712
Iceland	³ 26	0.0	5	0.0	-28.1	12,380
India	2,390	0.2	6,203	0.3	21.0	691,876
Ireland	25,157	2.1	73,153	3.5	23.8	183,560
Italy	17,889	1.5	33,378	1.6	13.3	1,672,302
Japan	55,120	4.5	80,246	3.9	7.8	4,623,398
Luxembourg	22,148	1.8	74,902	3.6	27.6	31,143
Mexico	37,151	3.1	66,554	3.2	12.4	676,497
Netherlands	121,315	10.0	201,918	9.8	10.7	577,260
Panama	33,493	2.8	5,868	0.3	-29.4	13,793
Philippines	3,517	0.3	6,338	0.3	12.5	86,429
Poland	3,281	0.3	6,059	0.3	13.1	241,833
Russia	1,678	0.1	2,231	0.1	5.9	582,395
Singapore	20,665	1.7	56,900	2.8	22.5	106,818
South Africa	3,474	0.3	4,966	0.2	7.4	212,777
Spain	19,970	1.6	45,251	2.2	17.8	991,442
Sweden	10,624	0.9	36,399	1.8	27.9	346,404
Switzerland	40,532	3.3	100,727	4.9	20.0	359,465
Taiwan	6,744	0.6	² 12,148	0.6	12.5	286,002
United Kingdom Islands, Caribbean	29,762	2.4	63,066	3.1	16.2	(⁴)
United Kingdom	216,638	17.8	302,523	14.7	6.9	2,140,898
European Union ⁵	564,037	46.4	965,379	46.8	11.3	(⁴)

¹ Direct investment position is the sum of foreign parents' equity holdings in their U.S. affiliates (including retained earnings), plus the net outstanding loans that foreign parents have made to these affiliates. Direct investment position is negative when the value of loans made by U.S. affiliates to their foreign parent companies exceeds the value of the parents' equity holdings plus the value of loans made by the parent to its affiliate companies.

² Data are for 2003. Data for 2004 are not available.

³ Data are for 2000. Data for 1999 are not available.

⁴ Not available.

⁵ Data for 1999 are for the EU-15. Data for 2004 are for the EU-25.

Sources: U.S. Department of Commerce (USDOC), Bureau of Economic Analysis (BEA), Balance of Payments and Direct Investment Position Data, found at <http://www.bea.gov/bea/di/di1us/bal.htm>; estimates by the Commission; World Bank, found at <http://www.worldbank.org/> retrieved Dec. 22, 2005; Government of Bermuda, Department of Statistics; and Republic of China, National Statistics, found at <http://eng.stat.gov.tw>.

Together, the leading ten recipient countries accounted for 62 percent of the U.S. direct investment position abroad in 2004. The EU-25 accounted for almost half of USDIA, owing in large part to the United Kingdom, which was the largest recipient of U.S. direct investment stock worldwide. Within Europe, industries that attracted the most USDIA in 2004 were, ordered by amount of USDIA, manufacturing, finance and insurance, and wholesale trade. Industries in which USDIA experienced the greatest change were information, which increased sharply, and utilities, which decreased.⁶ Industries that attracted the most USDIA within the United Kingdom were, ordered by amount of USDIA, finance and insurance, manufacturing, and depository institutions (banking). Industries in which USDIA in the United Kingdom experienced the greatest change were professional, scientific, and technical services, which increased by 26 percent, and mining, which decreased by 27 percent.⁷

Since 1999, USDIA has grown rapidly in Sweden, Luxembourg, Ireland, Singapore, and India. For Bermuda, Canada, Ireland, Luxembourg, Mexico, and Switzerland, U.S. outbound stock grew faster than the average annual rate of 11.2 percent for all countries during 1999-2004. In contrast, the U.S. outbound direct investment position in Germany, Japan, the Netherlands, and the United Kingdom grew at a slower rate than total U.S. outbound stock during the period. USDIA in China also grew at an average annual rate just below the rate for all countries. China's USDIA position in the manufacturing sector increased from 2003 to 2004, primarily because of equity capital flows and reinvested earnings.⁸

In 2004, the USDIA position in the Asia-Pacific region grew more rapidly than USDIA in other regions in both absolute and percentage terms. The restructuring of a large Australian media company (Rupert Murdoch's News Corporation) was primarily responsible for the increase, yet even excluding this transaction, USDIA in the region grew significantly. In Japan, reinvested earnings of affiliates in the finance and insurance industry sector and in holding companies contributed to the increase in USDIA position.⁹ Industries holding the most USDIA in Japan in 2004 included finance and insurance; wholesale trade; professional, scientific, and technical services; information services; computer and electronic products; and chemical manufacturing. These sectors accounted for 81 percent of USDIA in Japan, with finance and insurance alone accounting for 49 percent of the total.

⁶ USDOC, BEA, *U.S. Direct Investment Abroad*, 124.

⁷ USDOC, BEA, *U.S. Direct Investment Abroad*, 124.

⁸ In 2004, China ranked twentieth by USDIA position. USDOC, BEA, *Direct Investment Positions for 2004*, 43.

⁹ USDOC, BEA, *Direct Investment Positions for 2004*, 43.

What proportion of U.S. outbound investment stock is in high-income vs. low- and middle-income countries?

In 2004, 81 percent of U.S. outbound direct investment stock was in high-income economies (figure 2-2).¹⁰ Further, high-income countries in which gross national income (GNI) per capita is greater than \$20,000 accounted for 74 percent of total U.S. outbound investment stock in 2004.¹¹ The majority of foreign affiliates of U.S. firms are also located in high-income countries. The longstanding tendency for U.S. multinational corporations (MNCs) to position investments in high-income countries suggests that key factors influencing such investment include access to large and affluent markets. Relevant criteria may include access to skilled labor, access to supplying firms, political stability, ability to repatriate profits, stable currency, and other factors.¹²

Middle and low income countries accounted for 19 percent of USDIA stock in 2004.

Europe received the largest amount of USDIA in 2004, accounting for 53 percent of the worldwide total.¹³ U.S. investment in Europe is widely diversified across industries, reflecting the strong European market for both goods and services, as well as the integration of the U.S. and European economies. For example, in 2004, the European chemicals, information, wholesale trade, and depository institutions (banking) industries each accounted for approximately 60 percent of worldwide USDIA stock in these industries. As is the case for USDIA worldwide, finance and insurance, wholesale trade, and chemicals are the leading industry sectors for USDIA in Europe, together accounting for 29 percent of the European total. Industries in Europe that experienced the greatest increases in USDIA since 1999 were finance and insurance, wholesale trade, and computer and electronic products. Industries that experienced the smallest average annual changes in USDIA were mining, machinery manufacturing, transportation equipment, and utilities.¹⁴

¹⁰ Countries in which gross national income (GNI) per capita was greater than or equal to \$10,066 (in 2004) are considered by the World Bank to be high-income economies. Fifty-five countries are currently classified as high-income economies.

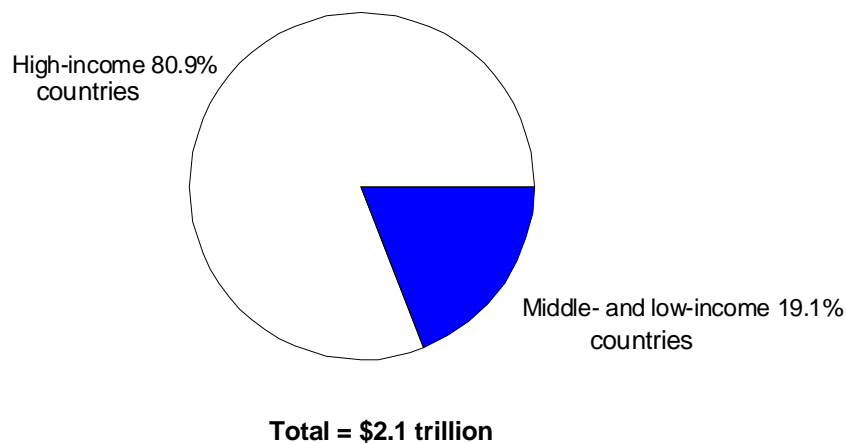
¹¹ World Bank, "GNI per capita 2004, Atlas method and PPP."

¹² USDOC, BEA, "U.S. Multinational Companies - Operations in 2003," *Survey of Current Business*, July 2005, 17.

¹³ Reflects all European countries, not just EU members. Switzerland accounted for almost 5 percent of USDIA in 2004 (table 2-1).

¹⁴ All data in this paragraph are from USDOC, BEA, *U.S. Direct Investment Abroad, 2002*, 118; and USDOC, BEA, *U.S. Direct Investment Abroad, 2004*, 136.

Figure 2-2
USDIA: Direct Investment position, by country income level, 2004



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, Sept. 2005, pp. 152-154; and World Bank, found at <http://siteresources.worldbank.org/datastastics/resources/class.xls>, retrieved May 22, 2006.

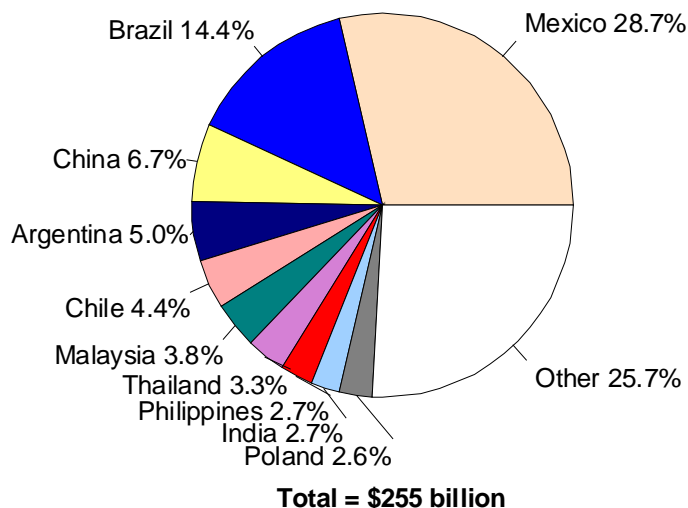
How rapidly has USDIA in low- and middle-income countries grown, compared to USDIA in high-income countries?

U.S. outbound investment stock located in low-income economies more than doubled during 1999-2004, yet the share of USDIA hosted by such economies increased from just 0.5 percent to 0.6 percent, as the amount remained a fraction of total USDIA stock.¹⁵ Among low-income economies, India, Pakistan, and Nigeria experienced significant increases of USDIA stock since 1999, both in terms of overall totals and percentage gains. USDIA stock in middle-income economies increased from \$226 billion in 1999 to \$242 billion in 2004, yet as a share of total USDIA stock, USDIA stock in middle-income economies decreased from 18.6 percent to 11.7 percent. By contrast, the share of U.S. outbound stock hosted by high-income countries has risen slightly since 1999, while the share of outbound stock hosted by the 10 leading high-income countries has remained fairly constant.

The five leading middle-income economies in terms of USDIA position in 2004 were Mexico, Brazil, China, Argentina, and Chile (figure 2-3). Among low-income economies, India hosted the largest share of total U.S. outbound stock, with \$6.2 billion, or 0.3 percent, of total U.S. outbound stock in 2004. USDIA in China, India, Mexico, and the Philippines experienced particularly strong growth, yet because they are starting from a relatively small base, their rankings by share of total USDIA have changed little. Leading industries for USDIA in India in 2004 included utilities, depository institutions, and professional,

¹⁵ According to the World Bank, countries in which 2004 GNI per capita fell between \$826 and \$10,065 are considered middle-income economies, and countries in which 2004 GNI per capita was less than or equal to \$825 are considered low-income economies. Fifty-nine countries are currently classified as low-income economies, 94 countries are classified as middle-income economies, and 55 are classified as high-income economies. The World Bank Group, "Data & Statistics - Country Classification."

Figure 2-3
USDIA: Direct investment position, top 10 low- and middle-income countries,¹ 2004



¹ Total does not include the following 14 countries: Australia, Cuba, Fiji, Indonesia, Iran, Lithuania, Macau, Palau, Paraguay, Slovenia, St. Lucia, Suriname, Syria, and Vanuatu.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, Sept. 2005, pp. 152-154; and World Bank, found at <http://www.worldbank.org/>, retrieved Dec. 22, 2005.

scientific, and technical services. In Mexico, leading industries included transportation equipment, chemicals, and finance and insurance; and in the Philippines they included utilities, computer and electronic products, and finance and insurance.

The declining USDIA position in Brazil is primarily due to significant decreases in four industries: chemicals, computer and electronic products, depository institutions, and transportation equipment, which recorded declines of 29 percent, 63 percent, 10 percent, and 83 percent, respectively, during 1999 to 2004. At the end of the 1990s, Brazil experienced a financial crisis and the 1999 devaluation of the Brazilian *real*. The downturn in Brazil's economy slowed the country's economic growth, and likely contributed to declining U.S. investment.¹⁶

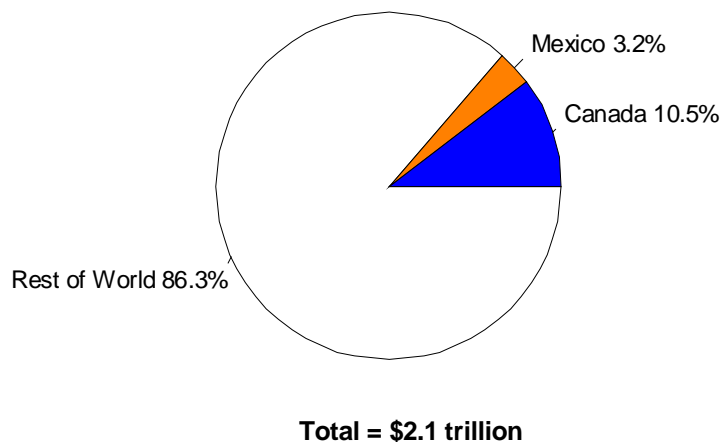
***What is the U.S. direct investment position in Canada and Mexico?
 How does the growth of USDIA in NAFTA partners compare to the
 growth rate of total U.S. outbound investment?***

The United States' direct investment position in its NAFTA partner countries, Canada and Mexico, totaled \$283.1 billion in 2004, of which 77 percent was invested in Canada and 24 percent in Mexico.¹⁷ The combined total accounted for 14 percent of total U.S. outbound investment stock (figure 2-4). The manufacturing, finance and insurance, and mining sectors

¹⁶ Congressional Research Service, The Library of Congress, *Trade Integration in the Americas*.

¹⁷ The NAFTA agreement went into effect on January 1, 1994, while the U.S.-Canada Free Trade Agreement went into effect in 1989.

Figure 2-4
USDIA: Direct investment position, NAFTA partners vs. rest of the world, 2004



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, Sept. 2005, p. 152.

account for the greatest share of U.S. outbound stock in Canada (table 2-2).¹⁸ The rise in U.S. outbound stock in the mining sector reflects several new equity transactions during 1999-2001, and the reinvestment of earnings resulting from higher metal prices in 2003-04.¹⁹ Notable transactions include Newmont Mining Company's acquisition of several Canadian gold interests,²⁰ Aber Diamond Corporation's 40-percent joint venture development of the Diavik Diamond Mine, which started producing in 2002,²¹ Inco's development of the Voisey's Bay nickel properties, and several other companies' iron ore mining ownership and development transactions.²²

In Mexico, U.S. direct investment stock is most concentrated in manufacturing, depository institutions, and finance and insurance (table 2-3). Overall, Mexico accounted for about 50 percent of all USDIA stock in Latin American financial services from 1990 to 2003.²³ A

¹⁸ For more information on U.S. investment in the mining sector, see chapter 5.

¹⁹ U.S. Government official, telephone interview with USITC staff, Jan. 19, 2006.

²⁰ For more information, see Newmont Mining Corporation's Internet site at www.newmont.com/en/about/history/index.asp.

²¹ Diavik Diamond Mines Inc., *Diavik Annual Social and Environmental Report - 2000*; U.S. Geological Survey, "Diamond (Industrial)," Mineral Resources Program, *Minerals Yearbook 2004*, found at minerals.usgs.gov/minerals/pubs/commodity/diamond/diamomyb04.pdf; and Marketwatch profile, found at www.answers.com/topic/aber-diamond-corporation-usa, retrieved Jan. 19, 2006.

²² Numerous transactions occurred in both directions across the Great Lakes and into Quebec and Labrador. For more information, see U.S. Geological Survey, "Iron Ore," *Mineral Commodity Summaries and Minerals Yearbook*, various issues, minerals.usgs.gov/minerals/pubs/commodity/iron_ore/.

²³ A consequence of the 1990s boom in such investment was the significant shift in the structure of financial systems in emerging market economies such as Mexico. Most notably, the share of assets held by foreign banks increased considerably. In Mexico, foreign ownership of the banking sector is as high as 80 percent. Bank for International Settlements, Committee on the Global Financial System, *Foreign Direct Investment in the Financial Sector of Emerging Market Economies*.

Table 2-2
USDIA: Direct investment position in Canada, by industry, 1999 and 2004

Industry	1999		2004	
	Millions of dollars	Percent of total	Millions of dollars	Percent of total
Mining	11,880	9.9	30,879	14.3
Utilities	1,151	1.0	1,387	0.6
Manufacturing	47,694	39.9	76,786	35.5
Wholesale trade	8,135	6.8	11,797	5.4
Depository institutions	1,967	1.6	2,981	1.4
Finance and insurance	25,231	21.1	36,889	17.0
Professional, scientific and technical services	1,149	1.0	2,281	1.1
Information services	2,350	2.0	3,485	1.6
Other	20,032	16.8	50,085	23.1
Total	119,590		216,571	

Note. - Due to rounding total percent might not equal 100.

Source: U.S. Department of Commerce (USDOC), Bureau of Economic Analysis (BEA), Balance of Payments and Direct Investment Position Data, found at <http://www.bea.gov/di/di1us/bal.htm>.

Table 2-3
USDIA: Direct investment position in Mexico, by industry, 1999 and 2004

Industry	1999		2004	
	Millions of dollars	Percent of total	Millions of dollars	Percent of total
Mining	321	0.9	1,703	2.6
Utilities	246	0.7	568	0.9
Manufacturing	18,155	48.9	19,438	29.2
Wholesale trade	2,175	5.9	1,954	2.9
Depository institutions	1,623	4.4	16,811	25.3
Finance and insurance	4,135	11.1	11,160	16.8
Professional, scientific and technical services	618	1.7	567	0.9
Information services	1,069	2.9	1,495	2.2
Other	8,807	23.7	12,858	19.3
Total	37,151		66,554	

Note. - Due to rounding total percent might not equal 100.

Source: U.S. Department of Commerce (USDOC), Bureau of Economic Analysis (BEA), Balance of Payments and Direct Investment Position Data, found at <http://www.bea.gov/di/di1us/bal.htm>.

number of U.S. banks have important investments in Mexico, including Citigroup, which acquired 100 percent of Grupo Financiero Banamex in 2001 for \$12.5 billion, Bank of America, which acquired a 25 percent equity stake in Grupo Financiero Santander-Serfin in 2003 for \$1.6 billion, and Principal Financial, which acquired 100 percent of Afore Tepeyac, a Mexico insurance and pension fund provider, for \$57.7 million in 2003.²⁴

What is the U.S. direct investment position in China? How does the trend in China compare to trends in other countries?

USDIA in China is rising rapidly, but remains a small percentage of the overall U.S. total.

U.S. direct investment stock in China reached \$15.4 billion in 2004, equal to less than 1 percent of total USDIA stock, but recording average annual growth of over 10 percent during 1999-2004.²⁵ Annual flows of new U.S. investment into China ranged from just under \$1 billion to just under \$2 billion during 1999-2003, then increased by \$4.2 billion in 2004 (figure 2-5). A comparison with U.S. capital outflows to other East Asian host countries sheds light on USDIA to China during the period. In 1999, USDIA outflows to China were roughly 20 percent of the amount of U.S. capital sent to Japan. In 2004, U.S. capital outflows to China were equivalent to 40 percent of outflows to Japan (figure 2-6). Throughout the period, USDIA outflows to China were similar to outflows to Korea. In 2004, USDIA capital outflows to China were nearly eight times the level of outflows to Thailand.²⁶

In which countries did U.S.-owned foreign affiliates record the highest sales? In which countries are foreign affiliate sales experiencing the most rapid growth?

In 2003, U.S.-owned foreign affiliates recorded sales totaling \$3.4 trillion.²⁷ Foreign affiliates in the United Kingdom registered the highest sales, accounting for \$443.4 billion, or 13 percent, of total foreign affiliate sales (table 2-4). Other countries accounting for a significant portion of U.S.-owned foreign affiliate sales were Canada (12 percent), Japan (8 percent), Germany (8 percent), and the Netherlands (5 percent) (figure 2-7). The EU-15 accounted for 44 percent of total U.S. owned foreign affiliate sales. Other countries that accounted for more than 2 percent of foreign affiliate sales in 2003 include Australia, Belgium, Brazil, Ireland, Italy, Mexico, Singapore, and Spain.

Sales by U.S.-owned foreign affiliates have increased since 1999 in Europe and the Asia-Pacific region, while such sales in South America experienced a sharp drop, reflecting economic difficulties in Argentina, and slow growth in other countries in the region. Sales by U.S.-owned foreign affiliates grew rapidly during 2000-2003 in China, increasing at an average of 25 percent per year.²⁸ This likely reflects the liberalization of many Chinese foreign investment regulations following China's WTO accession in 2001, with U.S. and other foreign firms permitted to operate in many cities formerly closed to foreign investors.

²⁴ Zephyr database.

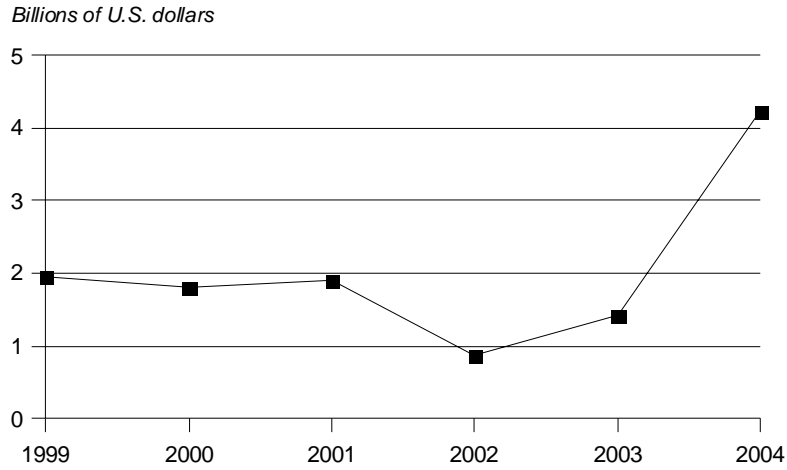
²⁵ USDOC, BEA, "U.S. Direct Investment Abroad, 2004."

²⁶ USDOC, BEA, *Survey of Current Business*, Sept. 2004, 138; and Sept. 2005, 154.

²⁷ Data for 2003 are the most recent available.

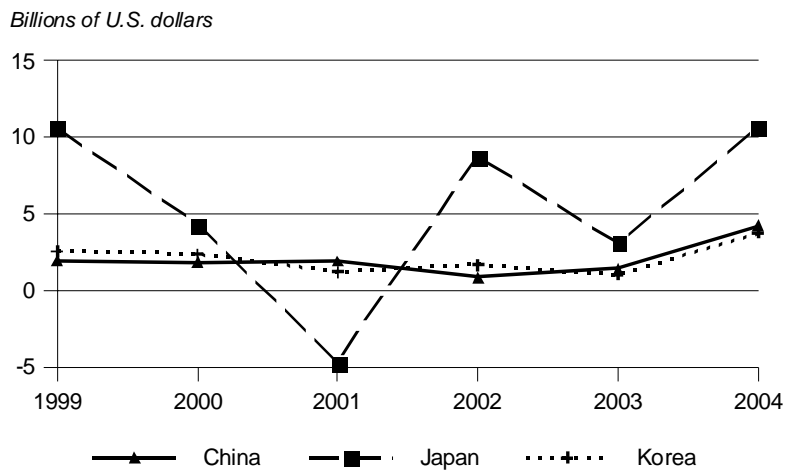
²⁸ Data for foreign affiliate sales in China in 1999 were suppressed to avoid disclosure of data of individual companies.

Figure 2-5
USDIA: Direct investment outflows to China, 1999-2004



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, Sept. 2005, p. 154 and Sept. 2003, p. 144.

Figure 2-6
USDIA: Direct investment outflows to China, Japan, and Korea, 1999-2004



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, Sept. 2005, p. 154 and Sept. 2003, p. 144.

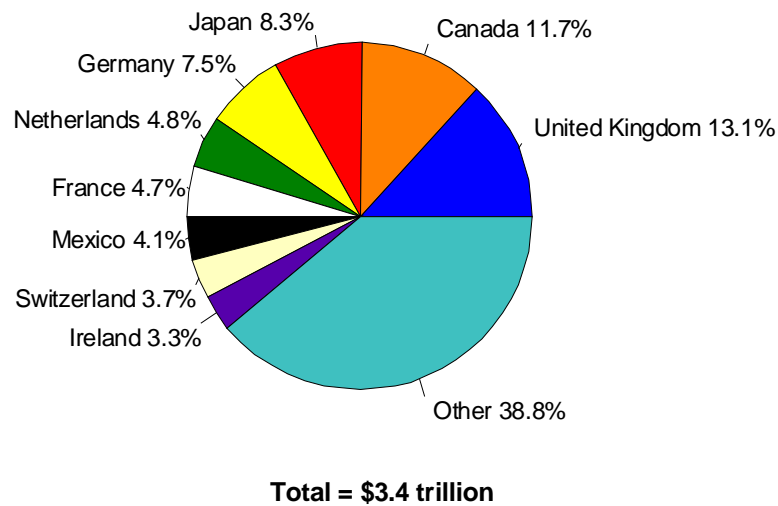
Table 2-4
USDIA: Foreign affiliate sales, by country, 1999 and 2003

Countries	1999		2003		Average annual growth
	Millions of dollars	Percent of total	Millions of dollars	Percent of total	Percent
All countries	2,611,764	100	3,383,010	100	6.7
Australia	72,579	2.8	89,704	2.7	5.4
Belgium	64,184	2.5	73,037	2.2	3.3
Bermuda	21,145	0.8	42,822	1.3	19.3
Brazil	71,371	2.7	74,394	2.2	1.0
Canada	302,162	11.6	396,527	11.7	7.0
Chile	11,420	0.4	11,924	0.4	1.1
China	23,407	0.9	56,831	1.7	24.8
France	142,508	5.5	158,289	4.7	2.7
Germany	244,568	9.4	254,152	7.5	1.0
Hong Kong	48,703	1.9	57,271	1.7	4.1
Hungary	9,165	0.4	10,036	0.3	2.3
Iceland	151	0.0	(¹)	(¹)	(¹)
India	6,416	0.2	12,092	0.4	17.2
Ireland	59,039	2.3	112,716	3.3	17.5
Italy	78,523	3.0	105,702	3.1	7.7
Japan	196,980	7.5	282,096	8.3	9.4
Luxembourg	4,567	0.2	10,374	0.3	22.8
Mexico	102,531	3.9	137,639	4.1	7.6
Netherlands	137,312	5.3	161,742	4.8	4.2
Panama	4,970	0.2	6,842	0.2	8.3
Philippines	9,063	0.3	12,509	0.4	8.4
Poland	10,328	0.4	15,299	0.5	10.3
RRussia	3,789	0.1	8,797	0.3	23.4
Singapore	81,483	3.1	104,955	3.1	6.5
South Africa	13,805	0.5	19,050	0.6	8.4
Spain	54,469	2.1	70,421	2.1	6.6
Sweden	(¹)	(¹)	49,013	1.4	(¹)
Switzerland	73,383	2.8	124,650	3.7	14.2
Taiwan	21,362	0.8	29,801	0.9	8.7
United Kingdom Islands, Caribbean	10,616	0.4	(¹)	(¹)	(¹)
United Kingdom	378,272	14.5	443,388	13.1	4.1
EU-15	1,250,717	47.9	1,501,792	44.4	4.7

¹ Not available.

Source: U.S. Department of Commerce (USDOC), Bureau of Economic Analysis (BEA), Balance of Payments and Direct Investment Position Data, found at <http://www.bea.gov/bea/di/di1usdop.htm/>.

Figure 2-7
USDIA: Foreign affiliate sales, by country, 2003



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *U.S. Direct Investment Abroad: Financial and Operating Data for U.S. Multinational Companies*, found at <http://www.bea.gov/bea/di/di1usdop.htm>.

Sales by foreign affiliates also increased in African countries, growing at an average annual rate of 11 percent, to reach \$50.2 billion in 2003. However, the increases in foreign affiliate sales in China and Africa did not have a significant impact on total value of sales by U.S.-owned foreign affiliates, as these regions each accounted for less than 2 percent of total sales in 2003.²⁹

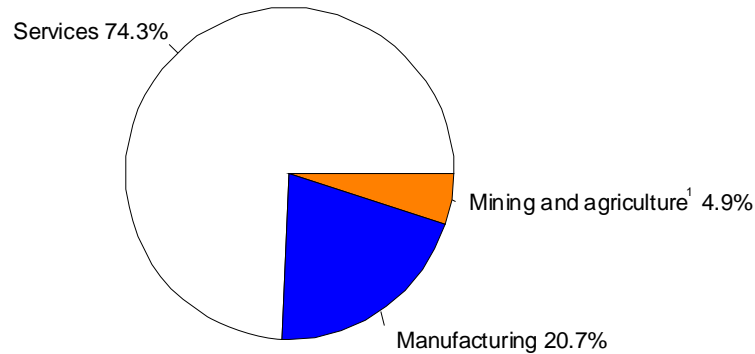
Have U.S. direct investors abroad focused on the primary, manufacturing or service sectors? How fast has U.S. direct investment in these sectors grown?

Three-quarters of USDIA is invested in the services sector.

The service sector accounted for 74 percent of total U.S. outbound direct investment stock in 2004, equal to \$1.5 trillion (figure 2-8). USDIA in the service sector increased at an average annual rate of 14 percent during 1999-2004, compared to the 11-percent average annual growth rate of total USDIA. In contrast, the shares of total outbound stock accounted for by the

²⁹ USDOC, BEA, *U.S. Direct Investment Abroad*.

Figure 2-8
USDIA: Direct investment position, by sector, 2003



Total = \$2.1 trillion

¹ The U.S. direct investment position in the mining sector represents 4.9 percent of the total. The U.S. direct investment position in the agriculture sector is very small.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, Sept. 2005, p. 155-158.

primary³⁰ and manufacturing sectors decreased from 6 percent to 5 percent and from 27 percent to 21 percent, respectively, during 1999-2004, even while recording average annual growth rates of 6 percent and 8 percent, respectively (table 2-5).³¹

Within the service sector, the largest share of USDIA is invested in the finance and insurance industry, which accounts for \$371.0 billion. Within the industry, the largest U.S. positions are in the United Kingdom (23 percent), Bermuda (14 percent), Japan (11 percent), and Canada (10 percent). In 2004, new FDI outflows in the services sector were largest to Japan and Canada. In the primary resource industries, Canada is by far the preferred destination, with a \$30.9 billion investment position in mining, representing 30 percent of total USDIA in mining in 2004. Indonesia, the United Kingdom, Norway, and Australia are other notable mining destinations. The overall share of USDIA in the manufacturing sector declined from 27 percent to 21 percent during 1999-2004. U.S. direct investment in the manufacturing sector is largest in Canada (\$76.8 billion, with significant investments in transportation equipment, machinery, and chemicals) and the United Kingdom (\$52.3 billion, with significant investments in chemicals and machinery).

Capital outflows to Canada and the United Kingdom were largest in manufacturing.

The United Kingdom and Canada were the two largest destinations for new capital outflows from the United States during 2004. The manufacturing sector accounted for 58 percent of new capital outflows to the United Kingdom, followed by 18 percent for the finance and insurance industry.

³⁰ Defined as mining, agriculture, forestry, fishing, and hunting.

³¹ U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, 155-158.

Table 2-5
USDIA: Direct investment position¹ on a historical-cost basis, by industry, 1999 and 2004

Industry	1999		2004		Average annual growth
	Millions of dollars	Percent of total	Millions of dollars	Percent of total	Percent
All industries	1,215,960		2,063,998		11.2
Mining	72,526	6.0	101,477	4.9	6.9
Agriculture, forestry, fishing and hunting	1,579	0.1	517	0.0	-20.0
Utilities	22,472	1.8	18,985	0.9	-3.3
Manufacturing	327,282	26.9	428,235	20.7	5.5
Food and kindred products	38,928	3.2	53,981	2.6	6.8
Chemicals	81,727	6.7	107,908	5.2	5.7
Pharmaceuticals	29,661	2.4	44,623	2.2	8.5
Primary and fabricated metals	21,569	1.8	26,328	1.3	4.1
Plastics and rubber products	10,542	0.9	13,810	0.7	5.5
Nonmetallic mineral products	6,370	0.5	11,341	0.5	12.2
Machinery	21,501	1.8	24,543	1.2	2.7
Computers and electronic products	46,783	3.8	58,615	2.8	4.6
Electrical equipment, appliances and components	8,212	0.7	12,392	0.6	8.6
Transportation equipment	43,322	3.6	48,418	2.3	2.2
Textiles, apparel, and leather products	3,969	0.3	3,314	0.2	-3.5
All other manufacturing	44,359	3.6	67,585	3.3	8.8
Services	814,573	67.0	1,533,769	74.3	13.5
Wholesale trade	86,313	7.1	136,949	6.6	9.7
Retail trade	18,975	1.6	40,445	2.0	16.3
Information	50,062	4.1	56,422	2.7	2.4
Telecommunications	25,499	2.1	5,897	0.3	-25.4
Depository institutions	40,879	3.4	68,100	3.3	10.7
Finance and insurance	198,749	16.3	370,965	18.0	13.3
Finance	145,740	12.0	274,654	13.3	13.5
Insurance	53,009	4.4	96,311	4.7	12.7
Professional, scientific and technical services	29,963	2.5	42,110	2.0	7.0
Other services	389,632	32.0	818,778	39.7	16.0

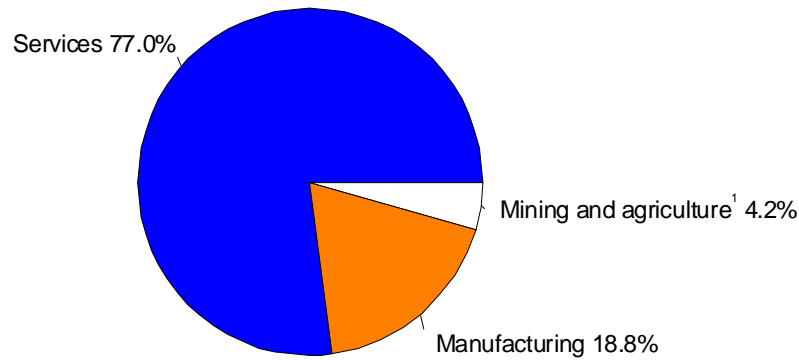
¹ Direct investment position is the sum of foreign parents' equity holdings in their U.S. affiliates (including retained earnings), plus the net outstanding loans that foreign parents have made to these affiliates. Direct investment position is negative when the value of loans made by U.S. affiliates to their foreign parent companies exceeds the value of the parents' equity holdings plus the value of loans made by the parent to its affiliate companies.

Source: U.S. Department of Commerce (USDOC), Bureau of Economic Analysis (BEA), Balance of Payments and Direct Investment Position Data, found at <http://www.bea.gov/bea/di/di1us/bal.htm>.

In Canada, new U.S. FDI in the manufacturing sector was 25 percent of the total FDI outflows in 2004, followed by 22 percent in financial services.

An analysis of U.S. direct investment assets by sector yields similar results. In 2003, the service sector accounted for \$6.3 trillion, or 77 percent, of total outbound assets (figure 2-9), an increase of 6 percent from 1999. In contrast, the manufacturing sector's share of total outbound assets decreased from 24 percent in 1999 to 19 percent in 2003. The primary sector's share of total outbound assets decreased only slightly from 5 percent in 1999 to 4 percent in 2003. During 1999-2003, assets in the service sector registered average annual growth of 18 percent, faster than the 15-percent growth rate of total outbound assets. Assets

Figure 2-9
USDIA: Assets of foreign affiliates, by sector, 2003



Total = \$8.2 trillion

¹ Assets of foreign affiliates in the mining sector represent 4.1 percent of total assets of foreign affiliates. Assets of foreign affiliates in the agriculture sector is very small.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, *U.S. Direct Investment Abroad: Balance of Payments*, found at <http://www.bea.gov/bea/di/di1usdop.html>.

in the primary sector increased at a slower-than-average rate of 12 percent, while U.S. direct investment assets in manufacturing increased at an average annual rate of 8 percent, which accounts for the significant decline in share.³²

On which industries have U.S. direct investors focused?

Over one-third of 2004 USDIA was directed toward holding companies with uncertain ultimate destinations.

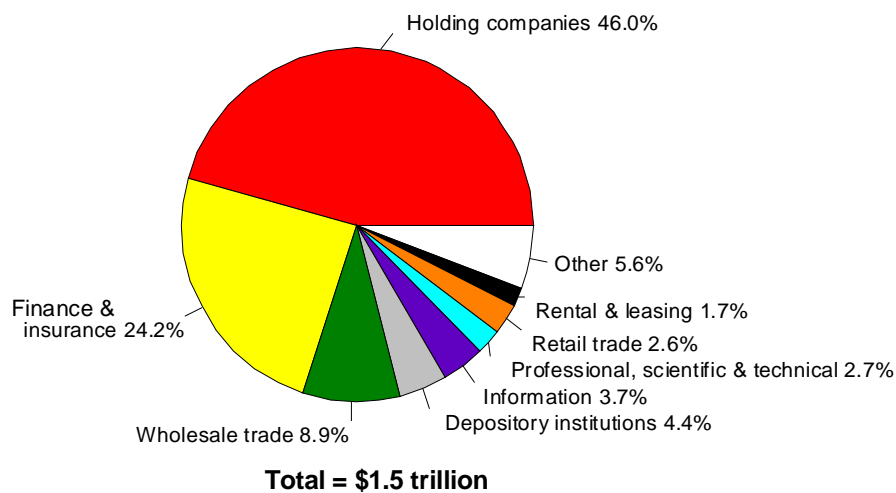
In 2004, 46 percent of outbound U.S. investment stock in the service sector, and 34 percent of total USDIA stock, was directed toward holding companies, for a total USDIA position of \$705.4 billion (figure 2-10). USDIA stock in holding companies increased at a faster-than-average pace of 18 percent per annum. Holding companies are designed primarily for tax purposes, to channel funds to operating companies in a wide variety of industries. Due to data collection limitations, the final country and industry destinations of these investment funds are unknown.

The financial services industry³³ accounts for the second-largest share of outbound direct investment stock, accounting for 24 percent, or \$371.0 billion, of U.S. service sector investment in 2004 (see table 2-5). Strong direct investment in the financial services

³² U.S. Department of Commerce, Bureau of Economic Analysis. *U.S. Direct Investment Abroad, 1999-2003*.

³³ Financial services comprise securities, commodities, and other financial intermediation; credit intermediation funds and trusts, insurance, and other related activities. Data for depository institutions (banks) are reported separately. In 2004, outbound stock in depository institutions was \$68.1 billion.

Figure 2-10
USDIA: Direct investment position in service industries, 2004



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *U.S. Direct Investment Abroad: Balance of Payments*, found at <http://www.bea.gov/bea/di/di1usdop.html>.

industry reflects the increasing globalization of large financial service providers, the progressive privatization of large financial institutions overseas, and regulatory reform in key financial markets.³⁴ Countries that accounted for significant shares of total U.S. direct investment in financial services included the United Kingdom (23 percent), Bermuda (12 percent), Canada (9 percent), and Japan (9 percent) (figure 2-11).³⁵ The wholesale trade industry comprises 9 percent, or \$137.0 billion, of USDIA stock in the service sector, of which 45 percent is invested in EU-25 countries, most prominently Germany and France. Within the service sector, U.S. outbound stock in education services and health care and social assistance services increased most rapidly, registering average annual growth rates of 32 percent and 30 percent, respectively, during 1999-2004. However, the USDIA positions in these industries are small, at \$929 million and \$1.2 billion, respectively.

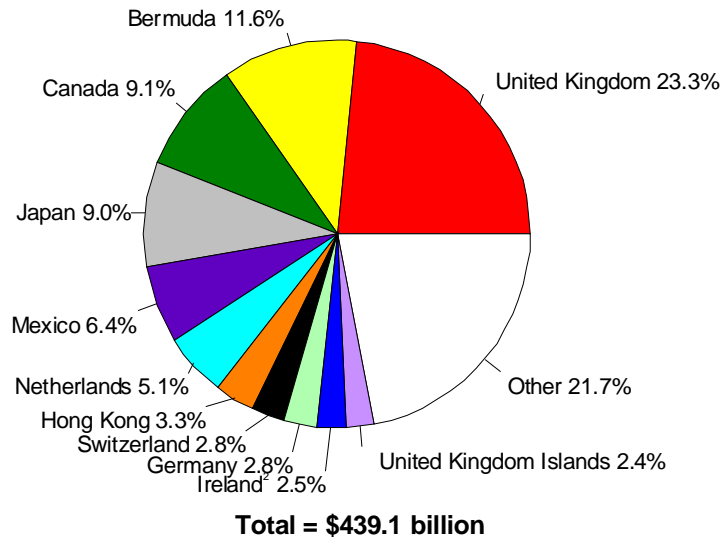
Within the manufacturing sector, the chemicals industry accounted for the largest share of outbound investment stock, totaling \$107.9 billion. This represented 25 percent of outbound investment in manufacturing (figure 2-12) and 5 percent of total outbound investment in 2004. Countries that accounted for large shares of total U.S. outbound investment in the chemicals industry included Canada (13.2 percent), the United Kingdom (11.8 percent), the Netherlands (11.2 percent), and Ireland (9.3 percent) (figure 2-13).³⁶ As discussed in chapter 7, U.S. investment in the Canadian chemicals industry is facilitated by the extensive network

³⁴ U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, Sept. 2005, 155-158.

³⁵ Bermuda is an offshore financial market. A significant share of the direct investment flows to this country are reinvested in third countries, but BEA has no way to discern the final destination of such capital flows.

³⁶ For additional information on chemicals industry investment, see chapter 7.

Figure 2-11
USDIA: Direct investment position in the financial services industry,¹ 2004

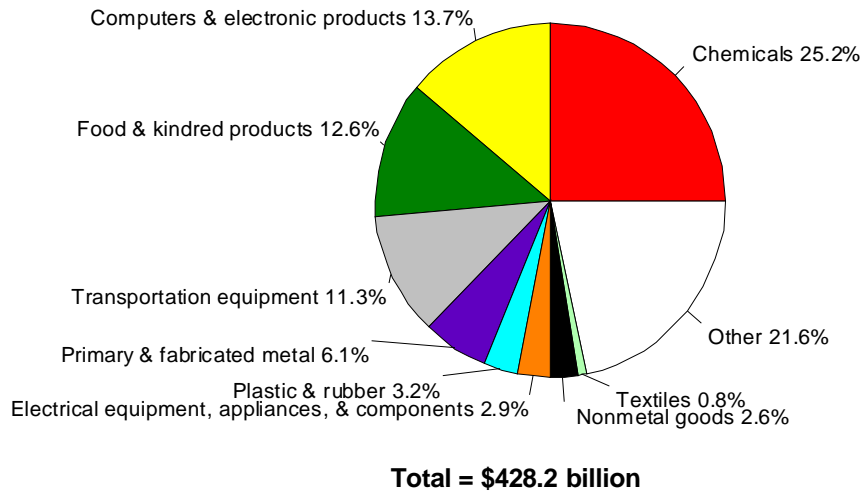


¹ Includes finance, insurance and depository institutions.

² Data for direct investment position in depository institutions was suppressed. Data reflect investment in finance and insurance industries only.

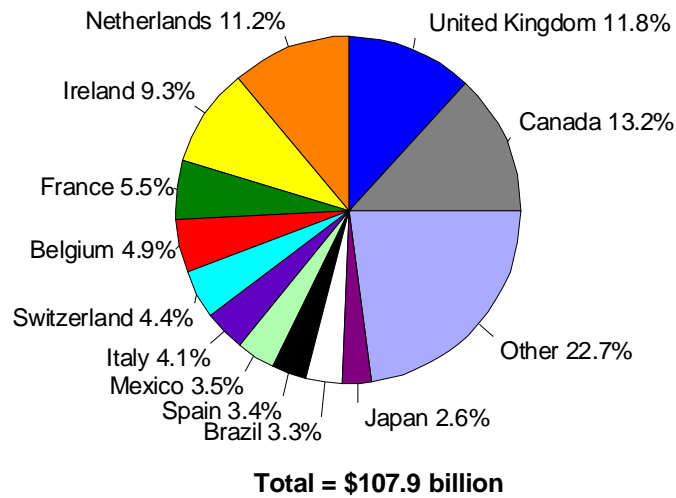
Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, Sept. 2005, p. 136.

Figure 2-12
USDIA: Direct investment position in manufacturing industries, 2004



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, Sept. 2005, p. 136.

Figure 2-13
USDIA: Direct investment position in the chemicals industry, by country, 2004



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, Sept. 2005, p. 136.

of pipelines and other infrastructure on the U.S.-Canadian border. Computers and electronics equipment was the second largest manufacturing industry, accounting for \$58.6 billion of outbound U.S. FDI in the manufacturing sector in 2004, followed by food, beverages, and tobacco, with \$54.0 billion. U.S. outbound stock in the manufacturing sector recorded slower-than-average growth of 6 percent during 1999-2004. The only manufacturing industry which grew at a faster-than-average rate was nonmetallic mineral products, growing at an average annual rate of 12 percent to \$11.3 billion by 2004. This primarily reflects purchases of specialty minerals facilities in Africa and the Pacific Rim. Textiles, leather, and apparel was the only manufacturing industry that recorded a decline in USDIA position, down 4 percent annually.

The mining industry accounts for most of USDIA stock in the primary sector. Outbound investment stock in the mining industry grew at an annual rate of 7 percent during 1999-2004, to \$101.5 billion. Oil and gas extraction accounts for 69 percent of mining investment, but the growth rates were higher for gold and silver mining (up 31 percent per annum during the period) and nonmetallic mineral mining and quarrying (up 30 percent per annum). Outbound investment stock in agriculture, forestry, fishing, and hunting declined at an average annual rate of 20 percent during 1999-2004, to \$517 million.

For which industries do U.S.-owned foreign affiliates record the highest sales? Are sales by foreign affiliates closely correlated with employment, wages, assets, and investment stock?

Mexico and Germany are leading host country manufacturing centers.

U.S.-owned foreign affiliates in the service sector account for 49 percent (\$1.7 trillion) of foreign affiliate sales, while the manufacturing sector accounts for 47 percent (\$1.6 trillion). The primary sector accounts for the remaining 4 percent (\$131.5 billion), but has increased most rapidly in recent years, at an average annual growth rate of 15 percent during 1999-2003 (table 2-6).

Sales by foreign affiliates in the primary sector are small, but are growing the fastest.

Wholesale trade, transportation equipment, and chemicals manufacturing accounted for the largest shares of foreign affiliate sales (figure 2-14) in 2003. Sales by foreign wholesale trade affiliates accounted for \$769.8 billion, or 23 percent, of total sales by foreign affiliates, while affiliates in the transportation equipment and chemicals manufacturing industries respectively accounted for 12 percent and 9 percent of such sales. Other industries in which foreign affiliates recorded high sales include computers and electronic products, food and kindred products, and information services, each of which accounted for approximately 6 percent of total foreign affiliate sales in 2003.³⁷ Industries posting particularly rapid average annual growth include retail trade (17 percent, led by a seven-fold increase in sales by motor vehicle and parts dealers); mining (15 percent, led by oil and gas extraction); wood products (14 percent); and finance and insurance, except depository institutions (11 percent, led by a doubling of sales by agencies, brokerages, and other insurance-related affiliates).

A strong and positive correlation exists between foreign affiliate sales and employment, assets, wages, and investment position (table 2-7).³⁸ This result is not surprising, as one would expect foreign affiliates with relatively large capital and labor resources to account for a large share of foreign affiliate sales. The greatest correlation is between foreign affiliate sales and wages. This may reflect high employee productivity, or the concentration of affiliate sales in high wage industries and high wage countries. Assets and investment position were also closely related, as would be expected, but assets are not quite as closely correlated to sales, employment, and wages, which appears to indicate that capital intensity (as in manufacturing industries) has a greater effect than the level of affiliate holdings.

In which industries do U.S.-owned foreign affiliates employ the greatest number of persons abroad? How are these employees distributed by country?

The manufacturing sector accounted for the largest share of employment by U.S.-owned foreign affiliates in 2003, with 5.0 million employees or 51 percent of all workers employed by foreign affiliates. Foreign affiliates in the service sector accounted for 47 percent of such workers, and the primary sector accounted for 3 percent (table 2-8). During 1999-2003, the number of workers employed by foreign affiliates in the service sector increased at an average annual rate of 4 percent, faster than the 2-percent average for total foreign affiliate

³⁷ USDOC, BEA, *U.S. Direct Investment Abroad 2005*.

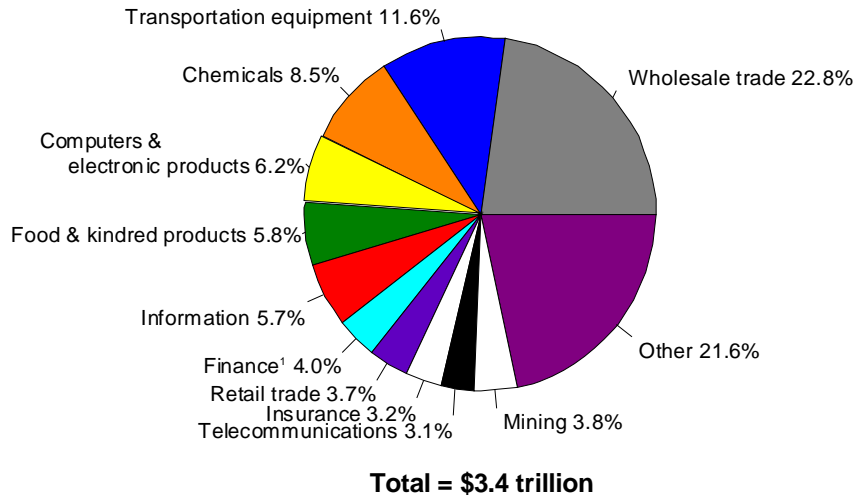
³⁸ Calculations by the Commission, based on USDOC, BEA, *U.S. Direct Investment Abroad*.

Table 2-6
USDIA: Foreign affiliate sales, by industry, 1999 and 2003

Industry	1999	2003	Percent of total, 2003	Average annual growth
	<i>—Millions of dollars—</i>		<i>—Percent—</i>	
All industries	2,611,764	3,383,010	100	6.7
Mining	73,657	127,822	3.8	14.8
Agriculture, forestry, fishing and hunting	2,887	3,650	0.1	6.0
Utilities	54,953	61,862	1.8	3.0
Manufacturing	1,283,684	1,598,390	47.2	5.6
Food and kindred products	160,723	197,605	5.8	5.3
Chemicals	214,097	286,083	8.5	7.5
Pharmaceuticals	69,550	108,286	3.2	11.7
Primary and fabricated metals	46,930	53,615	1.6	3.4
Plastics and rubber products	27,302	35,403	1.0	6.7
Nonmetallic mineral products	13,793	17,108	0.5	5.5
Machinery	77,109	81,516	2.4	1.4
Computers and electronic products	197,465	210,106	6.2	1.6
Electrical equipment, appliances and components	28,737	32,123	0.9	2.8
Transportation equipment	286,369	391,888	11.6	8.2
Textiles, apparel, and leather products	12,805	13,237	0.4	0.8
All other manufacturing	218,354	279,706	8.3	6.4
Services	1,251,536	1,653,148	48.9	7.2
Wholesale trade	613,256	769,784	22.8	5.8
Retail trade	66,796	124,524	3.7	16.8
Information	139,334	191,294	5.7	8.2
Finance and insurance	161,150	242,773	7.2	10.8
Professional, scientific and technical services	84,414	96,159	2.8	3.3
Other services	186,586	228,614	6.8	5.2

Source: U.S. Department of Commerce (USDOC), Bureau of Economic Analysis (BEA), *U.S. Direct Investment Abroad: Financial and Operating Data for U.S. Multinational Companies*. Found at <http://www.bea.gov/bea/di/di1usdop.htm>.

Figure 2-14
USDIA: Foreign affiliate sales, by selected industry, 2003



¹ Excludes depository institutions.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, *U.S. Direct Investment Abroad: Financial and Operating Data for U.S. Multinational Companies*, found at <http://www.bea.gov/bea/di/di1usdop.htm>.

Table 2-7
USDIA: Correlation of major indicators, 2003

	Sales	Employment	Assets	Wages ¹	Investment position
Sales	1.000				
Employment	0.984	1.000			
Assets	0.862	0.856	1.000		
Wages ¹	0.992	0.994	0.878	1.000	
Investment position	0.884	0.897	0.976	0.903	1.000

¹ Wages equal total annual compensation per employee.
 Source: Compiled by the Commission.

Table 2-8
USDIA: Employment by foreign affiliates, by industry, 1999 and 2003

Industry	Percent of total,			Percent of total, 2003	Average annual growth
	1999	1999	2003		
	<i>Thousands of employees</i>			<i>Percent</i>	
All industries	9,220.2		9,878.9		1.7
Mining	149.5	1.6	178.5	1.8	4.5
Agriculture, forestry, fishing and hunting	65.7	0.7	65.3	0.7	-0.2
Utilities	121.3	1.3	101.8	1.0	-4.3
Manufacturing	5,015.7	54.4	5,021.3	50.8	0.0
Food and kindred products	753.2	8.2	882.0	8.9	4.0
Chemicals	634.4	6.9	660.3	6.7	1.0
Pharmaceuticals	209.6	2.3	240.9	2.4	3.5
Primary and fabricated metals	250.7	2.7	265.0	2.7	1.4
Plastics and rubber products	176.8	1.9	172.6	1.7	-0.6
Nonmetallic mineral products	89.0	1.0	86.8	0.9	-0.6
Machinery	398.2	4.3	395.0	4.0	-0.2
Computers and electronic products	783.8	8.5	630.3	6.4	-5.3
Electrical equipment, appliances and components	304.8	3.3	256.0	2.6	-4.3
Transportation equipment	971.0	10.5	1,115.1	11.3	3.5
Textiles, apparel, and leather products	148.2	1.6	134.5	1.4	-2.4
All other manufacturing	505.6	5.5	423.7	4.3	-4.3
Services	3,989.3	43.3	4,613.8	46.7	3.7
Wholesale trade	712.0	7.7	837.9	8.5	4.2
Retail trade	441.8	4.8	710.2	7.2	12.6
Information	618.8	6.7	616.3	6.2	-0.1
Telecommunication	368.5	4.0	307.8	3.1	-4.4
Finance and insurance	280.4	3.0	320.0	3.2	3.4
Finance	139.5	1.5	139.5	1.6	3.6
Insurance	140.9	1.5	1593.2	1.6	3.1
Professional, scientific and technical services	432.0	4.7	466.6	4.7	1.9
Other services	1,504.3	16.3	1,662.8	16.8	2.5

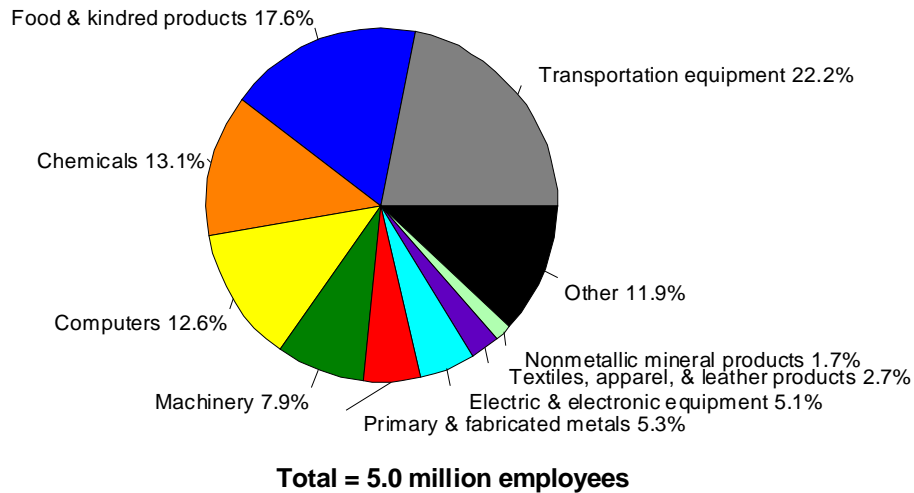
Source: U.S. Department of Commerce (USDOC), Bureau of Economic Analysis (BEA), *U.S. Direct Investment Abroad: Financial and Operating Data for U.S. Multinational Companies*. Found at <http://www.bea.gov/bea/di/di1usdop.htm>.

employment. Employment by foreign affiliates in the primary sector also grew faster than total foreign affiliate employment, recording an average annual growth rate of over 3 percent, led by the mining subsector. In contrast, employment by foreign affiliates in the manufacturing industry experienced no significant change.

During 1999-2003, foreign affiliate employment among manufacturing affiliates increased most rapidly in the food and kindred products and pharmaceuticals segments. Employment by affiliates engaged in the manufacturing of computers and electronic products and electrical equipment declined during the period. U.S.-owned foreign affiliates in the transportation equipment and food and kindred products industries employed the largest number of persons among foreign manufacturing affiliates, respectively accounting for 22 percent and 18 percent of all persons employed by foreign manufacturing affiliates in 2003 (figure 2-15).³⁹

³⁹ USDOC, BEA, *U.S. Direct Investment Abroad*.

Figure 2-15
USDIA: Foreign affiliate employment in manufacturing industries, 2003



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *U.S. Direct Investment Abroad: Financial and Operating Data for U.S. Multinational Companies*, found at <http://www.bea.doc.gov>.

During 1999-2003, foreign affiliate employment in the mining industry led the growth of the primary sector, growing at a faster-than-average annual rate (5 percent). Metal mining and support ventures were the principal segments of the mining industry that caused the high employment growth rate. In contrast, the number of workers employed by foreign affiliates in the agriculture industry as a whole declined marginally.⁴⁰

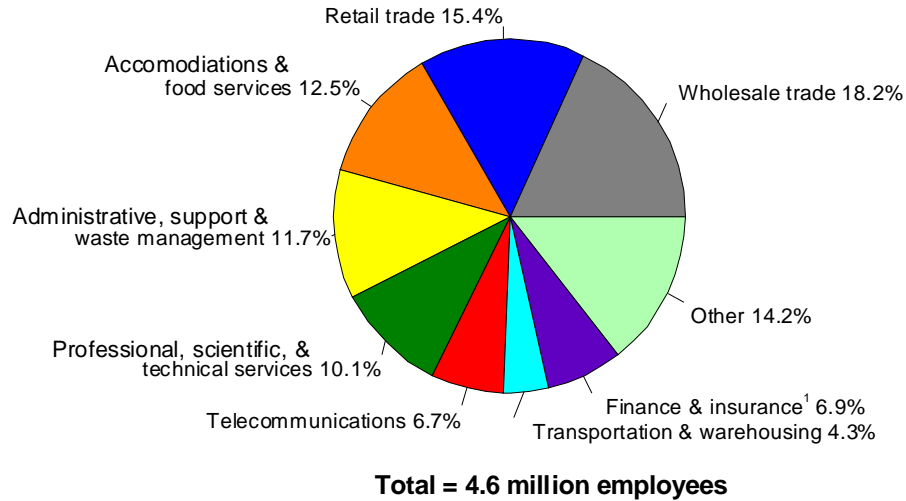
In the service sector, wholesale trade and retail trade affiliates were the largest employers, respectively accounting for 18 percent and 15 percent of employment by foreign service sector affiliates in 2003 (figure 2-16). Wholesale trade affiliate employment increased at an average annual rate of 4 percent during the period, led by an array of durable and non-durable goods.

The finance and insurance industry registered 3-percent average annual employment growth. Notably, employment by primary product wholesalers (metals, oil, lumber, paper, etc.) declined. This likely indicates increased centralization of these activities by the major resource companies.⁴¹ Retail trade employment increased by 12.6 percent per annum, led by employment by motor vehicle and parts dealers, which increased over three-fold. Other service subsectors showing rapid average annual growth of U.S.-owned foreign affiliate employment during 1999-2003 include health care and social assistance (70 percent) and management of nonbank companies and enterprises (up nearly seven-fold), both of which increased by 14 percent per annum. However, total employment in these areas was small,

⁴⁰ Calculations by the Commission, based on USDOC, BEA, *U.S. Direct Investment Abroad*. The BEA data provide ranges for some years due to incomplete reporting. Nevertheless, each subsector noted recorded a decline in the range size.

⁴¹ See Chapter 5 for examples related to the copper mining industry.

Figure 2-16
USDIA: Foreign affiliate employment in service industries, 2003



¹ Excludes depository institutions.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Database, found at <http://www.bea.doc.gov>, retrieved Nov. 14, 2005.

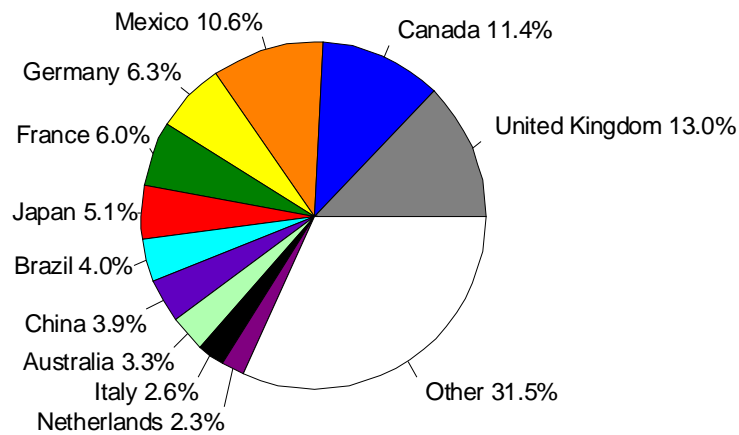
at 13,800 for health care and 28,100 for management of nonbank companies. Other rapidly growing industries included accommodation and food service (4.5 percent per annum) and administration, support, and waste management (3.5 percent per annum).⁴²

U.S.-owned foreign affiliates employ the largest number of persons in the United Kingdom, Canada, Mexico, and Germany, which together accounted for 41 percent of total employment in foreign affiliates of U.S. firms in 2003 (figure 2-17, table 2-9). The service sector accounted for the greatest share of U.S. affiliate jobs in the United Kingdom and Canada. In the United Kingdom, the most prominent industries were information services (with employment spread fairly evenly among publishing, broadcasting, telecommunications, and data processing affiliates) and computer systems design services. In Canada, retail trade and food and drink establishments accounted for the largest shares of U.S. foreign affiliate employment. In Mexico and Germany, by contrast, the manufacturing sector accounted for the largest share of employment. In both countries, transportation equipment affiliates accounted for 20 percent of foreign affiliate employment, followed by wholesale trade affiliates in Germany, and by computers and electronic products affiliates in Mexico.⁴³

⁴² USDOC, BEA, , *U.S. Direct Investment Abroad 2005*.

⁴³ USDOC, BEA, *U.S. Direct Investment Abroad 2003*, tables II.H.3 and II.H.4.

Figure 2-17
USDIA: Foreign affiliate employment, by country, 2003



Total = 9.9 million employees

Source: U.S. Department of Commerce, Bureau of Economic Analysis, *U.S. Direct Investment Abroad: Financial and Operating Data for U.S. Multinational Companies*, found at <http://www.bea.gov/bea/di/di1usdop.htm>.

How does the compensation of foreign employees of U.S.-owned foreign affiliates compare to compensation earned by workers in the U.S. market?

In 2003, U.S. workers received average annual compensation of \$45,012, while foreign workers employed by U.S.-owned foreign affiliates received average annual compensation of \$34,716 (table 2-10).⁴⁴ Likewise, in most industries, annual compensation paid to U.S. workers exceeded compensation paid to employees of foreign affiliates. This is likely due to lower costs-of-living in lesser-developed countries (LDCs), and the fact that one incentive for U.S. firms to invest abroad is to take advantage of lower labor costs.⁴⁵

⁴⁴ Employee compensation refers to total compensation paid by employers, divided by the total number of full-time and part-time employees. The term thus includes non-wage compensation such as benefits. This is distinct from the data presented in chapter 9, which include wages without benefits. Calculations by Commission staff from U.S. Department of Commerce, Bureau of Economic Analysis data.

⁴⁵ The large international primary and manufacturing industries all commonly report lower wages in their foreign affiliates as part of the impetus to move operations overseas.

Table 2-9
USDIA: Employment by foreign affiliates, by country, 1999 and 2003

Countries	1999	2003	Percent of	Average
	<i>Thousands of employees</i>		<i>total, 2003</i>	<i>annual growth</i>
			<i>Percent</i>	
All countries	9,220.2	9,878.9	100	1.7
Australia	311.5	329.0	3.3	1.4
Belgium	146.3	145.9	1.5	-0.1
Bermuda	(¹)	7.9	0.1	46.8
Brazil	421.9	399.9	4.0	-1.3
Canada	1,072.6	1,125.1	11.4	1.2
Chile	67.0	84.6	0.9	6.0
China	293.7	387.3	3.9	7.2
France	571.3	591.0	6.0	0.9
Germany	684.2	620.6	6.3	-2.4
Hong Kong	97.6	113.3	1.1	3.8
Hungary	72.2	50.6	0.5	-8.5
Iceland	0.1	(¹)	(²)	(²)
India	97.3	157.6	1.6	12.8
Ireland	86.2	86.4	0.9	0.1
Italy	208.8	255.1	2.6	5.1
Japan	399.1	501.0	5.1	5.8
Luxembourg	9.5	(¹)	(²)	(²)
Mexico	994.5	1,047.0	10.6	1.3
Netherlands	180.6	223.8	2.3	5.5
Panama	(¹)	33.3	0.3	(²)
Philippines	85.4	86.9	0.9	0.4
Poland	72.4	91.0	0.9	5.9
Russia	33.8	37.1	0.4	2.4
Singapore	120.4	100.8	1.0	-4.3
South Africa	137.8	116.4	1.2	-4.1
Spain	183.7	219.9	2.2	4.6
Sweden	81.2	99.3	1.0	5.2
Switzerland	60.2	66.5	0.7	2.5
Taiwan	82.5	79.7	0.8	-0.9
UK Islands, Caribbean	7.6	6.9	0.1	-2.4
United Kingdom	1,162.4	1,285.5	13.0	2.5
EU-15	3,473.9	3,742.7	37.9	1.9

¹ In 1999, U.S.-owned foreign affiliates in Bermuda employed between 5,000 and 9,999 workers; and in Panama, between 50,000 and 99,999 workers. In 2003, U.S.-owned foreign affiliates in Iceland employed between 1 and 499 workers, and in Luxembourg, between 10,000 and 24,999 workers. BEA reported a size range in order to avoid disclosure of individual company information.

² Not available.

Source: U.S. Department of Commerce (USDOC), Bureau of Economic Analysis (BEA), *U.S. Direct Investment Abroad: Financial and operating data for U.S. multinational companies*. Found at <http://www.bea.gov/bea/di/di1usdop.htm>.

Table 2-10

USDIA: Annual compensation per employee,¹ employees of U.S.-owned foreign affiliates vs. U.S. employees, by industry, 2003

Industry	Annual compensation, employees of foreign affiliates	Annual compensation, U.S. employees
	——Dollars/employee/year——	
All industries ²	34,716	45,012
Mining	38,426	76,996
Agriculture, forestry, fishing and hunting	8,469	22,874
Utilities	28,517	91,420
Manufacturing	32,626	61,586
Food and kindred products	23,254	46,109
Chemicals	46,335	88,784
Pharmaceuticals	50,494	⁽³⁾
Primary and fabricated metals	32,091	55,837
Plastics and rubber products	33,731	47,170
Nonmetallic mineral products	31,359	50,946
Machinery	38,423	61,853
Computers and electronic products	26,617	89,514
Electrical equipment, appliances and components	20,949	59,839
Transportation equipment	35,106	89,155
Textiles, apparel, and leather products	18,528	35,780
All other manufacturing	⁽³⁾	⁽³⁾
Services	37,218	⁽³⁾
Whole sale trade	50,698	60,702
Retail trade	15,670	28,084
Information	45,043	70,398
Finance and insurance	78,628	78,645
Professional, Scientific and technical service	58,641	70,180
Other services	⁽³⁾	⁽³⁾

¹ Wages equal total annual compensation per employee.

² Includes domestic, private industries.

³ Not available.

Source: U.S. Department of Commerce (USDOC), Bureau of Economic Analysis (BEA), *U.S. Direct Investment Abroad: Operations of U.S. Parent Companies and Foreign Affiliates (USDIA)*; and USDOC, BEA, National Income and Product Accounts, Tables 6.4D and 6.2D.

Average annual compensation for U.S. manufacturing workers is almost double the compensation paid to employees of foreign affiliates.

The greatest compensation differential is observed in the utilities industry. In 2003, U.S. employees of utilities received average annual compensation of \$91,420, while employees of U.S.-owned foreign utilities affiliates received average annual compensation of \$28,517. This is likely due to the high-tech nature of the domestic utilities industry relative to LDCs, particularly the emissions safeguards and controls. Other industries in which average annual U.S. compensation exceeded average foreign affiliate compensation by at least \$20,000 in 2003 include the mining industry, most manufacturing industries (both for similar reasons to utilities), and the information industry (for which the U.S. remains the technology development and application leader, and thus pays more).⁴⁶ By contrast, most service industries showed less disparity between U.S. and foreign employees, with finance and insurance employees receiving nearly identical

⁴⁶ The differences in compensation levels for a given industry in the United States versus other countries also may be due in part to different definitions of job functions in the countries, or to differing productivity levels within the same industry in different countries. USDOC, BEA, *U.S. Direct Investment Abroad 1999-2003*; and USDOC, BEA, *Survey of Current Business, U.S. Multinational Companies, July 2005*, 22.

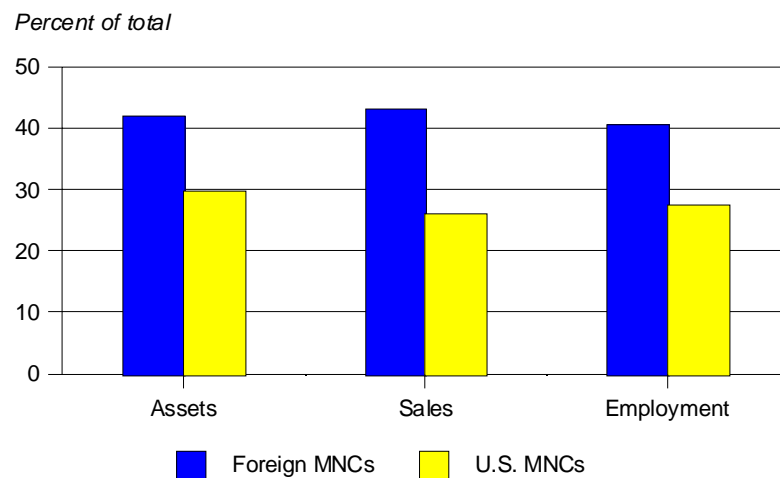
compensation within and without the United States.⁴⁷ This is likely due to the smaller influence of capital-intensive, high-technology skills in many service industries.

How do the foreign operations of U.S. parent companies compare to the foreign operations of other multinational companies?

MNCs based outside the United States have a higher proportion of foreign assets, sales, and employment than U.S.-based MNCs in almost every industry (figure 2-18), based on the annual list of the world's 100 largest non-financial MNCs published by the U.N. Conference on Trade and Development (UNCTAD). The list is ranked in terms of their foreign assets, which includes data regarding assets, sales, and employment by location. This is particularly true in the transportation equipment, telecommunications, and pharmaceuticals industries (table 2-11).⁴⁸ MNCs based outside the United States likely averaged a greater share of foreign sales because their domestic markets are smaller than the U.S. market, forcing them to increase sales by venturing into foreign markets. Other factors such as past colonial ties or management differences may also play a role.

The operations of non-U.S. MNCs appear more globally dispersed than the operations of MNCs based in the United States.

Figure 2-18
Level of foreign operations compared to total operations, foreign vs. U.S.-based MNCs, 2003



Source: UNCTAD, *World Investment Report 2005*.

⁴⁷ For additional detail on this issue, see chapter 9 of this study.

⁴⁸ United Nations Conference on Trade and Development (UNCTAD), *World Investment Report 2005*, annex table A.1.9.

Table 2-11
Foreign sales by U.S. and foreign parents, selected industries, 2003

Industry	Number of foreign companies in UNCTAD 100	Number of U.S. companies in UNCTAD 100	Foreign companies in UNCTAD 100	U.S.	U.S. share of
				companies in UNCTAD 100	total foreign sales by UNCTAD 100
				—Foreign sales/total sales—	
				Percent	
All Industries	76	24	59.5	43.0	26.1
Chemicals	1	2	58.4	58.2	61.2
Electronic equipment	5	3	59.7	51.7	45.9
Petroleum	8	2	67.2	60.0	35.9
Pharmaceuticals	5	3	73.0	40.0	24.3
Transportation equipment	11	3	63.5	33.3	19.8
Telecommunications	7	2	53.9	21.6	11.7
Utilities	7	2	46.9	38.1	8.4

Source: United Nations Conference on Trade and Development (UNCTAD), *World Investment Report 2005* (New York: United Nations, 2005).

U.S. multinational companies account for 30 percent of the total foreign assets of all 100 companies on the UNCTAD list, and represent 26 percent of total foreign sales and 27 percent of total foreign employment by such companies.⁴⁹ U.S. representation on the UNCTAD list is strongest in the chemicals sector, where U.S. firms account for 61 percent of all foreign sales by chemicals companies on the list, followed by the electronic equipment and petroleum industries, where U.S. firms account for 46 percent and 36 percent, respectively, of foreign sales by UNCTAD's top 100 non-financial MNCs.⁵⁰

⁴⁹ This figure is an estimate based on available data. UNCTAD's employment data is incomplete.

⁵⁰ UNCTAD, *World Investment Report 2005*, annex table A.1.9.

CHAPTER 3

Foreign Direct Investment in the United States

Summary of Key Findings

The majority of foreign direct investment in the United States (FDIUS) comes from the developed OECD economies, with the EU-25 accounting for 62 percent of FDIUS position in 2004, Japan accounting for 12 percent, and Canada and Switzerland each accounting for slightly less than 10 percent. Middle and low-income countries as a group accounted for 12 percent of FDIUS position. Sales by foreign-owned affiliates in the United States were highest for affiliates owned by parents based in Japan, the United Kingdom and Germany, but sales by affiliates located in Brazil, Mexico, and Bermuda recorded the fastest growth, all recording growth of greater than 20 percent per year, on average, between 1999 and 2004. U.S. affiliates owned by parents in the United Kingdom, Germany, Japan, and the Netherlands employed the greatest number of people in the United States, together employing almost 3 million U.S. workers.

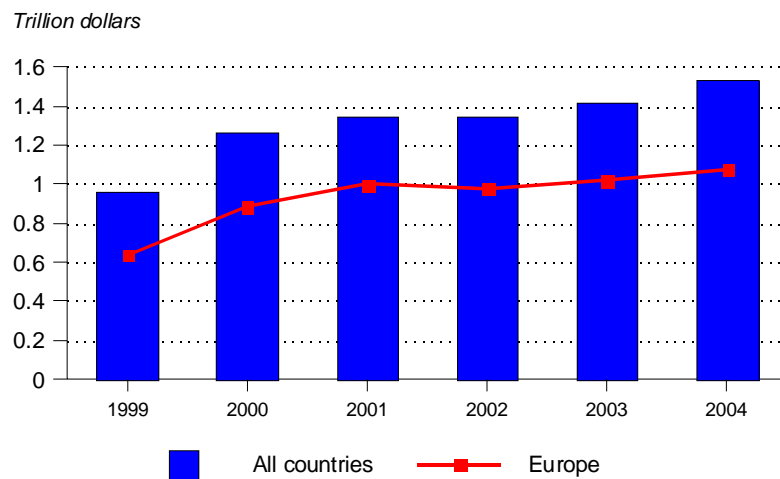
The service sector accounts for 63 percent of FDIUS stock, with the wholesale trade industry accounting for the greatest share, followed by the insurance and depository institutions (banking) industries. The manufacturing sector accounts for 34 percent of FDIUS stock, with the chemicals industry taking the largest share, followed by transportation equipment. The manufacturing sector accounts for 40 percent of employees of foreign affiliates, with 16 percent of all U.S. manufacturing workers employed by foreign-owned firms. For the chemicals manufacturing industry, 37 percent of all U.S. workers are employed by foreign-owned U.S. affiliates; for transportation equipment manufacturing, the figure is 22 percent. For most industries, employees of U.S. affiliates are paid at higher rates than employees of U.S.-owned firms.

Which countries have the largest direct investment positions in the United States?

Cumulative FDIUS totaled \$1.5 trillion in 2004 (figure 3-1). European countries as a group accounted for 73 percent of this total, or \$1.1 trillion. The United Kingdom is the leading single country investor in the United States, accounting for 17 percent, or \$251.6 billion, of the FDI stock in the United States in 2004 (table 3-1). Japanese investors accounted for the second largest share of FDIUS, or 12 percent of FDI stock in the United States in 2004, while the Netherlands and Germany ranked third and fourth, respectively. The rankings of the top four countries remained unchanged throughout 1999-2004 (figure 3-2).

Investors from low- and middle-income countries accounted for \$50.7 billion of inbound direct investment stock in 2004, or 3 percent of the total. Mexico held the largest share of FDIUS among low- and middle-income countries in 2004, accounting for \$7.9-billion of inbound investment and ranking sixteenth overall. Direct investment stock from Mexico

Figure 3-1
FDIUS: Direct investment position, 1999-2004



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, Sept. 2005, p. 111 and Sept. 2004, p. 94.

accounted for 16 percent of all FDIUS from low- and middle-income countries, and increased at an average annual rate of 32 percent between 1999 and 2004.

With few exceptions, FDIUS from small and developing countries recorded relatively high annual growth rates between 1999 and 2004, principally because such investment grew from a relatively small base. FDIUS from Iceland, Hungary, Macau, Egypt, Barbados, Azerbaijan, Colombia, and Venezuela recorded average annual growth rates in excess of 100 percent.

FDIUS stock from Mexico was \$7.9 billion in 2004, increasing 32 percent per year from 1999.

However, none of these countries accounted for more than 1.4 percent of total FDIUS by 2004. During 1999-2004, FDIUS held by investors from Hungary, Luxembourg, and Switzerland increased at rates well above the 10 percent average annual rate for all countries. By contrast, FDIUS held by Japan and the Netherlands, two of the three largest investors in the United States, increased at rates below the average for all countries, posting 3 percent and 6 percent average annual growth, respectively. The overall share of U.S. inbound direct investment

held by the United Kingdom, the largest investor, increased at an average rate of 10 percent per annum, on pace with the average annual growth rate recorded for total inbound investment.

What is the extent of FDIUS from Canada and Mexico? How does the growth of FDIUS from the NAFTA countries compare to the growth rate of total U.S. inbound investment?

The United States' NAFTA partners jointly accounted for 9 percent of all foreign direct investment stock in the United States in 2004, down from 10 percent in 1999. On average, FDIUS by NAFTA partners grew by 9 percent annually during 1999-2004 (table 3-2). This

Table 3-1

FDIUS: Direct investment position¹ on a historical-cost basis, by country, 1999 and 2004

Country	1999		2004		Average annual growth	Gross domestic product, 2004
	Millions of dollars	Percent of total	Millions of dollars	Percent of total	Percent	Million dollars
All countries	955,726	100	1,526,306	100	9.8	40,887,837
Australia	15,616	1.6	28,083	1.8	12.5	631,256
Belgium	11,011	1.2	11,285	0.7	0.5	349,830
Bermuda	14,798	1.5	8,442	0.6	-10.6	3,966
Brazil	735	0.1	1,286	0.1	11.8	604,855
Canada	90,559	9.5	133,761	8.8	8.1	979,764
Chile	42	0.0	40	0.0	-1.0	94,105
China	295	0.0	490	0.0	10.7	1,649,329
France	89,945	9.4	148,242	9.7	10.5	2,002,582
Germany	112,126	11.7	163,372	10.7	7.8	2,714,418
Hong Kong	885	0.1	1,709	0.1	14.1	163,005
Hungary	1,000	0.1	17,705	1.2	77.7	99,712
Iceland	113	0.0	8,249	0.5	135.9	12,380
India	88	0.0	522	0.0	42.8	691,876
Ireland	14,958	1.6	21,153	1.4	7.2	183,560
Italy	4,444	0.5	7,421	0.5	10.8	1,672,302
Japan	153,815	16.1	176,906	11.6	2.8	4,623,398
Luxembourg	35,644	3.7	107,842	7.1	24.8	31,143
Mexico	1,999	0.2	7,880	0.5	31.6	676,497
Netherlands	125,010	13.1	167,280	11.0	6.0	577,260
Panama	5,275	0.6	10,707	0.7	15.2	13,793
Philippines	101	0.0	25	0.0	-24.4	86,429
Poland	58	0.0	52	0.0	-2.2	241,833
Russia	97	0.0	330	0.0	27.7	582,395
Singapore	1,365	0.1	1,801	0.1	5.7	106,818
South Africa	236	0.0	356	0.0	8.6	212,777
Spain	2,749	0.3	5,669	0.4	15.6	991,442
Sweden	18,954	2.0	23,853	1.6	4.7	346,404
Switzerland	52,973	5.5	122,944	8.1	18.3	359,465
Taiwan	3,021	0.3	3,227	0.2	1.3	286,002
UK Islands, Carribean ...	11,573	1.2	24,243	1.6	15.9	(²)
United Kingdom	153,797	16.1	251,562	16.5	10.3	2,140,898
European Union (³)	582,006	60.9	941,679	61.7	10.1	(²)

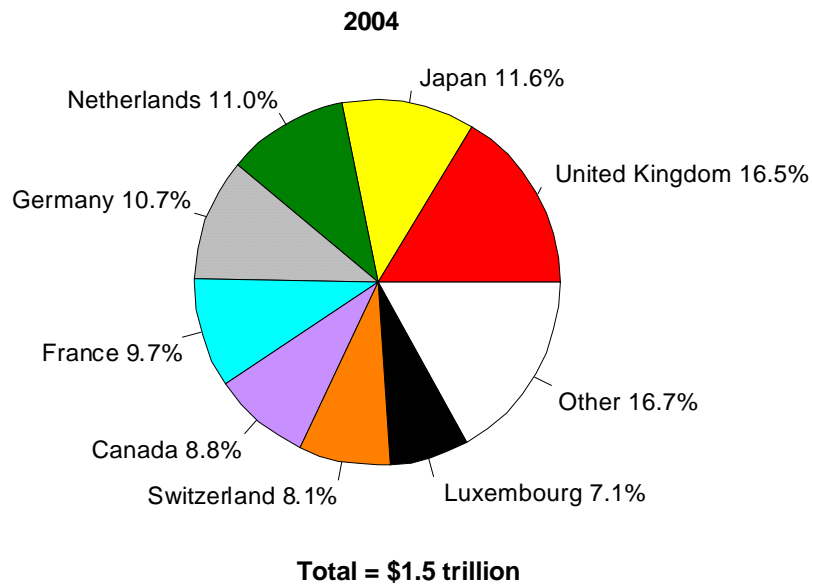
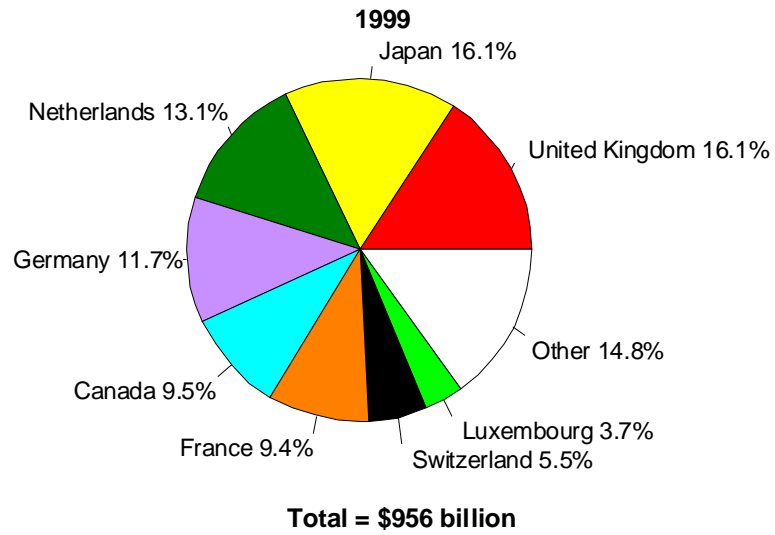
¹ Direct investment position is the sum of foreign parents' equity holdings in their U.S. affiliates (including retained earnings), plus the net outstanding loans that foreign parents have made to these affiliates. Direct investment position is negative when the value of loans made by U.S. affiliates to their foreign parent companies exceeds the value of the parents' equity holdings plus the value of loans made by the parent to its affiliate companies.

² Not available.

³ 1999 data are for the EU-15; 2004 data are for the EU-25.

Sources: U.S. Department of Commerce (USDOC), Bureau of Economic Analysis (BEA), Balance of Payments and Direct Investment Position Data, found at <http://www.bea.gov/bea/di/di1fdibal.htm>; estimates by the Commission; World Bank, found at <http://www.worldbank.org/> retrieved Dec. 22, 2005; Government of Bermuda, Department of Statistics; and Republic of China, National Statistics, found at <http://eng.stat.gov.tw>.

Figure 3-2
FDIUS: Direct investment position, by country, 1999 and 2004



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, Sept. 2005, pp. 111-112; and Sept. 2004, pp. 94-95.

Table 3-2
FDIUS: North American Free Trade Agreement (NAFTA) countries: Indicators of U.S. affiliate operations, 2003 and 2004

Country	Direct investment position, 2004		Employment, 2003		Sales, 2003		Assets, 2003	
	Total	Average annual growth	Total	Average annual growth	Total	Average annual growth	Total	Average annual growth
	<i>Millions of dollars</i>	<i>1999-04 Percent</i>	<i>Thousands</i>	<i>1999-03 Percent</i>	<i>Millions of dollars</i>	<i>1999-03 Percent</i>	<i>Millions of dollars</i>	<i>1999-03 Percent</i>
Canada	133,761	8.1	422.5	-10.5	142,048	-3.1	358,403	-3.8
Mexico	7,880	31.6	⁽²⁾	⁽¹⁾	⁽¹⁾ 22,897	22.2	¹ 25,600	23.2
NAFTA	141,641	8.9	⁽³⁾	⁽³⁾	164,945	-1	384,012	-2.7
Rest of the					2,175,21		5,427,74	
World	1,384,665	9.9	⁽³⁾	⁽³⁾	3	3.8	3	9.7
Total	1,526,306	9.8	5,735.0	-1.2	2,340,15	3.4	5,811,75	8.6
					8		5	

¹ Reflects 2002 data. Data for 2003 are not available.

² In 2003, Mexican-owned affiliates in the United States employed more than 100,000 workers. BEA reported a size range to avoid disclosure of individual company information.

³ Not available.

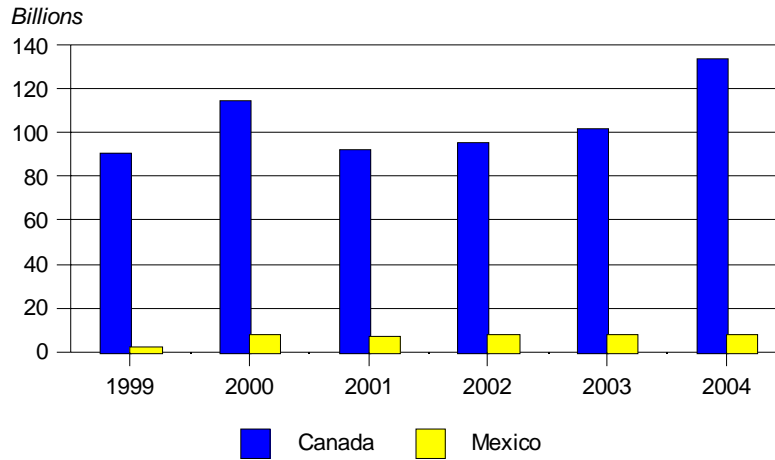
Source: U.S. Department of Commerce, Bureau of Economic Analysis, FDIUS: Operations of Foreign Parent Companies and their U.S. Affiliates, found at <http://www.bea.gov/bea/di/di1fdiop.htm>.

growth rate largely reflects investment by Canadian parent firms: Canada accounts for the bulk of the NAFTA partners' investment (94 percent in 2004). However, as noted above, FDIUS from Mexico increased at an average annual rate of 32 percent during the period, much more rapidly than the 8-percent rate recorded by Canadian firms (figure 3-3). Canadian parent firms are in turn increasing their investment in the United States more slowly than the 10-percent average growth rate among all direct investors.

In 2003, firms based in Canada and Mexico employed 442,200 U.S. workers.

Foreign-owned U.S. affiliates of parents from NAFTA partners employed more than 500,000 U.S. workers in 2003, accounting for 8 percent of all U.S. workers employed by U.S. affiliates of foreign firms. The two NAFTA partners have exhibited very different employment patterns in the United States, however. U.S. affiliates of Canadian parent firms reduced their total employment from 659,100 to 422,500 workers during 1999-2003. By contrast, employment by Mexican-owned U.S. affiliates increased from 33,000 in 1999 to more than 100,000 workers in 2003, consistent with the rise of Mexico's investment stock in the United States.

Figure 3-3
FDIUS: Direct investment position, Canada and Mexico, 1999-2004



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, Sept. 2005, p. 111; and Sept. 2004, p. 94;.

What is the extent of FDIUS from low- and middle-income countries?

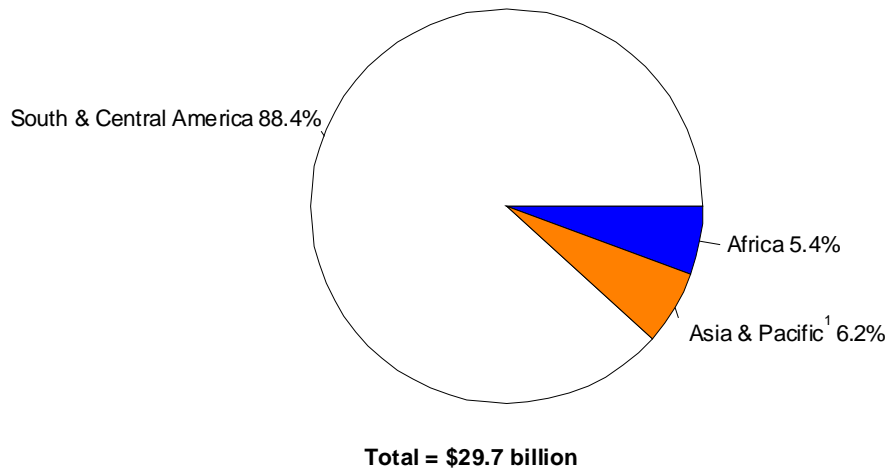
Low- and middle-income countries accounted for 2 percent, or \$29.7 billion, of total FDIUS stock in 2004.¹ Central and South American parent firms accounted for 89 percent of such investment (figure 3-4), which grew at an average annual rate of 26 percent between 1999 and 2004. Investment from low and middle-income economies in the Asia-Pacific region grew more slowly, but still faster than the average, at 14 percent per annum, reaching \$1.8 billion in 2004. Investment from African-based MNCs reached \$1.6 billion in 2004, with growth of 3 percent, on average, during 1999-2004. The developing countries with the largest shares of FDIUS in 2004 were Panama, Mexico, and Venezuela, with FDIUS stock of \$9.2 billion, \$7.7 billion, and \$4.4 billion, respectively.

FDIUS from Latin America grew by 26 percent between 1999 and 2004.

The shares of affiliate employment, sales, and assets held by MNCs from low and middle-income economies are similarly small: 6.0 percent, 5.9 percent, and 4.4 percent, respectively. Employment growth among such affiliates has actually been slightly negative in recent years, down by 0.3 percent per year since 1999, to just under 313,000 persons in 2003. Sales and assets held by such economies have risen significantly, however. Total sales by affiliates of low and middle-income parents grew by 22.3 percent per year since 1999, to \$125.6 billion in 2003. Assets held by such affiliates grew by 29 percent per year during the same period, to more than \$226 billion in 2003.

¹ Includes Central and South America, Africa, and the Asia-Pacific region, excluding Australia, Hong Kong, Japan, the Republic of Korea, New Zealand, Singapore, and Taiwan.

Figure 3-4
FDIUS: Direct investment position, low- and middle-income countries,
by region, 2004



¹ Does not include the following countries, which are all classified as high-income by the World Bank: Australia, Japan, Hong Kong, Korea, New Zealand, Singapore, and Taiwan.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, Sept. 2005, pp. 111-112.

How is FDIUS distributed by state? Within each state, which are the largest industries for foreign direct investment?

Foreign-owned firms employ 9 percent of all workers in South Carolina.

Approximately 5 percent of U.S. private-sector employees, or 5.3 million people, worked for U.S. affiliates of foreign firms in 2003. The states of California, Texas, and New York were the three largest hosts of FDIUS, measured in terms of both employment and gross property, plant, and equipment (PPE), a measure of physical assets. Together they accounted for approximately 24 percent of total FDIUS employment.² Affiliates in California employed 561,000 workers, followed by affiliates in New York (382,600 workers) and Texas (339,300 workers). Other states which ranked among the top ten for FDIUS employment in 2003 included Illinois, Florida, Pennsylvania, New Jersey, Ohio, Michigan, and North Carolina. The states with the largest proportions of workers employed by foreign-owned firms are South Carolina, Hawaii, and New Hampshire, where U.S. affiliates employed 9 percent, 8 percent, and 8 percent, respectively, of all private sector workers in 2003 (table 3-3).³

² This seems consistent with earlier research suggesting that market size is the principal factor determining U.S. affiliates' location by state. USITC, "Examination of U.S. Inbound and Outbound Direct Investment," USITC Publication 3383 (January 2001), p. 4-10, footnote 15 ("the correlation coefficient between total property, plant, and equipment in foreign affiliates and state gross domestic product, an indicator of market size, is 0.957").

³ Data on FDIUS employment from USDOC, BEA; data on total state employment from U.S. Department of Labor, Bureau of Labor Statistics. Data on the percentage of total PPE by state are not available.

Table 3-3

FDIUS: Property, plant, and equipment (PPE) and employment of U.S. majority-owned affiliates, selected states by industry, 2003
(million dollars)

	Total	Manufacturing	Wholesale	Retail	Information	Finance ^{1/} insurance	Real estate	Professional services	Other industries
California									
Employment (thousands) ..	561.0	180.4	87.2	25.4	40.1	23.6	3.6	17.3	183.5
PPE (million dollars)	88,247	31,690	17,124	3,246	5,940	2,322	13,633	1,285	13,007
New York									
Employment (thousands) ..	382.6	87.5	30.2	58.3	34.7	44.0	5.3	25.7	96.9
PPE (million dollars)	62,257	12,712	5,915	4,840	3,911	4,704	15,215	1,467	13,493
Texas									
Employment (thousands) ..	339.3	140.4	39.2	13.7	9.7	12.8	2.3	16.8	104.5
PPE (million dollars)	85,350	44,520	19,654	1,792	1,779	965	4,897	565	11,179
Illinois									
Employment (thousands) ..	254.9	97.2	29.0	10.2	16.5	17.5	1.0	13.6	69.8
PPE (million dollars)	40,852	17,073	9,436	1,120	1,880	1,505	3,472	462	5,903
Florida									
Employment (thousands) ..	248.9	73.0	24.1	25.9	12.8	11.2	5.3	7.6	89.0
PPE (million dollars)	29,452	9,902	3,696	1,545	1,460	585	4,429	168	7,687
Pennsylvania									
Employment (thousands) ..	227.7	108.8	14.3	29.3	9.8	8.8	1.8	8.1	46.9
PPE (million dollars)	30,245	16,869	2,158	2,320	932	638	2,276	371	4,681
All states									
Employment (thousands) ..	5,253.0	2,138.3	512.1	564.9	239.1	244.5	36.3	167.8	1,349.9
PPE ² (million dollars)	1,049,569	484,624	195,086	42,035	43,063	32,537	75,103	8,494	168,626

¹ Does not include depository institutions.

² Includes data for PPE held by U.S. affiliates outside the United States and PPE not permanently located in a particular state, such as aircraft, railroad rolling stock, satellites and undersea cable.

Source: U.S. Department of Commerce (USDOC), Bureau of Economic Analysis (BEA), *Foreign Direct Investment in the United States: Operations of Foreign Parent Companies and their U.S. Affiliates (FDIUS)*, tables D-12 and G-7, found at <http://www.bea.gov/lea/di/di1fdiop.htm>.

For the country as a whole, the manufacturing sector accounts for just under one-third of employment by U.S. affiliates. However, there are distinct variations by state (table 3-4). For instance, in California, manufacturing accounts for 25 percent of all affiliate employment in the state, with wholesale trade and “other industries”⁴ accounting for large shares as well. In New York, manufacturing accounts for 16 percent of all affiliate employment, and in Texas it accounts for 29 percent of such employment.

Which countries’ affiliates have the most sales in the United States? How are these sales divided by industry?

Firms based in 7 industrialized countries accounted for 87 percent of sales by U.S. affiliates.

Affiliates with parents based in seven developed OECD countries accounted for 87 percent of total 2003 sales by U.S. affiliates (figure 3-5). This reflects the high concentration of FDIUS in the United States from developed countries. Sales by affiliates of Japanese-, British-, and German-based affiliates together accounted for half of all sales by U.S. affiliates. Japan’s U.S. affiliates alone accounted for 19 percent of sales (\$449.6 billion) in 2003, while British-owned affiliates recorded sales of \$399.1 billion (table 3-5). Sales by Canadian-owned affiliates were \$142.0 billion in 2003. Together, the NAFTA countries accounted for approximately 7 percent of total sales by all foreign-owned U.S. affiliates. Wholesale trade accounted for more than half of Japanese-owned affiliates’ sales, and almost half of British-owned affiliates’ sales. Affiliates of EU-owned firms accounted for about 75 percent of total sales in the finance and insurance industry. U.S. affiliate sales are also strong in the chemicals industry (where, again, the EU is strongest), with sales of \$160.2 billion in 2004.

Is there a greater level of FDIUS in services or goods? How do the growth rates compare in the two sectors?

During 1999-2004, the FDIUS position in the services and manufacturing sectors increased at average annual growth rates of 13 percent and 5 percent, respectively. In 2004, FDIUS stock in the service sector measured \$962.1 billion, or 63 percent of the total, while FDIUS stock in manufacturing measured \$519.4 billion, or 34 percent of the total (table 3-6). The mining industry accounted for 3 percent of direct investment position with an average annual growth of 26 percent, while agriculture and related industries accounted for 0.2 percent with an average annual growth rate of 0.9 percent (figure 3-6). The service sector accounted for a majority of the cross-border acquisitions of U.S. firms during 1999-2003 as well, with 1,534 foreign acquisitions of U.S. service firms, 61 percent of all acquisitions of U.S. firms, valued at \$542.7 billion. The same period included 999 foreign acquisitions of U.S. goods-producing firms, valued at nearly \$277 billion.⁵

⁴ This category includes agriculture, mining, construction, transportation, communications, and public utilities services.

⁵ Data for values excludes most mining and agriculture transactions, for which data were suppressed by BEA to avoid disclosure of individual company information. BEA, “Table 4. Foreign Direct Investment Position in the United States on a Historical Cost Basis, 2001-2004” *Survey of Current Business*, Sept. 2005, p. 83; BEA, “Foreign Direct Investment Position in the United States on a Historical-Cost Basis, 1999,” available at <<http://www.bea.gov/bea/di/fdipos-99.htm>>; BEA, *Survey of Current Business*, “Table 17. Foreign Direct Investment in the United States: Selected Items by Detailed Industry of U.S. Affiliate, 2000-2004,” Sept. 2005, pp. 113 -114.; BEA, “Foreign Direct Investment in the United States: U.S. Business Enterprises Acquired or Established by Foreign Direct Investors, 1998-2004,” available on the web at URL <http://www.bea.gov/bea/ai/iidguide.htm#IID_comprehensive>, tables 1.1, 1.2, 4.2, 4.3, 4.4, 4.5, 5.2, 5.3, 5.4, 5.5, 5.6, and 5.7.

Table 3-4
FDIUS: Property, plant, and equipment (PPE) and employment by U.S. affiliates, by state, 2003

State	PPE	Share of PPE for all states	Employment	Percent of employment for all states	FDIUS employment as percent of total state employment
	<i>Millions of dollars</i>	<i>Percent</i>	<i>Thousands</i>	<i>Percent</i>	
Total	1,049,569		5253.0		4.9
South Carolina	20,533	2.3	127.5	2.4	8.8
New Hampshire	4,613	0.5	41.9	0.8	8.1
Hawaii	7,751	0.9	36.1	0.7	8.0
Delaware	6,154	0.7	26.5	0.5	7.6
Connecticut	12,682	1.4	104.9	2.0	7.5
Massachusetts	23,088	2.6	189.0	3.6	6.9
New Jersey	33,362	3.7	223.2	4.3	6.8
North Carolina	25,021	2.8	204.6	3.9	6.6
Rhode Island	(¹)	(¹)	25.9	0.5	6.3
Maine	5,986	0.7	30.1	0.6	6.1
Kentucky	25,575	2.8	87.0	1.7	6.1
Indiana	29,836	3.3	134.2	2.6	6.1
Georgia	26,125	2.9	182.8	3.5	5.8
New York	62,257	6.9	382.6	7.3	5.6
Michigan	39,009	4.3	205.0	3.9	5.6
Alaska	(¹)	(¹)	11.7	0.2	5.4
Maryland	10,902	1.2	104.1	2.0	5.2
Illinois	40,852	4.5	254.9	4.9	5.2
Virginia	16,733	1.9	138.6	2.6	5.0
Alabama	16,102	1.8	72.8	1.4	4.9
Wyoming	10,946	1.2	8.8	0.2	4.8
Pennsylvania	30,245	3.4	227.7	4.3	4.8
Ohio	32,686	3.6	208.6	4.0	4.6
California	88,247	9.8	561.0	10.7	4.5
Texas	85,350	9.5	339.3	6.5	4.5
Vermont	(¹)	(¹)	10.4	0.2	4.2
Wisconsin	16,463	1.8	97.6	1.9	4.2
Colorado	13,505	1.5	73.5	1.4	4.1
West Virginia	6,238	0.7	22.2	0.4	4.1
Florida	29,452	3.3	248.9	4.8	4.0
Missouri	14,438	1.6	87.2	1.7	4.0
District of Columbia ..	4,461	0.5	16.5	0.3	3.9
Washington	18,069	2.0	82.8	1.6	3.8
Minnesota	10,828	1.2	84.6	1.6	3.8
Utah	11,933	1.3	32.2	0.6	3.8
Oregon	10,314	1.1	48.4	0.9	3.7
Arkansas	4,864	0.5	33.7	0.6	3.6
Kansas	5,726	0.6	35.6	0.7	3.4
Iowa	6,028	0.7	38.1	0.7	3.2
Louisiana	29,200	3.2	48.0	0.9	3.2
Arizona	10,015	1.1	59.8	1.1	3.1
North Dakota	1,617	0.2	7.9	0.2	3.1
Oklahoma	8,100	0.9	32.5	0.6	2.9
Nevada	6,795	0.8	27.2	0.5	2.9
Mississippi	5,836	0.6	22.8	0.4	2.6
Nebraska	1,986	0.2	18.9	0.4	2.6

See footnote at end of table.

Table 3-4—Continued

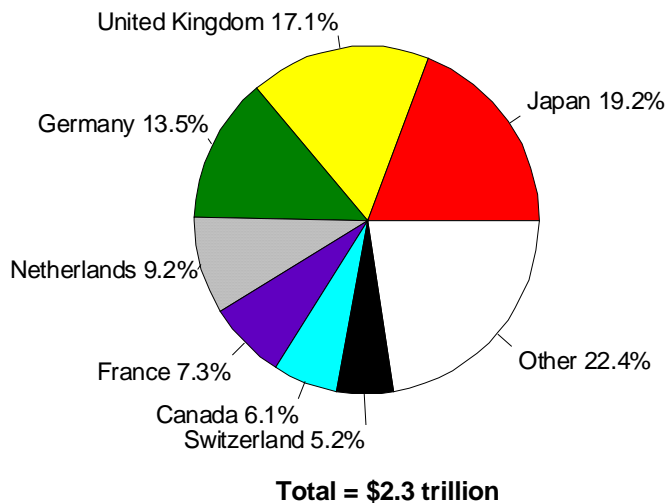
FDIUS: Property, plant, and equipment (PPE) and employment by U.S. affiliates, by state, 2003

State	PPE	Percent of PPE for all states	Employment	Percent of employment for all states	FDIUS employment as percent of total state employment, 2003
	<i>Millions of dollars</i>	<i>Percent</i>	<i>Thousands</i>	<i>Percent</i>	
Idaho	2,139	0.2	11.2	0.2	2.4
South Dakota	777	0.1	7.0	0.1	2.4
Puerto Rico	2,646	0.3	16.4	0.3	2.3
New Mexico	4,246	0.5	12.5	0.2	2.2
Montana	2,353	0.3	6.6	0.1	2.1
Tennessee	18,002	2.0	127.4	2.4	1.7

¹ Includes "other U.S. areas."

Source: Bureau of Economic Analysis (BEA), Foreign Direct Investment in the United States: Operations of Foreign Parent Companies and their U.S. Affiliates (FDIUS), tables D-12 and G-7, found at <http://www.bea.gov/lea/di/di1fdiop.htm>; and U.S. Department of Labor, Bureau of Labor Statistics, Employment and Wages, Annual Averages 2003, Table 6, found at <http://www.bls.gov/cew/ew03table6.pdf>.

Figure 3-5
FDIUS: Sales by U.S. affiliates, by country, 2003



Source: U.S. Department of Commerce, Bureau of Economic, Analysis, *Foreign Direct Investment in the United States: Operations of Foreign Parent Companies and their U.S. Affiliates*, found at <http://www.bea.gov>.

Table 3-5
FDIUS: Sales by U.S. affiliates, 1999 and 2003

Country	1999		2003		Average annual growth
	Millions of dollars	Percent of total	Millions of dollars	Percent of total	Percent
All countries	2,044,359	100.0	2,340,158	100.0	3.4
Australia	30,236	1.5	38,913	1.7	6.5
Belgium	19,627	1.0	28,619	1.2	9.9
Bermuda	28,866	1.4	60,909	2.6	20.5
Brazil	3,287	0.2	7,659	0.3	23.6
Canada	161,132	7.9	142,048	6.1	-3.1
Chile	531	0.0	(¹)	(¹)	(¹)
China	1,494	0.1	(²)2,139	0.1	9.4
France	169,876	8.3	171,691	7.3	0.3
Germany	312,281	15.3	315,505	13.5	0.3
Hong Kong	6,833	0.3	8,367	0.4	5.2
Hungary	(¹)	(¹)	(¹)	(¹)	(¹)
Iceland	350	0.0	451	0.0	6.5
India	466	0.0	(¹)	(¹)	(¹)
Ireland	13,830	0.7	11,475	0.5	-4.6
Italy	20,328	1.0	22,417	1.0	2.5
Japan	451,099	22.1	449,638	19.2	-0.1
Luxembourg	3,486	0.2	(³)3,721	0.2	1.6
Mexico	10,279	0.5	(²)22,897	1.0	22.2
Netherlands	182,193	8.9	216,075	9.2	4.4
Panama	2,245	0.1	1,573	0.1	-8.5
Philippines	197	0.0	(³)134	0.0	-9.2
Poland	66	0.0	(¹)	(¹)	(¹)
Russia	(¹)	(¹)	(¹)	(¹)	(¹)
Singapore	4,234	0.2	6,261	0.3	10.3
South Africa	3,475	0.2	(³)5,152	0.2	10.3
Spain	3,805	0.2	(²)5,429	0.2	9.3
Sweden	42,242	2.1	41,629	1.8	-0.4
Switzerland	108,401	5.3	122,626	5.2	3.1
Taiwan	13,158	0.6	10,100	0.4	-6.4
UK Islands, Caribbean ...	9,234	0.5	11,082	0.5	4.7
United Kingdom	282,640	13.8	399,079	17.1	9.0
EU-15	1,072,923	52.5	1,249,659	53.4	3.9

¹ Data not available.

² Data for 2002. Data for 2003 are not available.

³ Data for 2001. Data for 2002 and 2003 are not available.

Source: U.S. Department of Commerce (USDOC), Bureau of Economic Analysis (BEA), *Foreign Direct Investment in the United States: Operations of Foreign Parent Companies and their U.S. Affiliates (FDIUS)*, found at <http://www.bea.gov/>.

Table 3-6
FDIUS: Direct investment position¹ on a historical-cost basis, by industry, 1999 and 2004

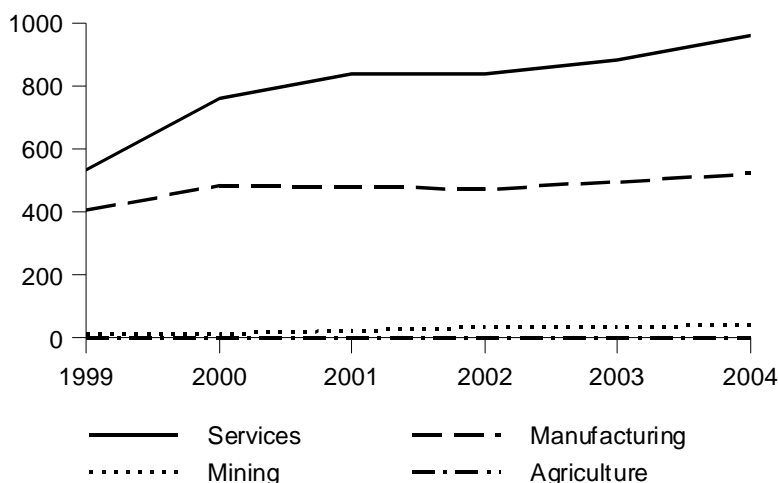
Industry	1999		2004		Average annual growth
	<i>Millions of dollars</i>	<i>Percent</i>	<i>Millions of dollars</i>	<i>Percent</i>	
All industries	955,726		1,526,306		9.8
Mining	13,415	1.4	42,507	2.8	25.9
Agriculture, forestry, fishing and hunting	2,220	0.2	2,325	0.2	0.9
Utilities	9,954	1.0	42,682	2.8	33.8
Manufacturing	406,415	42.5	519,410	34.0	5.0
Food and kindred products	19,632	2.1	36,004	2.4	12.9
Chemicals	96,614	10.1	147,952	9.7	8.9
Pharmacy and medicines	41,693	4.4	66,427	4.4	9.8
Primary and fabricated metals	18,831	2.0	18,897	1.2	0.1
Plastics and rubber products	12,720	1.3	14,221	0.9	2.3
Nonmetallic mineral products	22,387	2.3	33,430	2.2	8.3
Machinery	30,462	3.2	49,541	3.2	10.2
Computers and electronic products	62,566	6.5	41,883	2.7	-7.7
Electrical equipment, appliances and components	13,413	1.4	13,593	0.9	0.3
Transportation equipment	52,809	5.5	70,022	4.6	5.8
Textiles, apparel, and leather products	2,505	0.3	2,746	0.2	1.9
All other manufacturing	74,476	7.8	91,121	6.0	4.1
Services	533,676	55.8	962,064	63.0	12.5
Wholesale trade	106,745	11.2	201,101	13.2	13.5
Retail trade	22,387	2.3	26,122	1.7	3.1
Information	78,035	8.2	117,190	7.7	8.5
Telecommunications	25,598	2.7	28,645	1.9	2.3
Depository institutions	61,972	6.5	123,304	8.1	14.8
Finance and insurance	132,203	13.8	206,533	13.5	9.3
Finance	48,605	5.1	69,874	4.6	7.5
Insurance	83,598	8.7	136,659	9.0	10.3
Professional, scientific and technical services	11,682	1.2	38,778	2.5	27.1
Other services	120,652	12.6	249,036	16.3	15.6

¹ Direct investment position is the sum of foreign parents' equity holdings in their U.S. affiliates (including retained earnings), plus the net outstanding loans that foreign parents have made to these affiliates. Direct investment position is negative when the value of loans made by U.S. affiliates to their foreign parent companies exceeds the value of the parents' equity holdings plus the value of loans made by the parent to its affiliate companies.

² Not available.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, found at <http://www.bea.gov/lea/di/di1fdiop.htm>.

Figure 3-6
FDIUS: Direct investment position, by sector, 1999-2004



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, found at <http://www.bea.gov/bea/di/di1fdiop.htm>.

The service sector represents a much larger proportion of FDIUS when total assets of foreign-owned affiliates are used as a measure. Service sector affiliates accounted for 80 percent of total assets in 2003, compared with 19 percent for the manufacturing sector (table 3-7).⁶ The bulk of the assets in the service sector (95 percent) are controlled by companies in the finance, insurance, and real estate industries. Financial assets accounted for a larger share of assets in these companies than property, plant, and equipment. Service sector assets increased at an average rate of 10 percent annually during 1999-2003, versus 9 percent for all sectors. Assets of manufacturing affiliates increased at a 2 percent average annual rate.⁷

In which industries is FDIUS stock the largest?

FDIUS grew fastest in utilities and professional services.

Within the service sector, the wholesale trade, insurance, and depository institutions industries accounted for the greatest shares of inbound investment stock in 2004, equal to 21 percent (\$201.1 billion), 14 percent (\$136.7 billion), and 13 percent (\$123.3 billion), respectively, of FDIUS stock in services in 2004 (figure 3-7). During 1999-2004, the most rapid growth in FDIUS stock occurred in the utilities and professional, scientific, and technical service industries, which reported average annual growth of 34 percent and 27

⁶ 'Other industries' accounted for 3.1 percent of total assets in 2004; BEA reporting breakdowns do not permit full allocation between goods-producing and services-producing industries.

⁷ BEA, "Foreign Direct Investment in the United States: New Investment in 2004," *Survey of Current Business*, June 2005, p. 32; BEA, "Table 9.1. Selected Financial and Operating Data of Majority-Owned Affiliates by Industry of Affiliate, 2002," *Survey of Current Business*, August 2005, p. 211; BEA, "Table 9.2. Selected Financial and Operating Data of Majority-Owned Affiliates by Industry of Affiliate, 2003," *Survey of Current Business*, August 2005, p. 212.

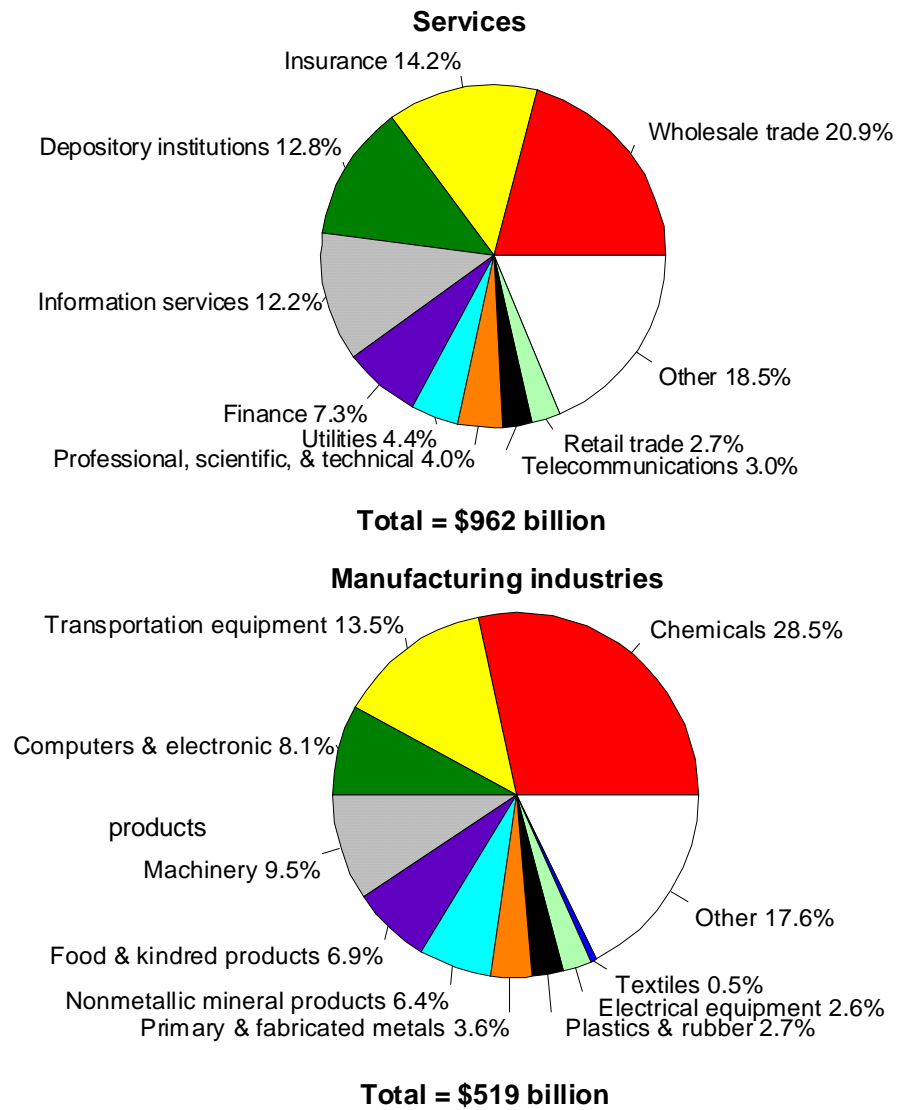
Table 3-7
FDIUS: Assets of U.S. affiliates, by industry, 1999 and 2003

Industry	1999	Percent of total, 1999	2003	Percent of total, 2003	Average annual growth
	<i>Millions of dollars</i>	<i>Percent</i>	<i>Millions of dollars</i>	<i>Percent</i>	
All industries	4,177,211		5,811,755		8.6
Mining	45,066	1.1	70,302	1.2	11.8
Agriculture, forestry, fishing and hunting	6,371	0.2	4,292	0.1	-9.4
Utilities	28,015	0.7	97,175	1.7	36.5
Manufacturing	992,765	23.8	1,087,087	18.7	2.3
Food and kindred products	58,417	1.4	77,327	1.3	7.3
Chemicals	207,312	5.0	253,205	4.4	5.1
Pharmacy and medicines	87,929	2.1	118,647	2.0	7.8
Primary and fabricated metals	60,465	1.4	49,697	0.9	-4.8
Plastics and rubber products	28,733	0.7	29,240	0.5	0.4
Nonmetallic mineral products	46,486	1.1	61,031	1.1	7.0
Machinery	64,664	1.5	100,007	1.7	11.5
Computers and electronic products	107,694	2.6	103,406	1.8	-1.0
Electrical equipment, appliances and components	40,132	1.0	27,218	0.5	-9.3
Transportation equipment	186,470	4.5	227,812	3.9	5.1
Textiles, apparel, and leather products	10,921	0.3	5,848	0.1	-14.5
All other manufacturing	181,471	4.3	152,296	2.6	-4.3
Services	3,133,009	75.0	4,650,074	80.0	10.4
Whole sale trade	306,995	7.3	462,465	8.0	10.8
Retail trade	70,381	1.7	68,835	1.2	-0.6
Information	223,103	5.3	368,903	6.3	13.4
Telecommunication	87,167	2.1	(¹)	0.0	(¹)
Finance and insurance	2,170,737	52.0	3,190,263	54.9	10.1
Finance	1,154,326	27.6	1,679,541	28.9	9.8
Insurance	1,016,410	24.3	1,510,722	26.0	10.4
Professional, scientific and technical services	25,485	0.6	63,952	1.1	25.9
Other services	336,308	8.1	495,656	8.5	10.2

¹ Data not available.

Source: U.S. Department of Commerce (USDOC), Bureau of Economic Analysis (BEA), *Foreign Direct Investment in the United States: Operations of Foreign Parent Companies and their U.S. Affiliates (FDIUS)*, found at <http://www.bea.gov/lea/di/di1fdiop.htm>, table A-2.

Figure 3-7
FDIUS: Direct investment position, by share of services and manufacturing sectors, 2004



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, found at <http://www.bea.gov/bea/di/di1fdiop.htm>.

percent, respectively, during the period. The wholesale trade industry recorded inbound investment growth of 14 percent annually, on average, slightly higher than the average for all service industries. Foreign firms acquired 229 U.S. wholesale trade firms during 1999-2003 and 273 U.S. information services firms, more than in any other service sector industry. FDIUS stock in the finance and insurance industry grew by 9 percent on an average annual basis. Foreign firms acquired 90 U.S. insurance firms and 117 other non-depository financial firms during 1999-2003.⁸

Within the manufacturing sector, the chemicals industry attracted the greatest share of foreign direct investment, with direct investment stock measuring \$148.0 billion in 2004, equal to 29 percent of FDIUS stock in manufacturing. Almost half this amount is invested in the pharmaceutical industry. Foreign direct investment in the chemicals industry recorded average annual growth of 9 percent during 1999-2004, with the pharmaceuticals segment growing by 10 percent per annum. Foreign firms acquired a total of 127 U.S. chemical firms during 1999-2003. Chapter 7 discusses inbound and outbound FDI in the chemicals industry in greater detail. Foreign investment in the food and kindred products industry recorded the fastest growth in the manufacturing sector, with average annual increases of 13 percent during 1999-2004.⁹

The two industries with the fastest overall growth rates in FDIUS stock were mining and utilities, with average annual growth rates of 26 percent and 34 percent, respectively. Chapter 5 of this study presents an in-depth discussion of FDI in the mining sector. In the utilities industry, large European firms including RWE AG (Germany), E.ON (Germany), Veolia Water (formerly Vivendi SA, France), and Suez Lyonnaise des Eaux (France) have amassed a significant presence in the U.S. water and electric power sectors in recent years. For instance, RWE acquired U.S.-based American Water Works Company in a deal valued at \$8.6 billion in 2003, and RWE Thames Water, a British-based subsidiary of RWE AG, acquired Elizabethtown Corporation for \$928 million in 2001.¹⁰ Vivendi SA acquired U.S. Filter Corporation in 1999 for \$6.0 billion, and Suez acquired United Water Resources, Inc. in 2000 for \$1.2 billion.

In which U.S. industries have FDIUS flows been largest in recent years?

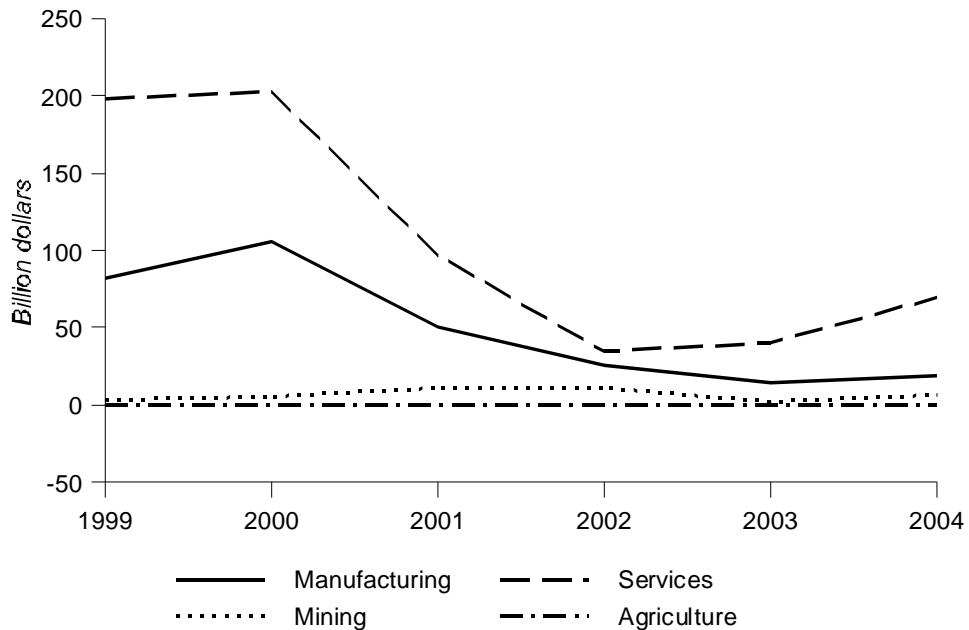
Total capital inflows resulting from direct investment into the United States were \$95.9 billion in 2004, below the average of \$163.5 billion during 1999-2004. This average reflects the very high capital inflows due to the large number of mergers and acquisitions associated with the internet stock market boom that began in the 1990s and continued through 2001. Consequently, total capital inflows declined sharply after 2000. Throughout the period, the service sector has captured the largest share of capital inflows (figure 3-8). This was particularly true in 1999 and 2000, before the 2001 stock market crash, and reflects strong investment in the telecommunications and finance sectors in 1999 and 2000. New FDIUS inflows in telecommunications alone were \$77.7 billion in 1999, which dropped sharply

⁸ BEA, "Foreign Direct Investment in the United States: Detail for Historical Cost Position and Related Capital and Income Flows, 2004", Table 10.3, *Survey of Current Business*, Sept. 2005, p. 95.

⁹ Ibid.

¹⁰ Zephyr database.

Figure 3-8
FDIUS inflows by sector, 1999-2004



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, Sept. 2005 and Sept. 2004.

during 2000-2004.¹¹ Within the service sector, total capital inflows throughout the period were largest in broadcasting and telecommunications, wholesale trade, insurance, finance, and professional, scientific, and technical services (table 3-8). Within the manufacturing sector, the chemicals, computer and electronic products, and electrical equipment sectors recorded the largest total capital inflows during the period. Investment in computer and electronic products was very strong during 1999 and 2001, again tied to the strong interest in internet-related industries during that time, and dropped sharply for the remainder of the period.

The five countries which recorded the largest capital flows during 1999-2004 were the United Kingdom, the Netherlands, France, Canada, and Switzerland (table 3-9). Due to the nature of capital flows data, which vary from year to year due to that year's particular transactions, the rankings of these countries changed throughout the period, but all were significant investors. Consistent with the data for all countries, each of the top five invested significantly more in the service sector than in manufacturing during 1999-2004.¹² Figure 3-9 illustrates the industry composition of capital flows from these top five countries.

¹¹ Separate data for the telecommunications industry is not available after 1999, but the total for the broader category of broadcasting and telecommunications is reflected in table 3-8. Aside from 2001, when the total reached \$40.6 billion, the category total was lower than \$5.0 billion for the remainder of the period.

¹² The data shows that capital flows from Switzerland were higher for manufacturing over the period under discussion, but this is due to data suppressed by BEA to avoid disclosing individual company information in depository institutions.

Table 3-8
FDIUS: Capital inflows (outflows) by sector and selected industry, 1999-2004
(millions of dollars)

Industry	1999	2000	2001	2002	2003	2004	Total	Average
							1999-2004	1999-2004
All industries	283,376	314,007	159,461	71,331	56,834	95,859	980,868	163,478
Manufacturing	82,382	105,119	51,069	25,715	14,888	19,372	298,545	49,758
Chemicals	7,435	25,466	16,823	-6,629	7,775	7,485	58,355	9,726
Computer and electronic products	29,481	33,073	-1,403	-6,648	-2,043	-784	51,676	8,613
Electrical equipment, appliances, and components	4,206	13,333	20,545	3,182	-959	1,064	41,371	6,895
Transportation equipment . . .	7,153	1,653	9,694	5,797	3,332	4,560	32,189	5,365
Machinery	17,878	2,175	3,560	5,176	611	937	30,337	5,056
Services	197,377	202,884	96,645	35,018	40,352	69,993	642,269	107,045
Broadcasting and telecommunications	77,529	4,436	40,597	4,430	4,317	-3,584	127,725	21,288
Wholesale trade	16,458	52,501	5,998	10,689	-5,762	15,311	95,195	15,866
Insurance	23,033	36,951	6,430	8,249	-3,135	16,090	87,618	14,603
Finance, except depository institutions	12,152	14,039	11,726	-5,353	22,580	15,745	70,889	11,815
Professional, scientific, and technical services	5,826	34,136	9,309	1,241	186	4,425	55,123	9,187
Depository institutions (banking)	19,471	5,775	6,429	2,756	4,094	16,220	54,745	9,124
Utilities	10,243	9,528	335	6,641	8,259	763	35,769	5,962
Mining	3,562	5,797	11,694	10,951	1,781	6,332	40,117	6,686
Agriculture	55	207	53	-353	-187	162	-63	-10

Source: USDOC, BEA, Survey of Current Business, Sept. 2004 and Sept. 2005.

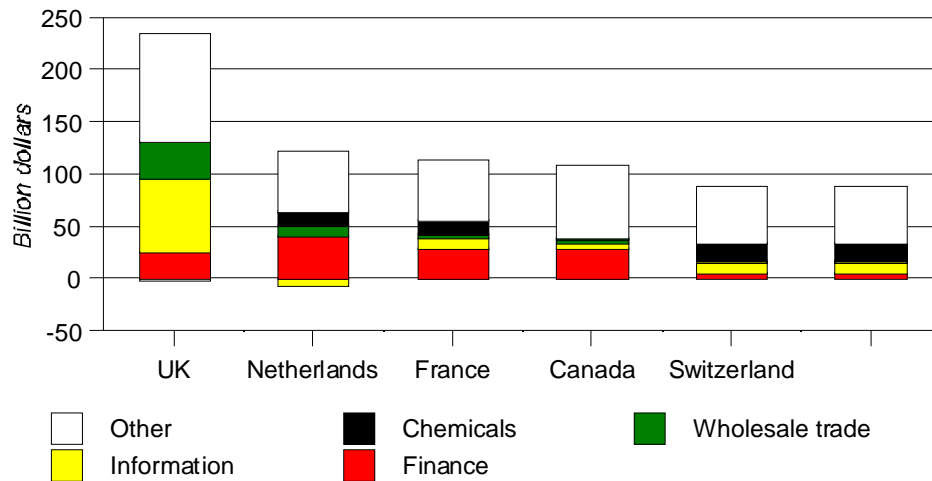
Table 3-9
FDIUS: Capital inflows from leading countries

(million dollars)

Country	1999	2000	2001	2002	2003	2004	Total 1999-2004	Average, 1999-2004
All countries	283,376	314,007	159,461	71,331	56,834	95,859	980,868	163,478
United Kingdom	108,566	82,652	2,819	26,515	-5,649	19,430	234,333	39,056
Netherlands	41,689	33,517	24,036	4,472	5,562	6,192	115,468	19,245
France	29,834	51,001	14,546	6,035	3,306	9,234	113,956	18,993
Canada	26,367	27,258	9,173	1,882	12,198	31,805	108,683	18,114
Switzerland	2,503	12,124	61,789	9,762	-3,500	4,732	87,410	14,568
Germany	23,478	14,054	40,206	-1,149	8,876	1,545	87,010	14,502
Japan	11,555	7,820	-3,132	6,010	7,752	16,146	46,151	7,692
Australia	4,193	4,935	6,490	6,645	3,671	3,635	29,569	4,928
Luxembourg	6,887	30,864	-21,498	-3,775	13,694	-538	25,634	4,272
United Kingdom Islands, Caribbean	4,137	3,800	12,961	1,361	2,745	-2,175	22,829	3,805
Hungary	810	3,992	12,463	87	2,711	-3,593	16,470	2,745
Barbados	1,284	290	3,075	4,201	4,573	686	14,109	2,352

Source: USDOC, BEA, *Survey of Current Business*, Sept. 2004 and Sept. 2005.

Figure 3-9
FDIUS capital inflows from leading countries, by industry, 1999-2004



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, Sept. 2005 and Sept. 2004.

Which countries' affiliates employ the greatest number of people in the United States?

Employment by U.S. foreign affiliates declined at an average annual rate of 1.2 percent between 1999-2003, most likely reflecting the general loss of jobs in the U.S. manufacturing sector.¹³ By contrast, U.S. employment by firms based in some smaller economies, including Chile, China, Bermuda, and Singapore, registered rapid increases. U.S. affiliates of British-owned firms employed 1.1 million U.S. workers in 2003, or 19 percent of all workers employed by U.S. affiliates. German-owned affiliates and Japanese-owned affiliates employed 12 percent and 11 percent, respectively (figure 3-10).

Among U.S. affiliates of parent firms from the industrial countries, the fastest growing in terms of employment were affiliates with parents based in Spain and Sweden, which recorded average annual growth of 16 and 11 percent, respectively (table 3-10). Employment by affiliates with parents based in most other large industrial economies was stable or declined during the period. U.S. affiliates owned by British and Dutch parents recorded average annual employment growth close to 1 percent during the period, while employment by affiliates of German, Japanese, and Canadian parents all declined. Firms based in these three countries are primarily invested in manufacturing, so the declining employment levels are consistent with the broader decline of U.S. manufacturing employment.

¹³ BEA, "U.S. Affiliates of Foreign Companies: Operations in 2003," *Survey of Current Business*, August 2005; BEA data tables II.G.3 for 1999 and 2003 respectively; calculations by USITC staff.

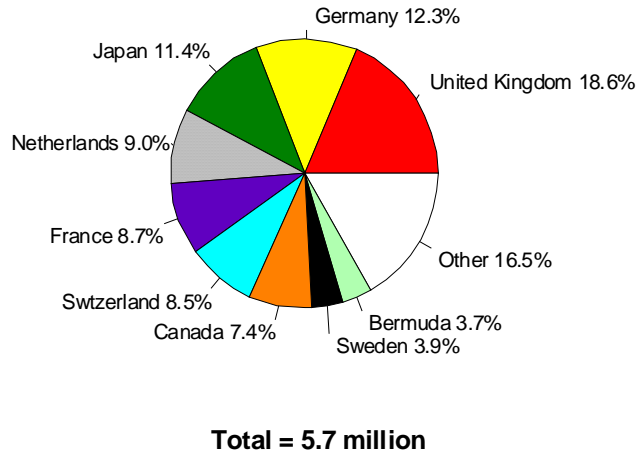
Table 3-10
FDIUS: Employment by U.S. affiliates, by country, 1999 and 2003

Country	1999		2003		Average annual growth —Percent—
	Thousands	Percent of total	Thousands	Percent of total	
All countries	6,027.6	100.0	5,735.0	100.0	-1.2
Australia	83.8	1.4	79.2	1.4	-1.4
Belgium	124.0	2.1	136.6	2.4	2.4
Bermuda	126.4	2.1	213.7	3.7	14.0
Brazil	3.5	0.1	5.0	0.1	9.3
Canada	659.1	10.9	422.5	7.4	-10.5
Chile	0.5	0.0	2.8	0.0	53.8
China	2.5	0.0	3.3	0.1	7.2
France	614.3	10.2	500.0	8.7	-5.0
Germany	848.8	14.1	707.5	12.3	-4.5
Hong Kong	25.2	0.4	22.9	0.4	-2.4
Hungary	0.5	0.0	(¹)	(¹)	(¹)
Iceland	0.9	0.0	1.2	0.0	7.5
India	1.6	0.0	2.2	0.0	8.3
Ireland	65.2	1.1	37.1	0.6	-13.1
Italy	90.8	1.5	93.8	1.6	0.8
Japan	827.0	13.7	653.5	11.4	-5.7
Luxembourg	9.1	0.2	(¹)	(¹)	(¹)
Mexico	33.0	0.5	(¹)	(¹)	(¹)
Netherlands	498.9	8.3	513.6	9.0	0.7
Panama	12.4	0.2	6.6	0.1	-14.6
Philippines	0.7	0.0	0.5	0.0	-8.1
Poland	0.2	0.0	(¹)	(¹)	(¹)
Russia	0.3	0.0	2.3	0.0	66.4
Singapore	10.7	0.2	18.7	0.3	15.0
South Africa	8.5	0.1	9.0	0.2	1.4
Spain	11.9	0.2	21.7	0.4	16.2
Sweden	145.1	2.4	221.1	3.9	11.1
Switzerland	442.4	7.3	487.9	8.5	2.5
Taiwan	25.1	0.4	17.6	0.3	-8.5
UK Islands, Caribbean	35.7	0.6	25.4	0.4	-8.2
United Kingdom	1,017.4	16.9	1,068.4	18.6	1.2
EU-15	3,488.7	57.9	3,421.8	59.7	-0.5

¹ In 2003, Hungarian-owned affiliates employed between 500 and 999 workers; Luxembourg-owned affiliates, between 25,000 and 49,999 workers; Mexican-owned affiliates, 100,00 or more workers; and Polish-owned affiliates, between 1 and 499 workers. BEA reported a size range in order to avoid disclosure of individual company information.

Source: U.S. Department of Commerce (USDOC), Bureau of Economic Analysis (BEA), *Foreign Direct Investment in the United States: Operations of Foreign Parent Companies and their U.S. Affiliates (FDIUS)*, found at <http://www.bea.gov/bea/di/di1fdiop.htm>.

Figure 3-10
FDIUS: Employment by U.S. affiliates, by country, 2003



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Foreign Direct Investment in the United States: Operations of Foreign Parent Companies and their U.S. Affiliates*, found at <http://www.bea.gov>.

In which industries do U.S. affiliates employ the greatest number of people? In which industry do U.S. affiliates account for the greatest share of total employment?

Foreign-owned, nonbank affiliates employed a total of 5.7 million U.S. workers in 2003, 59 percent of whom were employed in the service sector (figure 3-11). In 2003, foreign-owned U.S. affiliates employed 5 percent of all U.S. private sector workers, including 14 percent of mining employees and 16 percent of manufacturing sector employees (table 3-11).

The largest employer within the manufacturing sector was the transportation equipment industry, with 393,700 thousand U.S. workers in 2003, closely followed by the chemicals industry, with 331,800 thousand workers. Transportation equipment affiliates recorded a 2 percent average annual decline during 1999-2003, while employment by chemicals industry affiliates recorded an average annual decline of slightly more than 2 percent during the same period. U.S. affiliates in the electrical equipment and textiles industries recorded the sharpest declines in employment, both at 17 percent per annum. This is in line with an average annual decline of 4 percent for all manufacturing industries. By contrast, employment by U.S. affiliates in the utilities industry grew by 30 percent annually, although overall U.S. employment in the industry was low at 35,700 workers in 2003.

Overall employment by U.S. affiliates declined during 1999-2003, but employment by service sector affiliates increased.

U.S. affiliates employed an average of 4 percent of all U.S. service sector workers. The share of private sector employment by U.S. service affiliates was highest in the wholesale

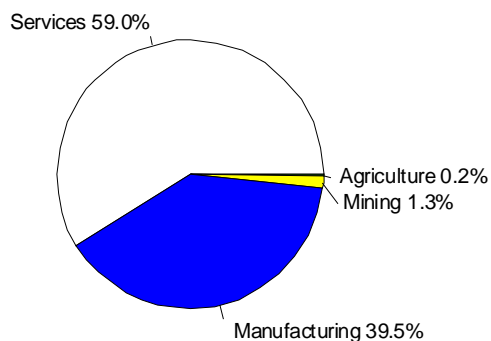
Table 3-11

FDIUS: Employment by U.S. affiliates, and employment by U.S. affiliates as percentage of U.S. industry total, 1999 and 2003

Industry	1999		2003		Average annual growth	U.S. affiliate employment
	Thousands	Percent	Thousands	Percent		as percent of total U.S. employment, by industry, 2003
All industries	6,027.6		5,735.0		-1.2	5.0
Mining	59.3	1.0	72.3	1.3	5.1	14.3
Agriculture, forestry, fishing and hunting	16.7	0.3	9.2	0.2	-13.8	0.6
Utilities	12.7	0.2	35.7	0.6	29.5	6.2
Manufacturing	2,617.5	43.4	2,266.5	39.5	-3.5	15.5
Food and kindred products	183.3	3.0	120.5	2.1	-10.0	7.0
Chemicals	365.5	6.1	331.8	5.8	-2.4	36.5
Pharmaceuticals	129.7	2.2	155.1	2.7	4.6	(¹)
Primary and Fabricated metals	210.2	3.5	152.6	2.7	-7.7	32.1
Plastics and rubber products	143.4	2.4	133.7	2.3	-1.7	16.4
Nonmetallic mineral products	152.7	2.5	155.8	2.7	0.5	31.2
Machinery	222.2	3.7	249.6	4.4	2.9	21.6
Computers and electronic products	299.6	5.0	243.3	4.2	-5.1	18.0
Electrical equipment, appliances and components	184.1	3.1	85.8	1.5	-17.4	18.7
Transportation equipment	423.3	7.0	393.7	6.9	-1.8	22.4
Textiles, apparel, and leather products	69.4	1.2	32.5	0.6	-17.3	4.0
All other manufacturing	364.0	6.0	367.0	6.4	0.2	7.9
Services	3,334.0	55.3	3,387.0	59.1	0.4	3.5
Wholesale trade	527.3	8.7	538.3	9.4	0.5	9.5
Retail trade	740.4	12.3	655.7	11.4	-3.0	4.3
Information	344.3	5.7	317.1	5.5	-2.0	9.9
Telecommunications	123.8	2.1	(¹)	(¹)	(¹)	(¹)
Finance and insurance	263.5	4.4	297.6	5.2	3.1	5.0
Finance	73.3	1.2	(¹)	(¹)	(¹)	(¹)
Insurance	190.1	3.2	(¹)	(¹)	(¹)	(¹)
Professional, scientific and technical service	115.5	1.9	172.5	3.0	10.5	2.4
Other services	1,343.0	22.3	1,406.0	24.5	1.1	2.4

¹ Not available.Source: U.S. Department of Commerce (USDOC), BEA, *Foreign Direct Investment in the United States: Operations of Foreign Parent Companies and their U.S. Affiliates (FDIUS)*, found at <http://www.bea.gov/bea/di/di1fdiop.htm>.

Figure 3-11
FDIUS: Employment by U.S. affiliates, by sector, 2003



Total = 5.7 million employees

Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Foreign Direct Investment in the United States: Operations of Foreign Parent Companies and their U.S. Affiliates*, found at <http://www.bea.gov>.

trade industry, representing 10 percent of the domestic industry's workforce; the information industry (10 percent) and the finance and insurance industry (5 percent).

How does the compensation of employees of U.S. affiliates compare to overall U.S. employee compensation by industry?

Employees of foreign-owned U.S. affiliates received average annual compensation¹⁴ of \$60,080 in 2003, compared with average annual compensation of \$45,012 for all U.S. companies (table 3-12). For the majority of the 19 industries for which comparable data exist, foreign-owned affiliates paid more than the U.S. average for the industry in 2003. This is likely due to U.S. affiliates entering the U.S. markets in these capital intensive industries more recently than domestic firms. Therefore, they are more likely to have newer, more productive capital equipment, and fewer employees relative to total output. However, for manufacturing sector industries that pay the highest salaries, U.S. affiliates of foreign companies usually pay lower wages than the domestic industry average. These industries include transportation equipment; utilities; electrical equipment, appliances and components; and computers and electronic products. Foreign-owned firms in certain industries, particularly transportation equipment, may be less likely to have a unionized labor force.

¹⁴ For the purposes of this chapter, wages are equal to total compensation paid by employers, divided by the total number of full-time and part-time employees. The term thus actually reflects total compensation per employee (including non-wage compensation such as benefits). High-wage industries are those for which total compensation per employee was greater than the average compensation per employee for all private U.S. industries of \$45,012 in 2003. Calculations by the Commission from BEA data.

Table 3-12

FDIUS: Annual compensation per employee (wages plus benefits) for U.S. affiliates, by industry, 1999 and 2003

Industry	1999	2003	Average	Compensation	US employee
	compensation (FDIUS)	compensation (FDIUS)	annual compensation growth	(United States) 2003	compensation/ FDIUS compensation, 2003
	<i>Thousands of dollars per year</i>	<i>Thousands of dollars per year</i>	<i>Percent</i>	<i>Thousands of dollars per year</i>	<i>Percent</i>
All industries	48,564	60,080	5.5	45,012	74.9
Mining	74,013	78,714	1.6	76,996	97.8
Agriculture, forestry, fishing and hunting ..	36,527	46,087	6.0	22,874	49.6
Utilities	55,827	76,611	8.2	91,420	119.3
Manufacturing	54,933	70,480	6.4	61,586	87.4
Food ¹	40,760	56,573	8.5	46,109	81.5
Chemicals	70,542	100,989	9.4	88,784	87.9
Pharmacy and medicines	82,143	123,591	10.8	(²)	(²)
Primary and Fabricated metals	50,932	65,111	6.3	55,837	85.8
Plastics and rubber products	49,407	58,085	4.1	47,170	81.2
Nonmetallic mineral products	49,437	58,986	4.5	50,946	86.4
Machinery	52,241	68,734	7.1	61,853	90.0
Computers and electronic products ...	65,180	82,326	6.0	89,514	108.7
Electrical equipment, appliances and components	44,921	53,135	4.3	59,839	112.6
Transportation equipment	56,740	63,614	2.9	89,155	140.1
Textiles, apparel, and leather products	35,605	45,969	6.6	35,780	77.8
All other manufacturing	51,903	66,016	6.2	(²)	(²)
Services	43,173	52,761	5.1	(²)	(²)
Whole sale trade	58,286	72,694	5.7	60,702	83.5
Retail trade	22,751	28,929	6.2	28,084	97.1
Information	62,382	71,646	3.5	70,398	98.3
Telecommunication	58,950	(²)	(²)	(²)	(²)
Finance and insurance	105,670	124,462	4.2	78,645	63.2
Finance	191,514	(²)	(²)	158,206	(²)
Insurance	72,625	(²)	(²)	66,714	(²)
Professional, Scientific and technical service	63,810	78,852	5.4	70,180	89.0
Other services	29,537	33,604	3.3	(²)	(²)

¹ Includes food manufacturing only. Data for beverage and tobacco manufacturing not available.

² Not available.

Source: U.S. Department of Commerce (USDOC), Bureau of Economic Analysis (BEA), *Survey of Current Business*, Aug. 1998, pp. 79-80; and USDOC, BEA, *Foreign Direct Investment in the United States: Operations of Foreign Parent Companies and their U.S. Affiliates*, table O-1, 1997 and table A-1, 1990-96.

The finance and insurance industries and transportation equipment industry show the greatest wage differentials between U.S. affiliates and domestic-owned companies. Average annual wages for employees of foreign-owned affiliates of finance and insurance firms is \$124,462, while the average for domestic firms in the same industry is \$78,645. A likely explanation is that a considerable share of the domestic firms' employment is in lower-wage "retailing" of such services, while foreign investors are more likely to participate in large scale, wholesale financial services such as financing, underwriting, and re-insurance, where there are fewer, but relatively better paid, employees. In contrast, the average compensation for employees of foreign-owned transportation equipment affiliates is \$63,614, while the average in the U.S. transportation equipment industry is \$89,155. As noted above, this is likely due to the foreign-owned affiliates' facilities more efficient assembly plants and lack of unions.

As shown in table 3-12, employment by U.S. affiliates in the manufacturing sector is highest in the transportation equipment, chemicals, machinery, and computers and electronic products industries. All of these are high-wage, capital-intensive industries. In the service sector, employment is highest in the retail trade and wholesale trade industries. Wholesale trade is a high-wage industry, but retail trade is not, illustrating the wage diversity of foreign investment in the United States. Wage levels also do not show any correlation with sales, employment, or assets of foreign-owned affiliates (table 3-13), suggesting that foreign investors in the United States are not primarily concerned with wage levels.

Which industries have the highest sales by U.S. affiliates?

Service industries account for more than 60 percent of foreign affiliate sales in the U.S.

The wholesale trade industry accounted for \$675.7 billion in sales by U.S. affiliates in 2003, followed by the transportation equipment industry, with \$207.6 billion. Sales by all U.S. affiliates totaled more than \$2.3 trillion in 2003, recording 3.4 percent average annual growth during 1999-2003, with the services industries accounting for 60 percent of the total (figure 3-12). Within services, sales by wholesale trade affiliates were by far the largest, with average annual growth of 8 percent. Retail trade and information service affiliates accounted for U.S. sales of \$133.9 billion and \$118.8 billion, respectively (table 3-14). Sales by U.S. affiliates increased fastest in the professional, scientific, and technical services, showing an average annual increase of 26 percent. This rapid growth is consistent with the growth in FDIUS stock, suggesting that the increase is based in new investment, rather than increased sales by existing affiliates. Among manufacturing industries, transportation equipment, with average annual sales in excess of \$200 billion, was by far the largest, followed by chemicals and computers and electronic equipment, with U.S. affiliate sales of \$177.7 billion and \$100.4 billion, respectively, in 2003. However, while sales by U.S. chemicals affiliates increased by 5 percent annually over the period, and sales by affiliates in the pharmaceuticals subsector increased by 11 percent per year, sales by affiliates in the computers and electronic products industry recorded average annual declines of 3 percent.

Table 3-13
FDIUS: Correlation of annual compensation rates with other indicators, by industry, 2003

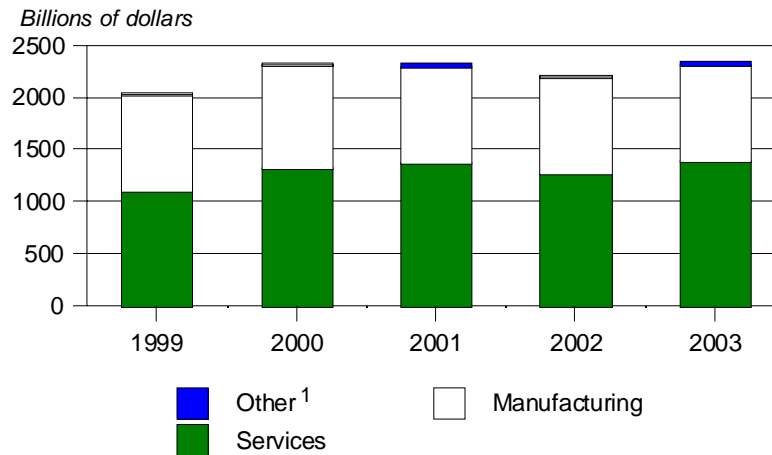
	Sales	Assets	Employees	Annual compensation	Investment position	Productivity ¹	Capital intensity ²
Sales	1.00						
Assets	0.95	1.00					
Employees	0.98	0.88	1.00				
Annual compensation . .	-0.11	0.07	-0.19	1.00			
Investment position	0.99	0.92	0.99	-0.09	1.00		
Productivity ¹	-0.09	-0.14	-0.17	0.55	-0.11	1.00	
Capital intensity ²	0.23	0.40	-0.02	0.56	0.07	0.13	1.00

¹ Productivity is equal to gross product per employee.

² Capital intensity is equal to total assets per employee.

Source: Calculations by the Commission, based on U.S. Department of Commerce (USDOC), Bureau of Economic Analysis (BEA), *Foreign Direct Investment in the United States: Operations of Foreign Parent Companies and their U.S. Affiliates (FDIUS)*, found at <http://www.bea.gov/lea/di/di1fdiop.htm>.

Figure 3-12
FDIUS: Sales by U.S. affiliates, by sector, 1999-2003



¹ Other includes mining and agriculture and related industries.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Foreign Direct Investment in the United States: Operations of Foreign Parent Companies and their U.S. Affiliates*, found at <http://www.bea.gov/lbea/di/di1fdiop.htm>.

Table 3-14
FDIUS: Sales by U.S. affiliates, by industry, 1999 and 2003

Industry	1999		2003		Average annual growth
	Millions of dollars	Percent	Millions of dollars	Percent	
All industries	2,044,359		2,340,158		3.4
Mining	19,429	1.0	24,158	1.0	5.6
Agriculture, forestry, fishing and hunting	2,874	0.1	2,400	0.1	-4.4
Utilities	32,360	1.6	40,287	1.7	5.6
Manufacturing	909,177	44.5	916,326	39.2	0.2
Food and kindred products	60,600	3.0	⁽²⁾ 50,156	2.1	-4.6
Chemicals	143,870	7.0	177,701	7.6	5.4
Pharmaceuticals	53,299	2.6	80,699	3.4	10.9
Primary and fabricated metals	57,497	2.8	53,633	2.3	-1.7
Plastics and rubber products	30,432	1.5	34,251	1.5	3.0
Nonmetallic mineral products	34,930	1.7	42,170	1.8	4.8
Machinery	51,272	2.5	66,280	2.8	6.6
Computers and electronic products	111,551	5.5	100,379	4.3	-2.6
Electrical equipment, appliances and components	39,276	1.9	21,985	0.9	-13.5
Transportation equipment	202,729	9.9	207,567	8.9	0.6
Textiles, apparel, and leather products	10,870	0.5	6,079	0.3	-13.5
All other manufacturing	166,150	8.1	156,125	6.7	-1.5
Services	1,112,879	54.4	1,397,274	59.7	5.9
Wholesale trade	506,664	24.8	675,682	28.9	7.5
Retail trade	114,508	5.6	133,942	5.7	4.0
Information	93,661	4.6	118,754	5.1	6.1
Telecommunications	35,267	1.7	⁽¹⁾	0.0	⁽¹⁾
Finance and insurance	206,108	10.1	⁽¹⁾	0.0	⁽¹⁾
Finance	73,331	3.6	62,255	2.7	-4.0
Insurance	132,777	6.5	⁽¹⁾	0.0	⁽¹⁾
Professional, scientific and technical services	20,073	1.0	50,318	2.2	25.8
Other services	171,865	8.4	⁽¹⁾	⁽¹⁾	⁽¹⁾

¹ Data not available.

² Includes food only. Data for beverages and tobacco products were suppressed for 2003.

Source: U.S. Department of Commerce (USDOC), Bureau of Economic Analysis (BEA), *Foreign Direct Investment in the United States: Operations of Foreign Parent Companies and their U.S. Affiliates (FDIUS)*, found at <http://www.bea.gov/lea/di/di1fdiop.htm>.

How did the gross product of U.S. affiliates compare to the total U.S. GDP during 1995-2004?

The U.S. gross domestic product (GDP) totaled \$11.0 trillion, and total GDP of U.S. private-sector industries equaled \$9.6 trillion in 2003. Total gross product of foreign-owned, U.S. affiliates measured \$486 billion, accounting for 5 percent of 2003 private-industry GDP. The United States' private-industry GDP grew at an average annual rate of 4 percent during 1999-2003, compared with a 1.5 percent average annual growth rate for the gross product of U.S. affiliates (table 3-15).

By industry, there are significant differences in the proportion of U.S. output that is attributed to affiliates of foreign companies. Foreign companies have a very strong presence in the chemicals industry, accounting for 28 percent or almost \$182 billion of the industry's gross product in 2003. Other industries for which U.S. affiliates comprise a large portion of GDP include the non-metallic mineral products and machinery manufacturing industries. U.S. foreign affiliates accounted for 17 percent of the output of the entire manufacturing sector in 2003. However, the share of U.S. affiliates in manufacturing sector output has declined by over 1 percent annually during 1999-2003, slightly faster than the 1-percent decline of the entire U.S. manufacturing sector.

Foreign companies have a much smaller presence in the service sector, with the percentage of service-sector gross product generated by U.S. affiliates representing 3 percent in 2003. Among services industries, wholesale trade and finance stand out with the largest shares of output from U.S. affiliates, at 13 percent and 7 percent, respectively. U.S. affiliates' gross product as a share of overall output in the service sector has increased at an average annual rate of 5 percent during 1999-2003. For the finance industry, affiliate gross product increased by 64 percent per annum during the period.¹⁵ Average annual growth was 25 percent for telecommunications and professional, scientific and technical services. The gross product of U.S. insurance affiliates declined at an average annual rate of 6 percent between 1999 and 2004.

U.S. affiliates account for the largest share of gross product in 3 manufacturing.

¹⁵ Does not include depository institutions.

Table 3-15
FDIUS: Gross product of U.S. majority-owned affiliates vs. U.S. private industry GDP, 2003

Industry	Affiliate gross product 2003	Average annual growth of affiliate gross product, 1999-2003	Total U.S. private sector output 2003	Average annual growth of U.S. private sector output, 1999- 2003	Affiliate gross product /U.S. private sector output 2003
	—Millions of dollars—			Percent	
All industries	486,344	1.5	9,556,754	4.1	5.1
Mining	8,842	-2.5	142,323	13.6	6.2
Agriculture, forestry, fishing and hunting	610	-13.1	114,217	5.1	0.5
Utilities	9,291	39.6	222,628	4.7	4.2
Manufacturing	227,682	-1.2	1,369,234	-0.1	16.6
Food and kindred products	16,257	1.6	170,621	2.7	9.5
Chemicals	49,950	4.5	181,776	3.7	27.5
Pharmaceuticals	28,176	15.0	(¹)	(¹)	(¹)
Primary and fabricated metals	12,327	-5.2	147,767	-2.5	8.3
Plastics and rubber products	9,004	-3.0	65,632	-0.2	13.7
Nonmetallic mineral products	14,733	2.3	46,160	0.6	31.9
Machinery	19,871	8.7	95,090	-2.6	20.9
Computers and electronic products	22,849	-1.5	125,639	-6.3	18.2
Electrical equipment, appliances and components	5,510	-14.9	48,577	0.2	11.3
Transportation equipment	35,191	-5.4	194,905	2.1	18.1
Textiles, apparel, and leather products ...	1,235	-18.4	41,163	-5.3	3.0
All other manufacturing	40,755	-3.4	251,904	1.2	16.2
Services	249,210	4.6	7,930,980	4.8	3.1
Wholesale trade	83,843	9.7	632,953	2.3	13.2
Retail trade	27,878	-0.4	750,976	4.3	3.7
Information	26,836	-1.2	491,807	2.9	5.5
Telecommunications	4,316	25.1	(¹)	(¹)	(¹)
Finance and insurance	25,577	-9.0	885,186	6.8	2.9
Finance	12,487	64.3	172,992	2.8	7.2
Insurance	13,090	-6.1	260,353	4.7	5.0
Professional, scientific and technical services	17,872	24.8	727,353	4.3	2.5
Other services	67,204	2.7	4,442,705	5.2	1.5

¹ Not available.

Sources: Bureau of Economic Analysis (BEA), *Foreign Direct Investment in the United States: Operations of Foreign Parent Companies and their U.S. Affiliates (FDIUS)*, annual publication, 1992-96. Table A-1, 1992-96; table O-1, 1997; and BEA, found at internet address <http://www.bea.gov>, retrieved Mar. 16, 2000.

CHAPTER 4

Direct Investment and Cross-border Trade

Summary of Key Findings

The majority of U.S. goods and services are delivered to foreign customers through affiliate sales.

Sales by U.S.-owned affiliates in foreign markets, and sales by foreign-owned affiliates in the U.S. market, are significantly larger than either U.S. exports or imports. U.S.-owned foreign affiliates recorded sales of \$3.4 trillion in 2003, while foreign-owned affiliates in the United States recorded sales of \$2.3 trillion. As is the case for overall U.S. trade, U.S. intrafirm trade reflects a U.S. deficit in merchandise trade and a U.S. surplus in services trade, resulting in an overall U.S. intra-firm trade deficit of \$222.2 billion. This chapter examines the relationship between direct investment and cross-border trade, focusing on the extent of U.S. imports and exports that are linked to U.S. and foreign-based multinational corporations (MNCs). The chapter compares affiliate sales to cross-border exports, investigates the share of total U.S. exports and imports for which MNCs account, and examines the nature of intrafirm trade between parents and their affiliates.

U.S. Exports

What is the predominant mode of delivering U.S. goods and services to foreign customers, cross-border exports or foreign affiliate sales?

Foreign affiliate sales is the predominant mode of delivering both goods and services from U.S. companies to foreign customers, accounting for about three-quarters (\$2.5 trillion) of such deliveries in 2003, compared to \$1.0 trillion in cross-border exports.¹ Affiliate sales² accounted for 76 percent of goods deliveries in 2003, while such sales accounted for 64 percent of services deliveries.³ Affiliate sales accounted for two-thirds of deliveries of U.S. manufactured goods in 2003, but there were variations among manufacturing industries. Food and kindred products⁴ and chemicals manufacturers reported 83 percent and 74 percent, respectively, of total deliveries through affiliate sales. In most other industries, manufacturers reported about one-half of deliveries from affiliate sales. In the mining sector, almost all deliveries take place through affiliate sales. This reflects the fact that most U.S.-based mining firms operate primarily outside the United States, to be close to sources of petroleum and mined ores. In contrast, in the agriculture sector, only a very small share of

¹ BEA does not publish data for goods trade on an industry-specific or a country-specific basis. Thus, for the sake of comparability, cross-border exports were calculated by adding the value of U.S. cross-border services exports, as reported by BEA, to the value of U.S. cross-border goods exports, as reported by the World Trade Atlas.

² Goods and services sold by affiliates are most often sold in the domestic market of the host country, but may also be exported to third countries or back to the parent firm's home country. Sales by affiliates to all destinations are included in these data.

³ This discussion reflects the activity of majority-owned foreign affiliates only, as the Bureau of Economic Analysis (BEA) does not publish sufficiently detailed data for all foreign affiliates.

⁴ Includes food, beverage, and tobacco manufacturing.

total deliveries occurs through affiliate sales. U.S. farmers and livestock producers are much more likely to deliver their products from the United States through cross-border exports than to invest in overseas farms (table 4-1).

A comparison of affiliate sales and cross-border trade data by country reveals that affiliate sales account for a greater share of deliveries in large single-country or regional markets and in countries with hospitable investment climates (table 4-2). For example, affiliate sales accounted for 93 percent of U.S. goods and services deliveries to the EU-15 countries in 2003. Affiliate sales also accounted for a particularly high share of total deliveries in Bermuda (84 percent) and Switzerland (88 percent). The large financial services markets in those countries encourage a higher share of sales by affiliates. Affiliate sales account for a smaller-than-average share of deliveries to Chinese and Japanese customers, and to the NAFTA countries. For China, the rapid growth of inbound FDI likely has been too recent for foreign investors to have captured significant domestic market share by 2003. The relatively small share of affiliate sales in Japan may be a result of a historically difficult business climate for foreign investors.⁵ This shift may reflect ongoing reform efforts in Japan aimed at increasing openness to foreign investment. In Canada and Mexico, some U.S. firms may not perceive benefits from establishing a physical presence, due to the proximity of those markets to the United States and the low trade barriers between the NAFTA countries.

How did the growth of U.S. intrafirm exports compare to the growth of total U.S. exports during 1999-2003?

Intrafirm exports accounted for almost one-third of total U.S. exports in 2003.

Intrafirm exports of goods and services increased at an average annual rate of 2 percent during 1999-2003, from \$290.9 billion to \$316.0 billion (table 4-3). Total U.S. exports grew more slowly, at a 1-percent average annual rate, from \$966.4 billion in 1999 to \$1,022.6 billion in 2003. Intrafirm trade is that portion of cross-border trade carried out between parent and affiliate firms. This trade may reflect either U.S. exports by U.S. parents to their foreign affiliates, or U.S. exports by U.S. affiliates to their foreign parents.⁶ The growth in intrafirm exports principally reflected rapid growth in U.S. exports by U.S. affiliates to their foreign parents. During 1999-2003, U.S. parents' exports of goods and services to their foreign affiliates declined slightly, to \$216.3 billion. By contrast, U.S. affiliates' exports to foreign parents increased by 8 percent per year, on average, to \$99.7 billion. Intrafirm exports represented 30 percent of total U.S. exports in 1999 and 31 percent in 2003, with little fluctuation in the total share during 1993-2003.⁷

⁵ See, e.g., Office of the United States Trade Representative (USTR), 2005 National Trade Estimate Report on Foreign Trade Barriers, 297-341.

⁶ Sales by U.S.-owned foreign affiliates to third countries are not included here, because the data are taken from the "Ownership-Based Framework of the U.S. Current Account," which only reflects trade with the United States. For additional information, see "Technical Note," USDOC, BEA, *Survey of Current Business*, January 2006, 44.

⁷ USDOC, BEA, *Survey of Current Business*, January 2006, 45.

Table 4-1
Foreign affiliate sales as a share of total deliveries of U.S. goods to foreign customers, by industry, 2003

	Percent of deliveries accounted for by affiliate sales
Manufacturing	67.6
Food and kindred products	83.1
Chemicals and allied products	73.8
Primary and fabricated metals	54.5
Industrial machinery and equipment	47.3
Electronic and other electrical equipment	57.7
Other manufacturing	71.3
Mining	94.9
Agriculture, forestry and fishing	8.6

Source: U.S. International Trade Commission dataweb; U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, Oct. 2005 and U.S. direct investment abroad, table III.F.3.

Table 4-2
Foreign affiliate sales as a share of total deliveries of U.S. goods and services to foreign customers, by country, 2003

	Goods	Services	Total
<i>Percent of deliveries accounted for by affiliate sales</i>			
Australia	79.5	75.6	79.1
Belgium	97.1	61.5	91.5
Bermuda	92.4	74.1	83.6
Brazil	81.5	72.0	79.7
Canada	57.9	60.4	59.1
Chile	94.2	38.2	62.0
China	59.5	38.8	57.0
France	87.3	70.6	83.7
Germany	86.1	63.1	82.1
Hong Kong	73.1	70.6	73.7
Hungary	89.2	⁽¹⁾	90.4
Iceland	⁽¹⁾	⁽¹⁾	⁽¹⁾
India	59.8	24.4	50.6
Ireland	52.4	⁽¹⁾	55.3
Italy	87.2	67.9	83.9
Japan	68.1	59.5	67.0
Luxembourg	⁽¹⁾	⁽¹⁾	96.2
Mexico	43.4	37.6	43.3
Netherlands	82.9	66.3	81.0
Panama	⁽¹⁾	⁽¹⁾	63.7
Philippines	⁽¹⁾	⁽¹⁾	49.3
Poland	⁽¹⁾	⁽¹⁾	94.4
Russia	74.6	⁽¹⁾	76.6
Singapore	83.0	52.6	79.7
South Africa	79.6	54.2	75.6
Spain	89.9	67.1	86.3
Sweden	90.7	76.8	86.7
Switzerland	91.9	72.8	88.1
Taiwan	43.7	65.2	52.4
UK Islands, Caribbean	99.6	⁽¹⁾	99.7
United Kingdom	88.3	76.2	85.0
EU-15	⁽¹⁾	70.1	92.5
All countries	73.9	62.1	72.0

¹ Not available.

Source: Compiled by the Commission based on data from U.S. Department of Commerce, Bureau of Economic Analysis, and U.S. trade data as reported by the World Trade Atlas.

Table 4-3
Intrafirm exports as a component of total U.S. exports, 1999 and 2003

	1999		2003		Average annual growth, 1999-2003
	<i>Billions of dollars</i>	<i>Percent of total U.S. exports</i>	<i>Billions of dollars</i>	<i>Percent of total U.S. exports</i>	<i>Percent</i>
Total U.S. exports	966.4		1,022.6		1.4
Total U.S. intrafirm exports	290.9	30.1	316.0	30.9	2.1
Exports by U.S. parents to their foreign affiliates	218.7	22.6	216.3	21.2	-0.3
Exports by U.S. affiliates to their foreign parents	72.2	7.5	99.7	9.7	8.4

Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, Jan. 2006, p. 45.

Which countries are the most important destinations for intrafirm exports?

In 2003, U.S. parents exported goods valued at \$150.9 billion to their majority-owned foreign affiliates (MOFAs),⁸ with MOFAs located in Canada, the EU-15, Mexico, Japan, and Singapore accounting for a combined total of 81 percent, or \$121.7 billion, of such exports (figure 4-1). MOFAs in Canada ranked first, accounting for intrafirm exports of \$43.9 billion. Of the major export destinations, only U.S. exports to Mexico recorded an increase during the period.⁹ U.S. affiliates exported goods valued at \$71.7 billion to their foreign parent groups in 2003. The EU-15 and Japan were the primary destinations of such exports.¹⁰

U.S. exports to foreign affiliates declined overall, but increased to affiliates in Mexico.

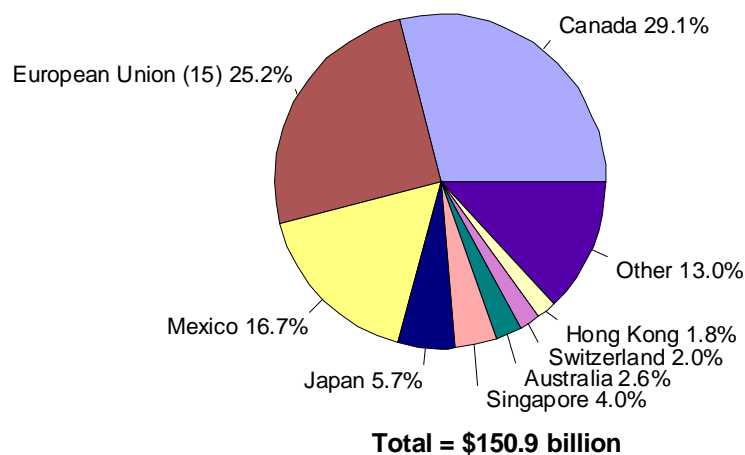
U.S. exports of services are divided into two categories: receipts for royalties and license fees and receipts for other private services. U.S. receipts for royalties and license fees collected from foreign parents and U.S.-owned foreign affiliates were \$39.0 billion in 2004. This includes \$35.1 billion paid by foreign affiliates to their U.S. parents, and \$3.9 billion paid by foreign parents to affiliates located in the United States. In 2003, 46 percent of all intrafirm receipts for royalties and license fees was collected from affiliates located in the EU-25. Leading country sources of such receipts were the United Kingdom, Japan, Switzerland, Canada,

⁸ Country-level data on intrafirm transactions are only available for U.S. parents and their majority-owned affiliates. Country-level data for all affiliates, defined as U.S. equity ownership of 10 percent or more, are not available.

⁹ USDOC, BEA, *U.S. Direct Investment Abroad*, Table 3.I.1, 1999 and 2003.

¹⁰ USDOC, BEA *U.S. Direct Investment Abroad*, Table III.I.9 and FDIUS, Table III.H.2.

Figure 4-1
U.S. parents' exports of goods to majority-owned foreign affiliates, by country, 2003



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *U.S. Direct Investment Abroad: Operations of U.S. Parent Companies and their Foreign Affiliates*, table III.1.9.

Singapore, and Germany (figure 4-2).¹¹ U.S. parents and affiliates recorded \$140.5 billion in receipts (exports) for other private services in 2004, but a breakdown by country is not available.¹²

To what extent do foreign affiliates incorporate U.S.-made goods and services in their output?

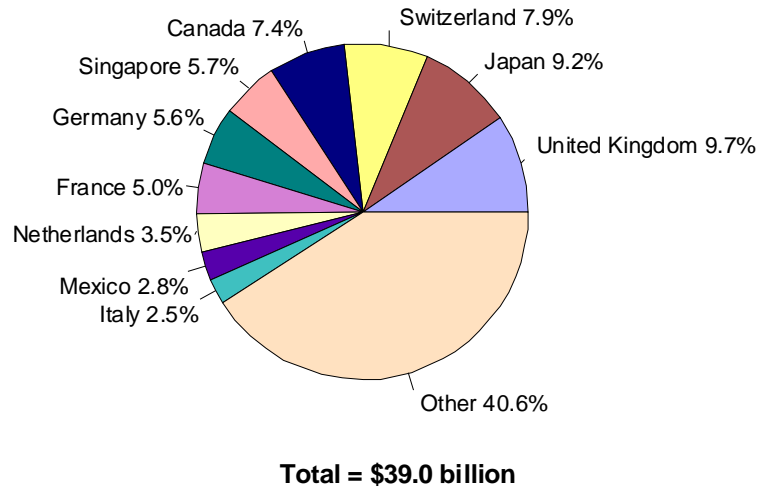
U.S. exports of goods and services constituted a decreasing share of value added by U.S.-owned foreign affiliates during 1999-2003. In 2003, U.S. exports to foreign affiliates comprised 31 percent of total foreign affiliates' output, down from 39 percent in 1999. Foreign affiliates purchased U.S. goods and services valued at \$216.3 billion in 2003, representing 21 percent of total U.S. exports of goods and services. This reflected an overall decline of 6 percent from 1999, when foreign affiliates purchased U.S. goods and services valued at \$246.3 billion.¹³

¹¹ The figure reflects only royalties and license fees paid by foreign affiliates to U.S. parents. Data by country for such fees paid by U.S. affiliates to their foreign parents are not available. USDOC, BEA, *Survey of Current Business*, Oct. 2005, 56.

¹² USDOC, BEA, *Survey of Current Business*, Oct. 2005, 60.

¹³ USDOC, BEA, *Survey of Current Business*, Jan. 2006, 45.

Figure 4-2
U.S. parents' receipts of royalties and license fees from foreign affiliates, by country, 2004



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, Oct. 2005, p. 56.

How did the mix of goods and services in U.S. intrafirm exports change during 1999-2003?

In 2003, goods accounted for three-fourths (74 percent) of total U.S. intrafirm exports, while services accounted for the remaining one-fourth (26 percent) of such exports. However, the proportion changed during 1999-2003, with the share of services in total U.S. intrafirm exports increasing by 5 percent, and a corresponding decline in the share of goods. Over a longer period beginning in 1993, the share of goods in intrafirm trade has declined by 9 percent. The same trend holds true for both U.S. exports by U.S. parent firms to foreign affiliates, and by U.S. affiliates to their foreign parents.¹⁴ The predominance of goods among intrafirm exports reflects the larger share of goods in overall U.S. exports.

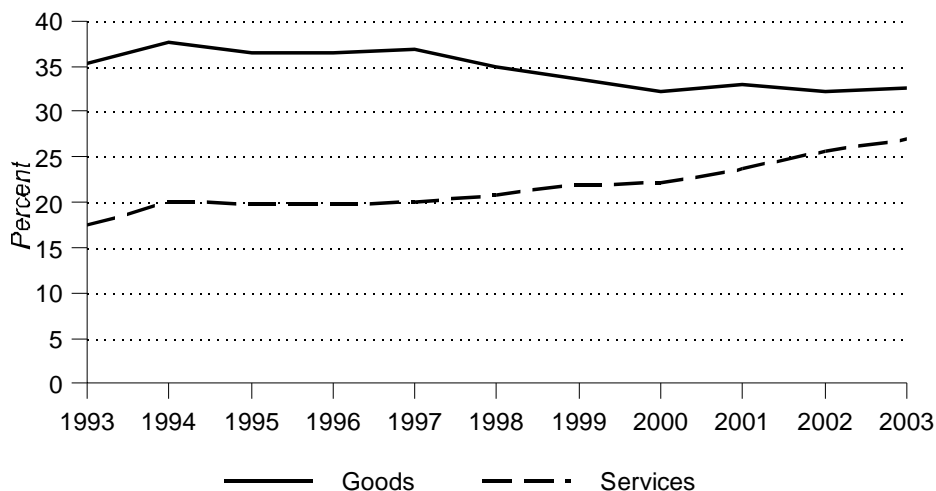
In 2003, intrafirm merchandise exports accounted for 33 percent of total U.S. merchandise exports, and intrafirm service exports accounted for 27 percent of total U.S. services exports.

However, service providers clearly have demonstrated a growing reliance on intrafirm exports in recent decades. Examination of services data from 1993 through 2003 reveals a gradual upward trend in the share of total services exports accounted for by intrafirm service exports, from 17 percent to 27 percent (figure 4-3). This trend likely reflects the deregulation of service industries such as telecommunications and finance, and recent technological developments that make it more feasible to trade these and other services

The share of services in U.S. intrafirm exports is increasing.

¹⁴ Ibid.

Figure 4-3
Intrafirm exports as a share of total exports of goods and services, 1993-2003



Note.--Includes exports by U.S. parent to foreign affiliates and exports by U.S. affiliates to foreign parents.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, Jan. 2006, p. 45.

across borders. The upward trend for intrafirm exports of services also likely reflects increased offshoring of services such as accounting, customer service, and payroll services by many multinational corporations.¹⁵ By contrast, intrafirm exports of goods represent a declining share of overall U.S. goods exports. This trend likely reflects the increased outsourcing of production and the trend for MNCs to sell off non-core divisions, which would result in fewer purchases of goods from within MNCs.

Which industries within the goods and services sectors account for the largest shares of intrafirm exports?

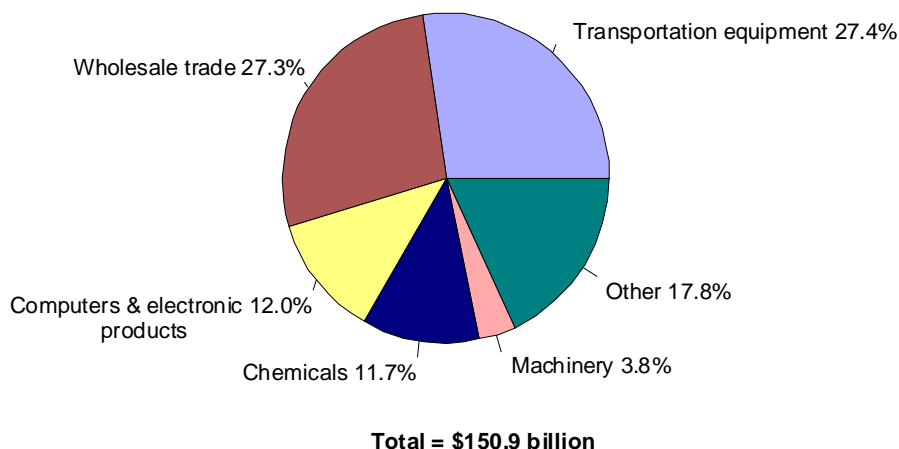
In the goods sector, transportation equipment, primarily motor vehicles and parts, and wholesale goods accounted for a combined 55 percent of U.S. parents' exports of goods to foreign affiliates in 2003 (figure 4-4). U.S. parents' exports of chemicals, computers and electronic products, and machinery also comprised significant shares of U.S. parents' intrafirm exports.¹⁶ U.S. affiliates' exports of goods to foreign parent firms predominantly comprised the same industries, although the proportions are somewhat different, with wholesale goods holding the greatest share, followed by transportation equipment, computers and electronic products, machinery, and chemicals.¹⁷ Intrafirm U.S. exports of services totaled \$79.9 billion in 2003, of which 75 percent (\$60.1 billion) was exports by U.S. parents to foreign affiliates, and the remainder consisted of exports by U.S. affiliates to their foreign parents. Royalties and license fees accounted for the largest share of such

¹⁵ Chapter 10 of this study presents an extensive review of the economic literature related to services offshoring.

¹⁶ USDOC, BEA, *U.S. Direct Investment Abroad*.

¹⁷ USDOC, BEA, *Foreign Direct Investment in the United States*.

Figure 4-4
U.S. exports of goods shipped by U.S. parents to foreign majority-owned affiliates, 2003



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *U.S. Direct Investment Abroad*, table III.I.2; and *Foreign Direct Investment Abroad*, table III.H.1.

exports (45 percent), followed by research and development and testing services (10 percent), and financial services (7 percent).¹⁸

What is the role of intellectual property (royalties and license fees) in intrafirm U.S. exports?

U.S. firms' intrafirm exports of intangible intellectual property¹⁹ were valued at \$39.0 billion in 2004. These intrafirm exports represented just under three-fourths of total U.S. receipts (exports) for royalties and license fees, illustrating the extent to which corporate intellectual property is kept within the firm. Intrafirm service exports reflect, in part, U.S. parents' research and development efforts and subsequent sale of intellectual property to their foreign affiliates, in the form of royalties and license fees. Receipts for royalties and license fees accounted for 16 percent of overall U.S. cross-border exports of services. By contrast, receipts for intrafirm exports of royalties and license fees accounted for 46 percent of overall intrafirm services exports, again illustrating the extent to which such intellectual property is kept within the boundaries of multinational corporations. These data include intellectual property exports from U.S. parents to their foreign affiliates, valued at \$35.1 billion in 2004, and from U.S. affiliates to their foreign parents, valued at \$3.9 billion.²⁰

¹⁸ USDOC, BEA, *Survey of Current Business*, October 2005, 45; and January 2006, 45.

¹⁹ Intangible intellectual property includes patented and unpatented techniques, processes, formulas, and other intangible property rights used in the production of goods; transactions involving copyrights, trademarks, franchises, broadcast rights, and other intangible rights; the rights to distribute, use, and reproduce computer software; and the rights to sell products under a particular trademark, brand name, or signature.

²⁰ USDOC, BEA, *Survey of Current Business*, Oct. 2005, 45 and 56.

Did U.S. parents or U.S. affiliates of foreign parents account for more U.S. intrafirm exports during 1999-2003?

U.S. parents' exports to their foreign affiliates account for 68 percent of all U.S. intrafirm exports of goods and services. However, exports by foreign-owned, U.S. affiliates increased from only 25 percent in 1999 to 32 percent in 2003. U.S. parent firms' share of intrafirm exports tends to be larger than U.S. affiliates' share of such exports, as both U.S. and foreign parents tend to maintain the majority of production assets in their home country. It also may reflect parents' exports of relatively high-value manufactures and services, a natural consequence of the research and development (R&D) performed and the intellectual property owned, in most cases, by the parent. The dollar value of R&D performed in the United States by affiliates of foreign parents increased by a total of 23 percent during 1999-2003. However, R&D as a share of U.S. affiliates' assets and sales did not change significantly during the period, so it does not appear that U.S. affiliates account for a greater share of overall R&D performed in this country.

U.S. Imports

What is the predominant mode of delivering foreign goods and services to U.S. customers, cross-border imports or U.S. affiliate sales?

U.S. affiliate sales is the predominant mode of delivering foreign goods and services to U.S. customers. In 2003, sales by foreign-owned affiliates located in the United States accounted for 58 percent (\$2.1 trillion) of total deliveries. The same year, cross-border imports of goods and services accounted for \$1.5 trillion.²¹ Affiliate sales accounted for a higher percentage of services deliveries (61 percent) than goods deliveries (57 percent).

The majority of foreign goods and services are delivered to U.S. customers through affiliate sales.

MNCs based in large developed countries typically deliver a higher-than-average share of goods and services through affiliates sales (table 4-4). Prominent exceptions to this rule are Hong Kong and Singapore, for which a large share of trade involves transshipment of goods, and Canada, whose long border with the United States makes cross-border exports to this country significantly easier than to other developed countries.

²¹ BEA does not publish data for goods trade on an industry-specific or a country-specific basis. Thus, for the purposes of this discussion, cross-border imports were calculated by adding the value of cross-border services imports, as reported by BEA, to the value of cross-border goods imports, as reported by the World Trade Atlas.

Table 4-4**U.S. affiliate sales as a share of total deliveries of foreign goods and services to U.S. customers, by country, 2003**

	Goods	Services	Total
<i>Percent of deliveries accounted for by affiliate sales</i>			
Australia	66.3	77.3	72.9
Belgium	72.0	33.9	69.0
Bermuda	(¹)	60.7	82.3
Brazil	28.4	17.3	27.7
Canada	27.7	67.5	35.7
Chile	(¹)	(¹)	(¹)
China	(¹)	(¹)	1.2
France	77.1	83.1	79.9
Germany	78.3	72.7	78.1
Hong Kong	33.2	28.8	32.4
Hungary	(¹)	(¹)	(¹)
Iceland	(¹)	(¹)	(¹)
India	1.9	31.1	7.3
Ireland	29.7	(¹)	30.8
Italy	42.1	31.7	41.5
Japan	76.5	56.8	75.7
Luxembourg	(¹)	(¹)	(¹)
Mexico	9.0	99.1	9.8
Netherlands	93.5	85.6	92.4
Panama	(¹)	(¹)	(¹)
Philippines	(¹)	(¹)	(¹)
Poland	(¹)	(¹)	(¹)
Russia	(¹)	(¹)	(¹)
Singapore	12.4	39.9	24.6
South Africa	50.6	18.6	46.9
Spain	41.1	33.1	40.5
Sweden	74.8	85.9	77.0
Switzerland	86.6	82.3	86.5
Taiwan	22.4	8.5	21.1
UK Islands, Caribbean	99.0	(¹)	99.7
United Kingdom	86.4	70.2	83.1
EU-15	(¹)	72.4	93.1
All countries	56.8	62.9	59.0

Source: Compiled by the Commission based on data from U.S. Department of Commerce, Bureau of Economic Analysis, and U.S. trade data as reported by the World Trade Atlas.

How did the growth of U.S. intrafirm imports compare to the growth of total U.S. imports during 1999-2003?

Total U.S. imports of goods and services increased at an average rate of 5 percent per annum during 1999-2003, from \$1.2 trillion in 1999 to \$1.5 trillion in 2003 (table 4-5).²² Intrafirm imports grew at a slightly faster pace, posting average annual growth of 6 percent, from \$433.0 billion to \$538.2 billion during the same period. U.S. parent firms' imports of goods and services from their foreign affiliates increased by an average of 3 percent per year, from \$184.8 billion in 1999 to \$213.5 billion in 2003. U.S. affiliates' imports from foreign parent

²² Data reflect imports compiled on a balance of payments (BOP) bases by the Bureau of Economic Analysis.

Table 4-5
Intrafirm imports as a component of total U.S. imports, 1999 and 2003

	1999		2003		Average annual growth, 1999-2003
	Billions of dollars	Percent of total U.S. imports	Billions of dollars	Percent of total U.S. imports	Percent
Total U.S. imports	1,229.8		1,517.4		5.4
Total U.S. intrafirm imports	433.0	35.2	538.2	35.5	5.6
Imports by U.S. parents from their foreign affiliates	184.8	15.0	213.5	14.1	3.7
Imports by U.S. affiliates from their foreign parents	248.2	20.2	324.7	21.4	6.9

Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, Jan. 2006, p. 45.

groups increased at an average annual rate of 7 percent to \$324.7 billion in 2003. The same year, U.S. intrafirm imports of goods and services represented 36 percent of total U.S. imports, approximately the same share recorded in every year since 1990.²³

In which countries did most intrafirm goods and services imports originate during 1999-2003?

For U.S. affiliates of foreign parents, Japan was by far the largest source of total U.S. affiliate imports from foreign parents, with a 43-percent share. The EU-15 accounted for 32 percent of intrafirm imports by U.S. affiliates, followed by Canada and Switzerland (figure 4-5).²⁴ Within the EU, German and British parents shipped the largest shares of goods to their U.S. affiliates, with \$39.0 billion and \$15.3 billion, respectively. Majority-owned foreign affiliates (MOFAs) located in Canada, Mexico, and the EU-15 accounted for the largest shares of intrafirm imports by U.S. parents in 2003, with MOFAs in Singapore, Malaysia, and Hong Kong also well represented (figure 4-6).²⁵ Within the EU, Ireland was the source of the greatest share of U.S. intrafirm imports in 2003, equal to \$14.9 billion, followed by the United Kingdom, with \$8.5 billion. In 2003, total intrafirm U.S. goods imports were valued at \$466.7 billion, of which 61 percent (\$285.9 billion) represented imports by U.S. affiliates from their foreign parents, and the remainder (\$180.8 billion) represented imports by U.S. parents from their foreign affiliates.²⁶

Japan is the largest source of U.S. intrafirm imports.

U.S. intrafirm imports of services are divided into two categories: payments for royalties and license fees and payments for other services. U.S. payments for royalties and license fees collected by overseas parents and affiliates were \$18.8 billion in 2004, of which the EU-25 and Japan comprised 40 percent and 30 percent, respectively (figure 4-7).²⁷ Such payments

²³ USDOC, BEA, *Survey of Current Business*, Jan. 2006, 45.

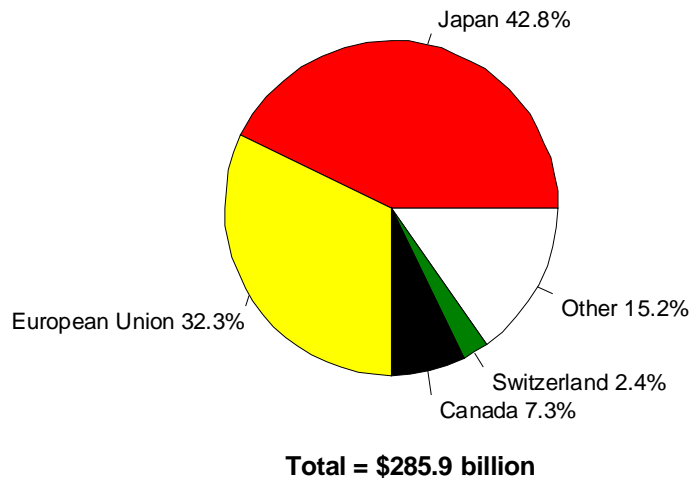
²⁴ USDOC, BEA, *Foreign Direct Investment in the United States*, Table III.H.2.

²⁵ USDOC, BEA, *U.S. Direct Investment Abroad*, Table 3.I.1.

²⁶ Data reflects majority-owned affiliates only.

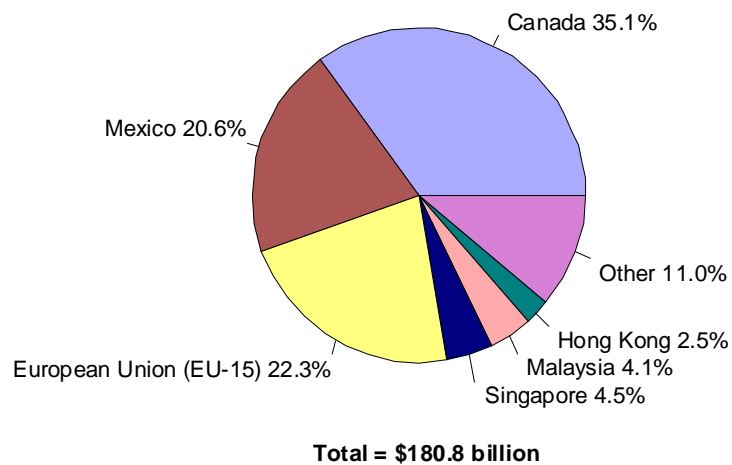
²⁷ Information for Canada for 2004 was suppressed to avoid disclosure of the data of individual companies. In 2003, Canada accounted for 3 percent of total intrafirm payments for royalties and license fees. However, during 2004, Manulife Insurance Corp. of Canada acquired U.S.-based John Hancock Life Insurance Corp., which likely increased payments of such fees to Canada. USDOC, BEA, *Survey of Current Business*, Oct. 2005, 57.

Figure 4-5
U.S.-majority-owned affiliates' intrafirm imports of goods, by country, 2003



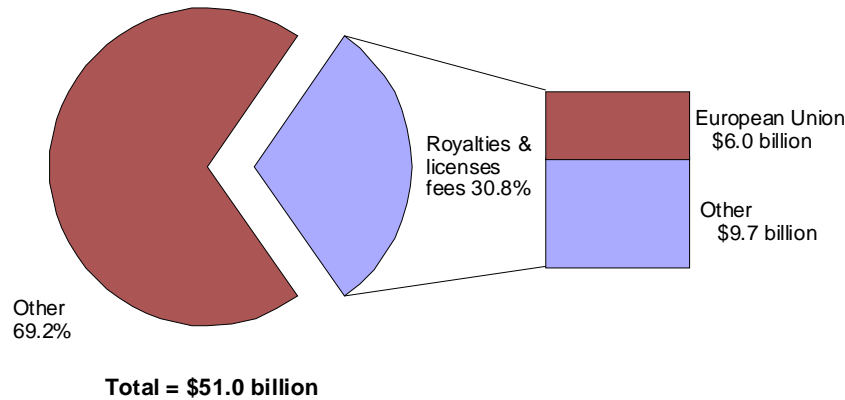
Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Foreign Direct Investment in the United States*, table III.H.2.

Figure 4-6
U.S. parents' intrafirm imports of goods from majority-owned foreign affiliates, by country 2003



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *U.S. Direct Investment Abroad*, table III.I.1.

Figure 4-7
U.S. intrafirm imports of services, 2004



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, Jan. 2006, p. 45 and Oct. 2005, p. 57.

include \$15.8 billion paid by majority-owned U.S. affiliates to their foreign parents, and \$2.9 billion paid by U.S. parents to their MOFAs. Other leading sources of such payments were Canada, Singapore, Switzerland, and Mexico.²⁸ U.S. parents and affiliates recorded \$90.7 billion in payments (imports) for other private services in 2004, but a breakdown by country is not available.²⁹

To what extent do foreign-owned U.S. affiliates incorporate foreign-made goods and services in their output?

U.S. imports of goods and services comprised an increasing share of value added by foreign-owned U.S. affiliates during 1999-2003. In 2003, imports by U.S. affiliates comprised 67 percent of total U.S. affiliates' output, a significant increase from 54 percent in 1999. U.S. affiliates purchased foreign goods and services valued at \$324.7 billion, representing 21 percent of total U.S. imports of goods and services. This reflected an overall decline of 6 percent since 1999, when U.S. affiliates purchased foreign goods and services valued at \$248.2 billion.³⁰

²⁸ Ibid., 56.

²⁹ Ibid., 60.

³⁰ USDOC, BEA, *Survey of Current Business*, Jan. 2006, 45.

What was the role of intellectual property (royalties and license fees) in intrafirm U.S. imports during 1999-2004?

As is the case for U.S. exports of services, intrafirm service imports reflect, in part, foreign parents' research and development efforts and subsequent sale of marketable intellectual property to their U.S. affiliates in the form of royalties and license fees. U.S. firms' intrafirm imports of intangible intellectual property,³¹ valued at \$15.7 billion in 2003, constituted 31 percent of total U.S. intrafirm service imports in 2003. These intrafirm imports represent 79 percent of total U.S. payments (imports) for royalties and license fees, illustrating the extent to which corporate intellectual property is kept within the boundaries of multinational corporations. These data include both imports by U.S. affiliates from their foreign parents, valued at \$15.8 billion in 2004, and by U.S. parents from their foreign affiliates, valued at \$2.9 billion.³² As with U.S. exports, affiliates most commonly pay royalties and license fees for intellectual property developed by the parent.

How did the mix of goods and services in U.S. intrafirm imports change during 1999-2003?

In 2003, imports of goods accounted for 90 percent of U.S. intrafirm imports, which totaled \$538.2 billion. The share of intrafirm imports of services recorded a steady increase from 4.4 percent in 1982 to 8.4 percent in 1999, then increased more slowly to 9.5 percent in 2003.³³ The predominance of goods as a share of intrafirm imports reflects, in part, the dominant share of goods in overall cross-border trade, and also may reflect manufacturers' relatively high reliance on intrafirm trade, compared to service providers.

Which industries within the goods and services sectors account for the largest shares of intrafirm imports?

Transportation equipment accounts for 40 percent of total U.S. intrafirm merchandise.

In 2003, U.S. parent firms' intrafirm imports of goods from their majority-owned foreign affiliates predominantly comprised imports from transportation equipment affiliates, representing 40 percent of such imports; computer and electronic products affiliates, representing 17 percent; and wholesale trade affiliates, representing 14 percent (figure 4-8). U.S.-owned foreign affiliates in Canada and Mexico together accounted for at least 85 percent of intrafirm imports from transportation equipment affiliates. Affiliates in Malaysia, Mexico, and Singapore represented the largest share of intrafirm imports by computer and electronics products affiliates. Foreign affiliates in the EU-15 countries accounted for 48 percent of U.S. intrafirm imports from wholesale trade affiliates.³⁴

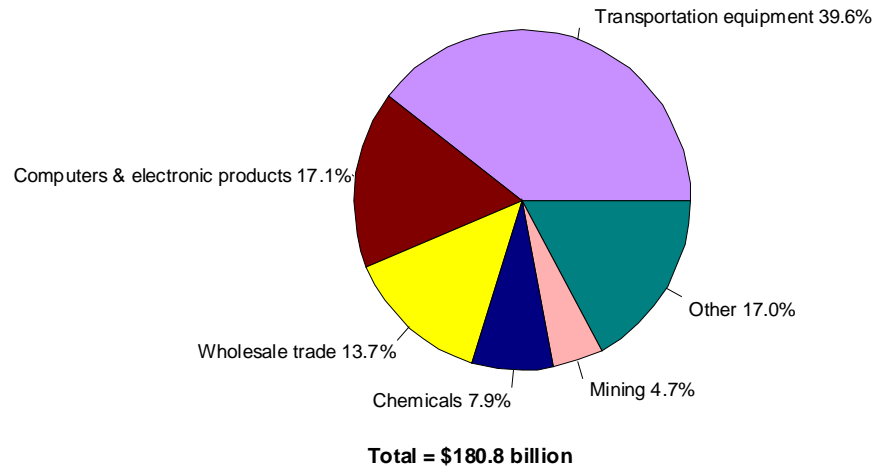
³¹ Intangible intellectual property includes patented and unpatented techniques, processes, formulas, and other intangible property rights used in the production of goods; transactions involving copyrights, trademarks, franchises, broadcast rights, and other intangible rights; the rights to distribute, use, and reproduce computer software; and the rights to sell products under a particular trademark, brand name, or signature.

³² USDOC, BEA, *Survey of Current Business*, Oct. 2005, 33, 45, and 56.

³³ USDOC, BEA, *Survey of Current Business*, Jan. 2006, 45.

³⁴ Includes majority-owned affiliates only. USDOC, BEA, *U.S. Direct Investment Abroad*, table III.I.23.

Figure 4-8
U.S. parents' imports of goods from foreign affiliates by industry of foreign affiliate, 2003



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *U.S. Direct Investment Abroad*, table III.I.23.

U.S. affiliates' imports of goods from foreign parent groups overwhelmingly consisted of imports by wholesale trade affiliates (figure 4-9). U.S. intrafirm imports by wholesale trade affiliates were dominated by imports of goods related to motor vehicles, electrical goods, and petroleum and petroleum products. Asia accounted for 63 percent of intrafirm goods imports by wholesale trade affiliates in 2003.

An additional 25 percent of intrafirm goods imports by wholesale trade affiliates originated in Europe, and 7 percent originated in Latin American and Caribbean countries.³⁵

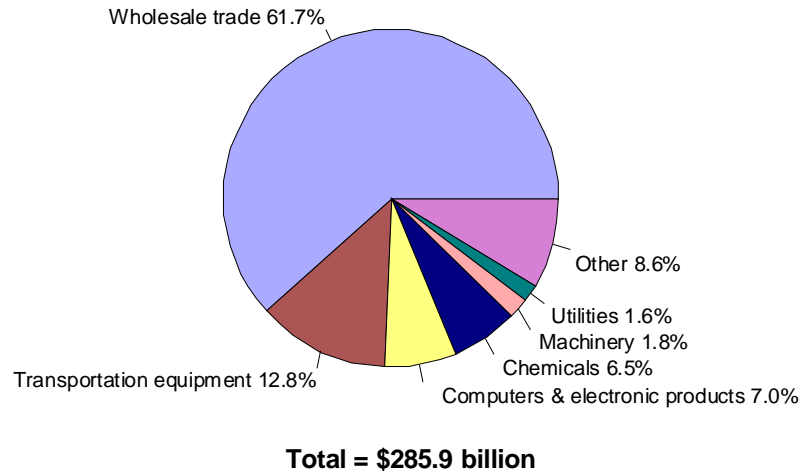
Data on U.S. intrafirm trade in services are available only for total affiliated trade, which includes imports by U.S. affiliates from foreign parents and by U.S. parents from foreign affiliates. The largest share of such imports is business, professional, and technical services, which accounted for 82 percent of total U.S. intrafirm imports of services in 2003. Within this broad category, computer services;³⁶ research, development, and testing services; and management consulting and public relations comprised the largest shares of intrafirm service imports, valued at \$3.5 billion, \$3.1 billion, and \$2.8 billion, respectively.³⁷

³⁵ Includes majority-owned affiliates only. USDOC, BEA, *Foreign Direct Investment in the United States*, table III.H.7.

³⁶ For additional information on USDIA and FDIUS in computer services, see chapter 8 of this report.

³⁷ USDOC, BEA, *Survey of Current Business*, Oct. 2005, 59 and 66.

Figure 4-9
U.S. majority-owned affiliates' imports of goods from foreign parents,
by industry of U.S. affiliate, 2003



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Foreign Direct Investment in the United States*, table H-7.

CHAPTER 5

Copper

Summary of Key Findings

Foreign investment into the U.S. copper sector has declined significantly over the last two decades, largely due to an overall decline in available U.S. resources, government policies that discourage exploration and development of new resources on public lands, and more favorable investment opportunities in other countries. The number of domestic producers has also declined significantly over the past two decades, along with domestic production and the number of operating mines. The two remaining U.S.-based copper mine operators now invest the bulk of their exploration capital abroad, largely in Latin America and Asia. FDI in the mining industry, in the form of durable equipment goods and facilities, typically follows the discover of new mineral deposits.

The mining industry is characterized by high capital intensity and commodity price cyclicity, which causes worldwide production adjustments, such as exploration for new resources or closure of mines, to significantly lag changes in market prices. This reduces the opportunities for investments with suitable returns, as explained in more detail below, which has two effects. First, mining companies tend to invest in very large projects, which take a long time to come on line and are difficult to close during cyclical lows, thus exacerbating the cyclical peaks and valleys. Second, mining companies rely on significant consolidation via mergers and acquisitions (M&A) and joint-venture projects to shed risk. Several developed countries, including the United States, have significant regulatory hurdles that extend the time needed to open new mines and contribute to the decline in domestic investment.

Global Copper Market

The copper-producing industry is global, and is often located in remote undeveloped areas.¹ Refined copper is the industry's end product, and its price is determined on the major inventory exchanges.² The availability of supply is the major determinant of copper prices. The price is highly cyclical, in response to general manufacturing activity and inventory levels, so copper (consumption and price) is often considered a prime leading indicator of economic activity. The 1999-2004 period reviewed throughout this study began with a continuation of one of the highest inventory levels and deepest price troughs in industry

¹ The copper mining industry generates refined copper metal from copper-bearing ores. The basic production processes include mining; followed by concentrating, smelting, and refining; or leaching, solution extraction (which bypasses the concentrating and smelting steps for some ores) and electrowinning (which allows creation of refined copper from concentrated leach solutions). Though all processes are considered part of the mining industry due to significant vertical integration by the dominant companies, government statistics classify smelting and refining with the manufacturing sector.

² The London Metal Exchange (LME) is the world's primary metal commodity warehousing and trading exchange. The New York Stock Commodity Metal Exchange (COMEX) and the Shanghai Futures Exchange (SFE) are the other common exchanges, but they deal primarily with futures trading and maintain significantly lower inventories. Premium and discounted grades and forms are normally benchmarked to the exchange price for refined copper. Copper cathode is the predominantly traded form worldwide.

history. However, as global economic activity accelerated in 2002, copper inventories fell and prices recovered. The period ended with some of the highest prices on record in response to near-record low inventories (figure 5-1).

Record cyclical
highs and lows have
been experienced
since 2000.

World refined copper production was 15.8 million metric tons (MT) in 2004, up 9 percent from 14.5 million MT in 1999.³ World refined copper consumption increased 16 percent during 1999-2004, to 16.3 million MT.⁴ In 2004, the primary consuming regions were North and South America (41 percent combined share, largely by NAFTA countries), Asia (31 percent, largely by China and Japan), and Europe (21 percent),⁵ with the United States accounting for 15 percent of the total in 2004 (table 5-1).⁶ The principal end-use is conductive wire, with consuming industries led by construction (48 percent), electrical products (17 percent), and general engineering (16 percent).⁷

Competitive situation

The global copper mining industry is dominated by several major international mining companies that produce the bulk of the world's copper (table 5-2). The largest copper-focused companies include state-owned CODELCO (Chile), Phelps Dodge (U.S.), Grupo Mexico (Mexico), and KGMH Polish Copper (Poland). However, the world's largest mining companies, which produce both energy and various metals, including copper, include BHP Billiton (Australia/U.K.), Rio Tinto (U.K.), Anglo American (U.K.), and CVRD (Brazil).⁸ Other multinationals with significant copper interests include Norilsk Nickel Group (Russia), Freeport McMoRan (U.S.), and Corporation Kazakhmys (Kazakhstan). Smaller multinationals with multiple metal interests, along with copper, include Teck Cominco and Falconbridge⁹ (both of Canada) and Xstrata (Switzerland). Most of these mining companies are vertically integrated from mine through product, operate in multiple countries, and account for the bulk of foreign direct investment in the industry.

Several large international metals companies—including Sumitomo Metal Mining, Nippon Mining & Metals, and Mitsubishi Metals (all Japan), Jiangxi Copper (China), Outokumpu (Finland), and Norddeutsche Affinerie Group (Chile)—specialize in smelting, refining, and fabrication of metals, including copper.¹⁰ These firms often purchase minority ownership in foreign mining operations to secure sufficient raw-material feed stocks for their downstream operations.

³ World Bureau of Metal Statistics, *World Metal Statistics*, 40.

⁴ World Bureau of Metal Statistics, *World Metal Statistics*, 40.

⁵ London Metal Exchange, *Copper - Industry Usage*.

⁶ World Bureau of Metal Statistics, *World Metal Statistics*, 40.

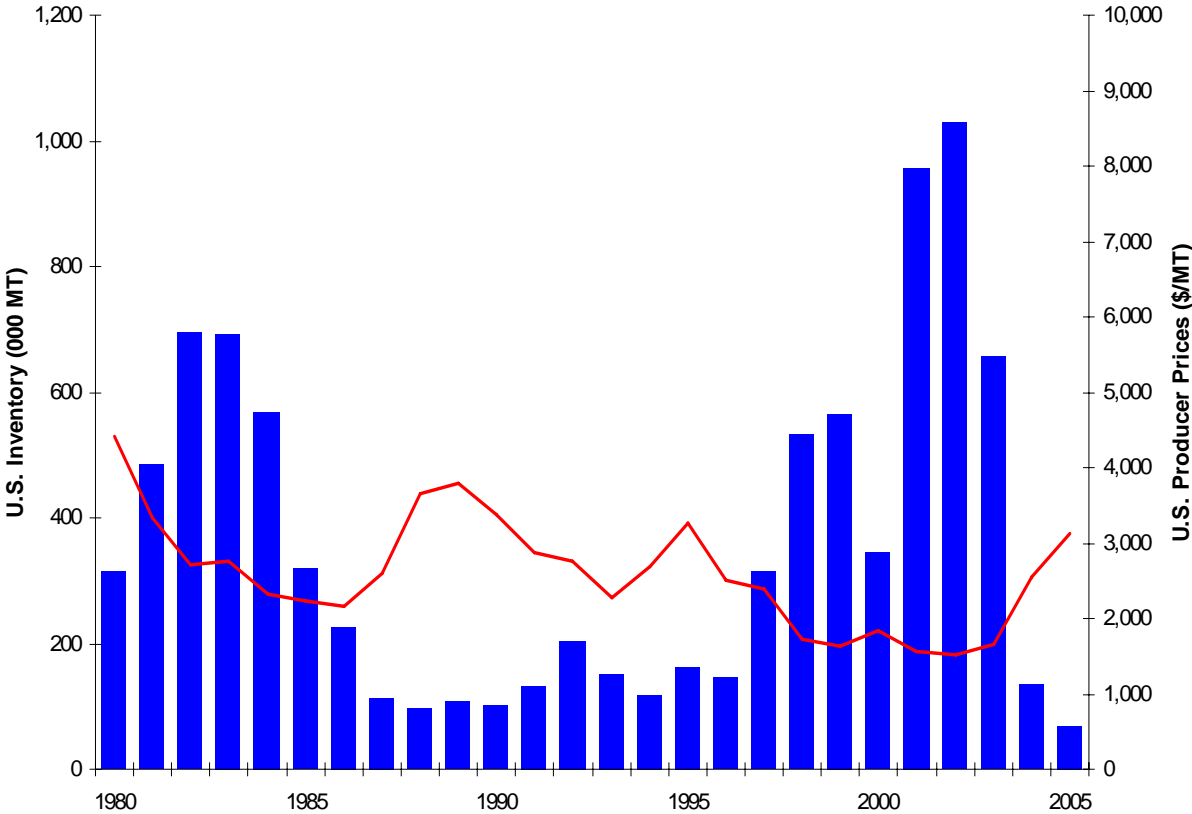
⁷ London Metal Exchange, *Copper - Industry Usage*.

⁸ According to Pricewaterhouse Coopers, 40 percent of the global mining industry's 2004 \$461 billion market capitalization is held by these four companies, and increased with BHP Billiton's 2005 takeover of WMC Resources. From The Business Analysts Group, *Global Metals & Mining Industry*, 5.

⁹ Noranda (Canada) obtained majority interest in Falconbridge in 2002; the amalgamation of the two companies was completed in 2005, as Falconbridge Limited. INCO, also of Canada, is presently securing common share ownership of Falconbridge.

¹⁰ Many of these had a strong mining history but shifted focus into downstream processing and manufacturing, largely due to declining or limited local resources.

Figure 5-1
Copper: Global inventory versus price



Source: U.S. Geological Survey, Mineral Information Team.

Table 5-1
Copper production, trade, and consumption, refined and unrefined, 2004
1,000 metric tons

	Unrefined			Refined			Consumption ²
	Production	Imports ¹	Exports ¹	Production	Imports	Exports ²	
Chile	5,412.5	14.2	2,531.7	2,836.7	0	2,953.9	100.4
China	742.2	834.9	1.3	2,198.7	1,200.1	123.8	3,363.9
United States . .	1,160.0	171.8	70.7	1,310.0	703.9	127.1	2,410.0
Germany	³ 541.2	297.1	12.4	652.6	584.9	137.2	1,100.2
Poland	530.5	(⁴)	(⁴)	550.1	(⁴)	280.4	274.3
Russia	767.0	29.1	17.8	885.0	0.0	359.4	525.6
Japan	³ 1,465.4	1,280.9	8.1	1,380.1	87.7	194.6	1,278.6
South Korea . . .	³ 390.0	380.5	(⁴)	496.0	487.7	46.7	939.5
Canada	562.8	216.0	241.1	527.0	53.5	289.0	297.3
Peru	1,035.6	(⁴)	501.7	505.3	(⁴)	317.7	55.0
Australia	854.0	(⁴)	296.0	490.0	0.5	322.9	168.5
Others	1,252.1	(⁵)	(⁵)	4,021.8	(⁵)	(⁵)	6,231.2
World	14,713.3	(⁵)	(⁵)	15,853.3	(⁵)	(⁵)	16,744.5

¹ Unrefined imports and exports are the sum of concentrates (copper content) plus blister and anode copper, where reported.

² Reported exports and consumption; includes copper from inventory.

³ Smelter production only; no mining.

⁴ Not available.

⁵ Incomplete data for all countries .

Source: World Bureau of Metal Statistics, "World Metal Statistics," April 2006, 37-44.

Table 5-2
Top ten world copper manufacturers, mining and refined copper production, 2004

Company	Country of origin	Production volume	Share in world production
		<i>Thousand tons</i>	<i>Percent</i>
<i>Mining production:</i>			
Codelco Chile	Chile	1,876	12.8
BHP Billiton Group	Australia	1,055	7.2
Phelps Dodge Corporation	United States	1,054	7.2
Anglo American Plc. RPA	Great Britain	744	5.1
Rio Tinto Group	Great Britain	727	4.96
Grupo Mexico SA de CV	Mexico	717	4.89
KGHM Polska Miedz S.A.	Poland	529	3.61
Norilsk Nickel Group	Russia	483	3.3
Freeport-McMoRan Copper & Gold Inc.	United States	415	2.83
Corporation Kazakhmys	Kazakhstan	377	2.57
Other manufacturers		6,678	45.57
Total		14,655	100.0
<i>Refined production:</i>			
Codelco Chile	Chile	1,550	9.74
Phelps Dodge Corporation	United States	1,054	6.62
Nippon Mining & Metals Co., Ltd.	Japan	695	4.37
Grupo Mexico SA de CV	Mexico	627	3.94
Norddeutsche Affinerie Group	Germany	570	3.58
KGHM Polska Miedz S.A.	Poland	545	3.42
Mitsubishi Materials Corporation	Japan	542	3.41
Norilsk Nickel Group	Russia	446	2.8
Corporation Kazakhmys	Kazakhstan	427	2.68
Jiangxi Copper	China	415	2.61
Other manufacturers		9,042	56.82
Total		15,913	100.0

Source: CRU - Copper Quarterly Industry and Market Outlook.

Global investment mechanisms and timing

The high capital costs and long development times of new copper mines and processing facilities encourage consolidation in the mining industry as a whole through either M&A or joint ventures. Consolidation typically occurs at the leading edge of a downward price trend. The 1990s saw the creation of mega-commodity corporations, such as Xstrata (Switzerland), that had no historical mining base. Other large-scale mergers included the consolidation of U.S. operations owned by Magma, Amax, Phelps Dodge, Cyprus, and Asarco. Partnerships provide greater access to development capital and enable risk-shedding by large mine producers.

Mining company consolidation usually occurs on the downward price trend.

Due to the high capital intensity of the industry¹¹ and long lead times¹² associated with bringing new production facilities online, most major mining companies establish portfolios of land access rights and wait to make large investments until technology and market conditions encourage new development. New sites are generally identified by small exploration and development companies, who often secure access rights and identify resources but rarely operate a developed facility (text box 5-1). Therefore, new FDI typically lags the cyclical rise in prices for three primary reasons: mines are site-locality fixed and land access is often problematic; worldwide increases in environmental regulations and legal challenges often delay or prevent development of new resources; and the high capital costs and long development times intrinsic to the industry restrain closure decisions and delay investment into new mining facilities.¹³

Exploration and development is a long process dependent upon small companies.

Beyond investing in new mines and facilities, a significant share of annual FDI flows represents the reinvestment of earnings into the modernization or expansion of existing facilities. Such reinvestment occurs during the early years of high copper prices and high incomes. Expansion typically occurs at peak periods to meet demand, whereas modernization is often driven by new regulation or by efforts to reduce production costs in preparation for the next down cycle. The composite effect of such expansion and modernization often creates an oversupply, which leads to the market exit of smaller and lesser-performing operations during the next downturn.

¹¹ A copper smelter, for example, costs well over \$1 billion in most developed countries. New milling operations can cost in excess of \$500 million for the mill alone, and the cost of mine-leach operations can vary from \$300 million to \$1.2 billion. The project budget for one of the few mines expected to come online in 2006—the Spence Mine in northern Chile (owned by BHP-Billiton)—is \$990 million, for a mine-leach-SX-EW facility. See BHP-Billiton, *Escondida*.

¹² The permitting process alone in the United States is now reported to average more than 7 years, with the process in Australia approaching 5 years. There are no significant new mine developments in Western Europe. Most Latin American, Asian, and African facilities report two- to three-year development timelines. See U.S. International Trade Commission, *International Trade and Technology Review*, 1-20 and The Fraser Institute, *Annual Survey of Mining Companies*.

¹³ This effect often serves to accentuate the commodity cycle extremes, by delaying response to demand increases and by serving as a return-on-investment disincentive to reduce production when demand drops.

Box 5-1**Mine Development: Mid-Tier Mining Companies are Integral to the Development of New Resources**

Industry consolidation has removed many of the intermediate, or junior, mining companies that historically have been responsible for finding new resources. There are thousands of smaller firms worldwide that are commonly separated into two categories: “low-tiers” that concentrate on finding resources and “mid-tiers” that focus on developing resources into bankable projects. These companies are not significant drivers of FDI, but they are an essential link in facilitating FDI. Typically, as a project develops, a “senior” mining company purchases majority ownership and operates the facility, with the original company maintaining a minority or royalty share. Very few of these junior companies operate their own mines or processing facilities. In 2003, fewer than 10 percent of the world’s 3,000 known mining firms actively engaged in actual mining. The junior international mining companies engage primarily in exploration, with a few participating in advanced stages of mine development and expansion. In 2003, over one-half of the world’s known mining companies were based in Canada. Many Canadian interests have minority positions in facilities operated by larger firms worldwide, and are largely responsible for developing new projects. There is no evidence that the situation has changed since then.

Sources: U.S. Geological Survey, *The Mineral Industry of Canada*; *American Metal Market*; *Metal Bulletin*; *Platts Metals Week*; press releases; company reports; USITC staff interviews; and OCO Consulting, “Industry Trends,” *FDI Quarterly*.

During the 1997-2003 price trough, no new facilities were needed due to oversupply of copper on world markets.¹⁴ Rather, M&A activity increased at the front end of the downturn while there were still acceptable cash flows, largely to streamline portfolios, increase consumable purchasing power (volume discounting), decrease overhead costs, and rationalize in-company intermediate production with in-company downstream consumption during the price and earnings trough.¹⁵ This rationalization led to the closure of many facilities and cutbacks at many others, mostly in the United States and Canada but also at high-cost operations in other locations.

Despite the increase in the price of copper since mid-2003,¹⁶ there are few new mining projects in the pipeline, largely because the recent price downturn was so long and severe that copper mining firms cut investment in exploration dramatically in an effort to control costs,¹⁷ but also because of the decline in small and mid-tier company activity. The bulk of net worldwide mining investment since 2003 thus largely reflects reinvestment into existing facilities. M&A activity also remains a prominent investment mechanism in the mining

¹⁴ The perception of ready supply for consuming industries, as measured by exchange inventories, is always a function of numerous supply and demand issues. As this section attempts to show, the actual supply and demand causes are not as important as the inability of the industry to quickly respond. Thus, solutions (either direction) always lag the consumptive indicators because of the high capital, personnel, legal, and time ramifications of any decision. The effect is to increase the amplitude and length of the cycle.

¹⁵ These decisions were largely based on trimming higher-cost operations. However, closure of these high-cost operations created ripple effects to upstream and downstream facilities to maintain material flow balances, causing other facilities to cut back or change their production mode. For example, Phelps Dodge closed its high-cost Hidalgo smelter when confronted with significant rebuild expenditures, but this also required the concentrating portion of the Morenci facility to close due to the reduction of in-house smelting capacity and required the El Paso refinery to operate at half-capacity. Further, the loss of sulfuric acid production from the smelter constrained leaching at several PD leaching operations, which was matched by a cessation in new leach mining at Chino and Miami and a reduction in the leach mining rate at Morenci, among other ripple effects.

¹⁶ The LME copper price has increased sixfold to \$3.98 per pound (May 12, 2006) from a low of \$0.59 in 2001.

¹⁷ Worldwide nonferrous exploration spending reached a 12-year low of \$1.9 billion in 2002. The cyclical high was \$5.2 billion in 1997; 2004-2005’s “meteoric increases” of exploration spending, largely by junior companies, reached \$4.9 billion. From “Corporate Exploration Strategies,” Metals Economics Group, as reported in “Exploration Exploding, but U.S. Ranks Near End,” and Paydirt.”

industry, and the level of such activity dramatically increased in 2004.¹⁸ The average value of a single FDI transaction in the mining industry was \$171 million during the downturn, but in the first half of 2004 transactions averaged \$1.7 billion, indicating a widespread surge in high-value development projects.¹⁹

Official U.S. government data indicate the timing of the varied FDI mechanisms during 1999-2004 (table 5-3). Reinvested earnings into existing facilities—largely sustaining capital—are less than half of total USDIA in mining during the price decline years of 1999 and 2001. However, reinvested earnings accounted for well over 90 percent of total mining sector USDIA in the early boom cycle, as firms re-started shuttered facilities or increased capacity at existing operations. A market price spike in 2000 generated enough cash to be spent on existing facilities, but a large negative flow in USDIA also was recorded as U.S. firms relinquished ownership positions through M&A activity. Reinvestment began in earnest in 2003, when the longer-term recovery of prices began. The price increase in 2004 fueled so much reinvestment that reinvestment accounted for almost all USDIA capital outflows. Based on historical patterns, as the boom period continues, greenfield investments should begin to take precedence over M&A and reinvested earnings

U.S. Role

As of 2004, the United States produced approximately 8 percent and consumed approximately 15 percent of the world's refined copper. As a result, the implied U.S. net import reliance²⁰ for refined copper was 24 percent in 2004, up from 13 percent in 1990. Chile replaced the United States as the largest producer of mined copper in 1990 and of refined copper in 1999. In 2002, China supplanted the United States as the largest consumer of refined copper.²¹ These trends illustrate both declining production in the U.S. copper mining and refining sector and the increased movement by U.S. copper-producing companies to invest internationally.²²

The U.S. non-oil and gas mining and refining industry as a whole²³ produced \$81.5 billion in direct value to the U.S. economy in 2004—less than one percent of the nation's GDP, with less than one percent of employment.²⁴ However, both imports and exports of mining industry products were more than 3 percent of the nation's imports and exports in 2004. Further, outbound USDIA capital flows in mining were nearly 3 percent of total USDIA, and FDIUS represented almost 4 percent of the total (table 5-4). In 2004, the U.S. copper mining industry produced unrefined copper valued at \$3.4 billion and refined copper valued

¹⁸ Andrew Dolbeck, "Consolidation in the Global Mining Industry" and "Median Values For Large Cap Transactions in the Mining Industry."

¹⁹ Ibid.

²⁰ Import reliance is how much the United States must import to meet its consumption needs, as a percentage of total consumption.

²¹ To date, the United States remains the largest consumer of copper in end-use products, but China consumes more refined (and scrap) copper to feed its export-oriented manufacturing industry.

²² This was highlighted by Phelps Dodge Corporation's CEO, J. Stephen Whisler, in 2000, when he stated in a presentation to staff that his company operates mines in the United States, but makes its money in Chile.

²³ BEA data does not provide disaggregated data for copper mining and refining alone.

²⁴ These are direct values, and do not include indirect values such as varied government revenues, personal and business income, or the effect on supporting industries. Estimates of the total impact vary around 8 times the direct value. See Leaming, *Mining and the American Economy*, 21. That would make the total contribution \$659 billion, or 6.4 percent of the U.S. GDP in 2004.

Table 5-3
Mining: Reinvested earnings as a share of total capital outflows

	1999	2000	2001	2002	2003	2004	Average, 1999-2004
Reinvested earnings	1,706	7,930	5,178	3,918	6,365	11,009	6,018
Total outflows	9,298	2,174	12,823	6,732	5,426	11,103	7,926
Reinvested earnings/total outflows	18.3%	364.8%	40.4%	58.2%	117.3%	99.2%	75.9%

Source: USDOC, BEA, *Survey of Current Business*, September 2004 and September 2005.

Table 5-4
Mining and refining in the U.S. economy, excluding oil and gas, 2004

	Total	Share of total U.S. Percent
Gross product (<i>billions</i>)	81.5	0.8
Employment (<i>thousands</i>)	675	0.6
U.S. exports (<i>billions</i>)	22.1	3.0
U.S. imports (<i>billions</i>)	58.3	4.0
U.S. direct investment abroad (<i>billions</i>)	56.5	2.7
Foreign direct investment in the United States (<i>billions</i>).	58.6	3.8

Sources: USDOC, BEA. Includes direct value for non-oil and gas mining and primary metal and nonmetallic manufacturing. Detail for the copper segment is not provided.

at \$3.7 billion, based upon the average LME price of \$1.30 per pound. U.S. imports and exports of unrefined and refined copper totaled \$2.5 billion and \$2.4 billion, respectively. The U.S. copper mine and mill employment was approximately 7,000; copper manufacturing (smelting and refining) employment was approximately 1,280.²⁵

**Only one US-based
mining company still
operates in the United
States.**

There are only two major U.S.-based copper mining companies: Phelps Dodge (PD, Phoenix), the world's largest private copper mining company, with operations in over 20 countries including the United States; and Freeport McMoRan (New Orleans), which operates exclusively overseas, predominantly in Indonesia and Papua New Guinea. Several large domestic companies have been acquired by foreign firms in the past 20 years. Specifically, Rio Tinto (U.K.) purchased Kennecott in 1986, BHP (Australia) purchased Magma in 1993, and Grupo Mexico purchased Asarco in 1999. Key events affecting the U.S. copper industry during 1999-2004 included the completion of Grupo Mexico's Asarco acquisition, the 2002 reorganization of Asarco's Southern Peru Copper Corp. assets to a Grupo Mexico subsidiary, the gradual write-off of BHP Billiton's former Magma assets

²⁵ U.S. Geological Survey, *Copper 2004*, 1.

during 2001-04, PD's buyout of Mitsui's stake in the Chino (New Mexico) property in 2003, and PD's 2004 reinvestments in its El Abra (Chile) and Cerro Verde (Peru) facilities.²⁶

Incentives to New Investment

The high capital cost and the cyclical nature of commodity prices, coupled with recent land access and environmental issues, have significantly altered the global copper mining industry and its principal FDI destinations worldwide. These factors, coupled with the lengthening lead times to bring a U.S. project on-line (due to access and permitting issues),²⁷ have caused the focus of strategic investment to move outside the United States.

Over the last 20 years, two different "boom" and "bust" cycles occurred that were more extreme than any on record.²⁸ The first bust, in the mid-1980s, led to the collapse of many international mining companies, including several U.S. companies. The following 1986-1996 boom witnessed the greatest expansion of copper mining capacity in history, and the buildup of substantial worldwide inventories. The principal destinations for new FDI in the international copper mining industry during the latter part of the boom were South America (especially Chile, but also Peru and Argentina) and Australasia (particularly Indonesia and Papua New Guinea, but also Australia). New, very large mines were brought on-line and, unlike during previous boom periods, most involved shared multinational ownership. For example, the Escondida copper-gold-silver mine in Chile, which is now the world's largest copper-producing mine, is owned by a consortium of BHP Billiton (Australia), Rio Tinto (U.K.), Jeco Corporation (a consortium of Japanese companies led by Mitsubishi), and the International Finance Corp. (part of the World Bank Group). Other notable joint ventures include the Grasberg copper-gold mine in Indonesia²⁹ and the La Candelaria copper-gold mine in Chile.³⁰ State-owned mining enterprises also entered into joint ventures. Several large Chilean mines were developed with shared CODELCO (Chilean Government) and international private ownership,³¹ and several state-owned mining companies in Africa (e.g., Gecamines in DROC and ZCCM in Zambia) began to privatize with international ownership, selling equity stakes to private joint venture partners.

The price collapse during 1997-2003 initiated another industry contraction. Some higher-cost operations were closed indefinitely or permanently, while others were downsized. For example, BHP (Australia) closed its Magma (U.S.) facilities; Phelps Dodge bought Cyprus (U.S.) and then shut down higher-cost operations; and Grupo Mexico bought Asarco (U.S.) and downsized its operations. Meanwhile, Xstrata (a Swiss holding company) began buying

²⁶ PD announced plans to invest \$850 million in the expansion of the Cerro Verde mine in 2004-07.

²⁷ Permitting times in the U.S. are often near a decade or more, which exceeds any price cycle boom period. For example, the Safford Mine Project (AZ) began permitting in 1993 and secured its final Federal permits in 2005. It anticipates securing its State permits in 2006 and to begin construction in 2007, 50 years after discovery.

²⁸ Dramatic increases in capital intensity and legacy costs have slowed industry reaction time to significant pricing events, causing extreme over-corrections in prices. The longer cycle times this behavior creates practically ensures that the behavior will continue, with ever higher peaks and lower troughs and longer cycle times.

²⁹ Owned by Freeport McMoRan Copper & Gold Inc. and subsidiaries (U.S.), the Government of the Republic of Indonesia, and Rio Tinto (U.K.).

³⁰ Owned by PD (U.S.) and Sumitomo (Japan).

³¹ For example, the El Abra mine (Chile) was developed in conjunction with Cyprus (U.S.), now an asset of Phelps Dodge (U.S.).

properties and firms internationally; and BHP (Australia) merged with Billiton (U.K.).³² As a result, there are far fewer independent mining companies, and almost no mid-tier firms (except in Canada), which as noted above has contributed to a sharp decline in new exploration and development, thereby delaying the industry's capacity to quickly respond to the recent increased demand.³³ Firms began cutting their greenfield exploration budgets as the price fell in 1997,³⁴ so the last decade has witnessed very few new discoveries. Few project opportunities thus exist to meet growing demand, allowing copper prices to climb to record levels. The industry is meeting extant demand by reinvesting in existing facilities to enlarge them. The potential drawback to this approach is that it makes facilities less nimble in responding to market signals. Since the industry can never respond as fast as the supply-demand balance changes, the increased size of facilities may force the mining industry to endure the extremes of price fluctuations.

However, in response to high prices, companies are once again investing in exploration. The target regions for new exploration are Latin America, Australia, Canada, and Africa;³⁵ the United States and Pacific/Southeast Asia rank last.³⁶ Many developing countries, especially in the Copperbelt region of the Congo (Zambia and the Democratic Republic of the Congo) are rapidly privatizing national holdings and developing mining-friendly laws to entice international investment.³⁷

Disincentives to new investment

The price cyclicality of copper discourages investment.

Despite the recent, substantial price increases, there are several factors that may discourage investment in the copper mining industry. For example, the cyclical nature of the business may discourage many non-industry investors. This is because average returns on investment often trail other industries for many years, or until the next boom period. As such, access to financing is difficult and expensive, with investment decisions often dependent on predictions of whether the boom period will last long enough to secure a suitable return on investment.³⁸ This situation leads to the development of mega-sized mines with extremely high capital costs in an attempt to recover

³² Similar effects have been seen in other metals, ferrous and nonferrous. Significant ownership changes have occurred in the domestic iron ore industry. In nickel, Noranda bought Falconbridge, and now INCO is trying to purchase Noranda. In gold, Newmont, AngloGold, and Barrick have all been buying, jockeying for position as the number one producer worldwide. Barrick completed the takeover of Place Dome on January 24, 2006, making it the world's largest gold mine.

³³ Worldwide consumption growth of copper in end use forms has averaged over 2 percent per annum for decades, and accelerated to over 3 percent per annum since 1993 with the consumer electronics boom. The development of electric and hybrid cars is expected to further accelerate copper demand due to the increased electronic controls and electrification of that technology, even without the rapidly growing new Asian markets.

³⁴ From "Corporate Exploration Strategies," Metals Economics Group, as reported in "Exploration Exploding, but U.S. Ranks Near End," and *Paydirt*.

³⁵ The extremely rich resources of sub-Saharan Africa (SSA) are well-known, and in this time of high cash flow, numerous companies worldwide have begun allocating portions of their exploration and development budgets toward opportunities in SSA, despite the political risks. "Sub-Saharan Africa Economy: Digging Deep."

³⁶ From "Corporate Exploration Strategies," Metals Economics Group, as reported in "Exploration Exploding, but U.S. Ranks Near End," and *Paydirt*.

³⁷ See Minerals and Metals, *U.S. Trade and Investment with Sub-Saharan Africa*, issues 2002-2004, Chapter 5: Industry Sector Profiles.

³⁸ Keynote Session, Annual Conference of the Society for Mining, Metallurgy, and Exploration, Feb. 2002.

the orebody's value faster. However, the situation also serves to oversupply the market and constrain the ability of firms to cut back in periods of oversupply and still pay off their financing debt.

Political and social unrest during 2005 and 2006 caused temporary closures at some existing Peruvian and Indonesian facilities and may slow new FDI into those countries. Further, political changes in Latin American countries, including Venezuela and Bolivia, have raised concerns related to resource nationalization which may discourage new international FDI into those countries.³⁹

Regulatory and land-access measures are increasing in some developed countries, including Australia and the United States. Australia is confronting native lands issues that are delaying the development process.⁴⁰ The United States restricts access to most public lands for the purpose of exploration. In addition, the U.S. imposed a mining patent (land-use title)⁴¹ moratorium in 1994 that remains in effect.⁴² An annual survey of mining executives ranks most U.S. mining states as difficult mining investment destinations, with overlapping and overly restrictive mining policies, despite numerous world-class resources.⁴³ Therefore, the United States is not a significant destination for inbound FDI in the copper industry with regard to exploration or new development. M&A activity and reinvested earnings thus generate the overwhelming majority of FDIUS capital inflows in this industry. Domestic and foreign producers are actively reinvesting in existing U.S. facilities, with most facilities having been returned to full production and some previously shuttered facilities being evaluated for reopening to take advantage of the current record-high prices. As of 2006, only one large new U.S. copper mine—PD's Safford Project—appears headed for development.⁴⁴

Recent tightening of mining and financial laws in several key copper mining countries is creating global investment uncertainty. Notable among these countries are Peru, South Africa, and Chile. South Africa has also introduced royalty, health and safety, ownership, and other laws that are reportedly devaluing mining assets, inhibiting their domestic producers' expenditures abroad, and stifling mining-related FDI inflows into the country.⁴⁵ Political instability and the significant disrepair of existing facilities continue to inhibit

³⁹ Bolivia nationalized its oil and gas industry in May 2006. Observers are also closely monitoring the 2006 presidential elections in Peru for the same reason. Staff interviews with industry representatives at the Society of Mining, Metallurgy, and Exploration Annual Conference, indicated that a reversion to past policies is likely the only near-term effect that could stifle FDI into Peru.

⁴⁰ See AMIRA International, the Australian mining industry association, at www.amira.com.au/, and the Australian Bureau of Agricultural and Resource Economics, at www.abareconomics.com/, for detailed information. A brief summary of the business conditions is also found in Christopher B. Mapes, "Major Contraction of the Domestic Refined Copper Industry," 1-20.

⁴¹ A patent granting title to specific public land for specific purposes is issued by the owning government entity. A mining patent issuance is contingent upon site due diligence and permitting. See www.teamlaw.org/LandPatents.htm for more detail.

⁴² Then-Secretary of the Interior Bruce Babbitt instructed the Bureau of Land Management (BLM), in Memorandum No. 95-01 dated Oct. 4, 1994, to only process applications that were pending in Washington, DC, as of September 30, 1994, and let all others remain idle. See John D. Leshy, "Entitlement to a Mineral Patent Under the Mining Law of 1872."

⁴³ One exception is Nevada, which is primarily a gold-producing area. See Fraser Institute, Composite Policy and Mineral Potential, *Annual Survey of Mining Companies*, 48-9. For additional examples, see Mapes, "Major Contraction of the Domestic Refined Copper Industry," 1-20.

⁴⁴ The orebody was discovered in 1957. Several unsuccessful attempts have been made to develop it. The present land consolidation, permitting, engineering, and development process began in 1993. The mine is scheduled to open in 2007, 14 years after the permitting process began and 50 years after discovery.

⁴⁵ For a review of South Africa's significant legal changes, see Minerals and Metals, *U.S. Trade and Investment with Sub-Saharan Africa*, issues 2002-2004, Chapter 5: Industry Sector Profiles.

mining-related FDI in many sub-Saharan African countries.⁴⁶ Chile is currently debating royalty⁴⁷ laws and tightening capital repatriation laws,⁴⁸ and Peru enacted mining royalty laws in 2004.⁴⁹

U.S. Direct Investment Abroad⁵⁰

USDIA net capital outflows in the U.S. copper mining⁵¹ and processing⁵² industries totaled \$2.1 billion and negative \$13 million,⁵³ respectively, during 1999-2004. The USDIA position in 2004 stood at \$6.6 billion in the mining segment and \$406 million in the processing segment.

In 2003, U.S. parent firms maintained 918 overseas mining⁵⁴ affiliates, including 55 affiliates in the metal mining segment and 27 affiliates in the combined copper, lead, zinc, and nickel mining segment. U.S.-owned foreign affiliates in the metal mining segment (for seven U.S.-parent companies) reported employment of 47,100, assets of \$25.8 billion, sales of \$9.7 billion, and net income of \$1.3 billion in 2003. Copper and gold facilities account for the majority of such affiliate data.

The near future for the U.S. copper industry's direct investment abroad appears strong. For example, PD is spending \$850 million (from 2004-07, with Sumitomo Metal Mining) to build a concentrator at its Cerro Verde mine in Peru. PD has also obtained a Letter of Agreement to acquire 70 percent ownership and develop the Tenke Fungurume copper-cobalt orebody in the Democratic Republic of the Congo and has personnel on-site performing the engineering feasibility study.⁵⁵

⁴⁶ Ibid.

⁴⁷ A royalty is a direct tax imposed by the government taken on the value of the extracted metal from government lands. There are many types of royalties, but the typical royalty in the metal mining industry is imposed on the value of the metals after smelting or refining. In the United States, royalties are typically imposed on continental shelf (oil & gas) production and from government lands that were obtained from private interests (e.g., Appalachian coal and Missouri lead/zinc). Most western U.S. lands do not have this history of private ownership, so are rarely subject to royalties, though numerous efforts to impose a royalty have been proposed in the U.S. Congress. As with all taxes, a royalty increases mining cost, thus lowering the effective venture profitability and thus the mines reserves and operating life and value.

⁴⁸ Multiple sources, including varied issues of the Santiago Times, Business News Americas, and Mining Engineering.

⁴⁹ Multiple sources, including Steve James, "Peru Royalty Plan Unpopular with Mining Companies."

⁵⁰ USDOC, BEA, "Foreign Direct Investment in the United States," Sept. 2005, 79-116, and "U.S. Direct Investment Abroad," Sept. 2005, 117-161. U.S. government statistics separate the electrowinning, smelting, and refining functions of a mining company into the manufacturing metal processing category.

⁵¹ Includes nickel, lead, and zinc ores. No major outlays for the other metals were found, so the bulk is presumed to be copper-related.

⁵² Includes all nonferrous metal manufacturing, except aluminum.

⁵³ Negative values reflect a net inflow of FDI during the period.

⁵⁴ Includes oil and gas.

⁵⁵ See Tenke Mining Corporation

Foreign Direct Investment in the United States⁵⁶

FDIUS net capital inflows into the United States during 1999-2003 totaled \$2.2 billion in copper, lead, zinc, and nickel mining, with an end-of-period FDIUS position of \$694 million; and \$3.6 billion in nonferrous (and non-aluminum) processing, with an end-of-period FDIUS position of \$2.1 billion. The data also confirm the growing importance of the processing segment of the U.S. copper market as compared to the diminishing mining portion. As evidence of this trend, the world's two largest copper refineries— in El Paso and Amarillo, Texas— must import smelter anodes to operate at full capacity. Grupo Mexico's acquisition of Asarco's Amarillo facility is a significant component of total foreign FDI into the U.S. copper industry; the Mexican ownership provides a vital source of foreign raw material and an important outlet for sales as Asarco's U.S. mining operations close.

Foreign-owned affiliates in the U.S. mining sector⁵⁷ accounted for assets of \$70.3 billion, sales of \$24.2 billion, and net income of \$1.7 billion in 2003. The capitalized portions of these assets—plant, property, equipment (PPE)—totaled \$51.9 billion, with new expenditures of \$4.1 billion in 2003. Foreign-owned U.S. affiliates in the mining sector recorded total employment of 72,300, which is dominated by employment in the oil and gas industry. The metal mining segment reported employment of 9,500, and the copper, nickel, lead and zinc sub-segment accounted for fewer than 5,000 employees.⁵⁸

Future FDIUS in copper is likely to consist of reinvested earnings and acquisitions.

The likelihood of inbound FDI directed at the development of new facilities in the U.S. copper mining industry in the near future is small. Few resources that have been discovered in the past two decades have secured approval, and in many cases the projects were foreign-investment driven (largely from Canada). The massive writedown of the U.S. Magma assets after BHP's acquisition has served as a warning to foreign acquisition FDI. Grupo Mexico did acquire U.S.-based Asarco, but has closed some facilities, and is currently reported to be contemplating additional closures. In contrast, the Rio Tinto Kennecott assets are receiving significant FDI directed at sustaining and expanding the existing facilities. Thus, acquisition and reinvested earnings are likely the only mechanisms of inbound FDI into the U.S. copper mining and refining sector in the foreseeable future.

⁵⁶ USDOC, BEA, "Foreign Direct Investment in the United States," Sept. 2005, 79-116; and "U.S. Direct Investment Abroad," Sept. 2005, 117-161. U.S. government statistics separate the electrowinning, smelting, and refining functions of a mining company into the manufacturing metal processing category.

⁵⁷ Includes oil and gas.

⁵⁸ Not counting processing facilities.

CHAPTER 6

Whole Farmed Salmon

Summary of Key Findings

The U.S. whole farmed salmon industry is small (2004 shipments of \$49.6 million) and consists of four firms, three in Maine and one in Washington State. Three of the firms were owned for many years by Norway-based salmon farming/marketing firms. As of 2006, three firms are Canadian-owned and one is U.S.-owned. Norwegian interest in investing in the U.S. farmed salmon industry appears to have been spurred by significant U.S. countervailing and antidumping duties in 1991. The recent divestitures by Norway appear to be driven largely by the high costs of U.S. environmental regulations. While still supplying the U.S. market, such firms have shifted much of their productive capacity to Chile and other lower-cost locations. The interest by Canada-based firms in U.S. salmon farming investment appears to be driven by both the proximity of the large U.S. market, and scale economies (the Canadian salmon farms and the Canadian-owned U.S. farms are separated by only a few miles and the U.S.-Canada border). There is no known direct investment abroad by U.S.-based firms, apparently because the large U.S. market encourages domestic firms to concentrate on their home market.

The Farmed Salmon Industry in the U.S. Economy

The whole farmed salmon industry is a tiny part of the overall U.S. economy, but in Maine, where the bulk of the industry is located, it is an important local industry, accounting for much of the economy and employment in Washington County and elsewhere along the coast.¹ The industry consists of firms that hatch salmon eggs into fry, and raise salmon to marketable size in ocean pens. The firms sell their whole salmon to processors and distributors for sale to restaurants, supermarkets, and other retail sellers. The rapid growth experienced by the U.S. industry and market in the 1990s has slowed in recent years, in part because the market has matured,² but perhaps also due to recent consumer fears that salmon is contaminated with PCBs, mercury or other toxins.³ Total domestic production in 2003, the latest year reported by the U.S. Department of Commerce, reached \$49.6 million, down from \$99 million in 2000 (table 6-1).⁴ The 2003 total output represented a fraction of the

¹ There were three Maine producers in 2005: Heritage and Atlantic Salmon, both owned by the same Canadian firm, and Marine Harvest, owned by a Norway-Netherlands joint venture. There is also one producer in Washington State, American Gold (formerly Cypress Island), owned since 2004 by a U.S. firm and before that by a Norwegian firm.

² U.S. International Trade Commission (USITC), *Fresh and Chilled Atlantic Salmon From Norway*, (Second Review), 181-182 (testimony of economic consultant Stern).

³ "Risk-Based Consumption Advice for Farmed Atlantic and Wild Pacific Salmon Contaminated With Dioxins and Dioxin-Like Compounds." There is significant disagreement, however, as to the actual danger posed by toxins in salmon. "Group files FTC complaint over farmed salmon ads" (describing efforts by the National Environmental Trust to ban ads by industry advocate Salmon Of The Americas touting the health benefits of eating farmed salmon).

⁴ Farmed salmon consumption grew slightly during the same period, from 158 million pounds in 2000 to 164 million pounds in 2003.

**Table 6-1
Fisheries in the U.S. economy, 2003**

	Total	Share of total U.S.
Gross product (<i>millions</i>)	49.6	(1)
Employment	234	(1)
U.S. exports (<i>millions</i>)	24.0	(1)
U.S. imports (<i>millions</i>)	247.0	(1)
U.S. direct investment abroad	(2)	(2)
Foreign direct investment in the U.S. (<i>millions</i>)	24	(1)

¹ Less than 0.05 percent.

² Not available.

Sources: Official statistics of the U.S. Department of Commerce; USITC, *Fresh and Chilled Salmon From Norway*, Inv. Nos. 701-TA-302 and 731-TA-454 (Second Review), USITC Publication 3835, January 2006, appendix C; and company financial statements and press releases.

total output of the broader U.S. farmed fish/shellfish industry of about \$961 million in that year.⁵

The U.S. whole farmed salmon industry exports 50 percent of its production.

As a share of U.S. employment, likewise, the salmon farming industry is small, accounting for a tiny fraction of total U.S. employment. Average wages in the industry, at \$6.57 per hour, are about 45 percent lower than the average Maine hourly income of \$14.41 in 2004.⁶

The U.S. farmed salmon industry has traditionally focused on serving the domestic market, but since 1999, the ratio of exports to production has increased; a 19-percent decline in domestic production and a 3-percent increase in exports raised this ratio to just over 50 percent in 2004 (figure 6-1).⁷ Reasons for the decline in production likely include lower retail salmon prices, court-imposed cutbacks on pen capacity utilization (because of violations of environmental laws, described below), and industry consolidation. Imports, which account for the bulk of U.S. consumption, grew steadily for several years until they reached a record \$299 million in 2002, then declined to \$247 million by 2004. The decline is due in part to rising global fuel costs, temporary production cut-backs caused by environmental problems in Canada, and a shift by foreign exporters from shipping whole fish to shipping salmon fillets to the U.S. market (figure 6-2).⁸

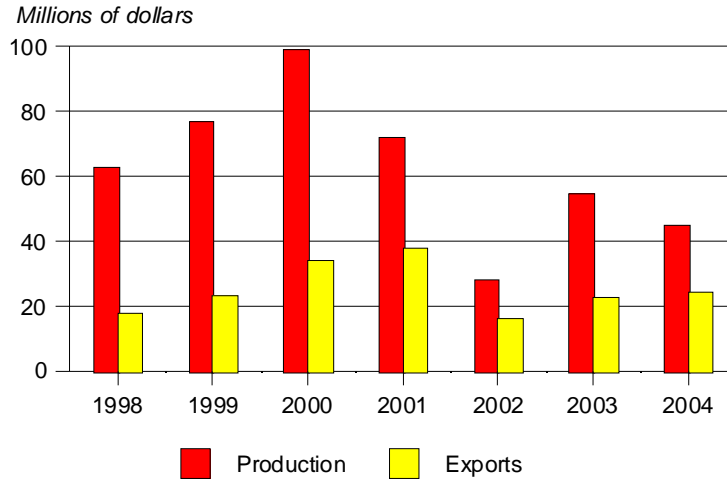
⁵ National Marine Fisheries Service, "Fisheries of the United States 2004," 16. The bulk of the output of the U.S. farmed fish industry is catfish, followed by oysters, salmon, and trout. Production of farmed seafood is generally limited by environmental and cost factors.

⁶ U.S. industry sources reported to Commission staff that such wages are roughly comparable with those paid in major competing nations, but statistics on competing nations' wages in this industry are not available.

⁷ Exports are probably overstated, however, as a significant but unknown portion of such exports to Canada (the only significant export market) are simply processed and reimported. USITC, *Fresh and Chilled Atlantic Salmon from Norway*, (Second Review).

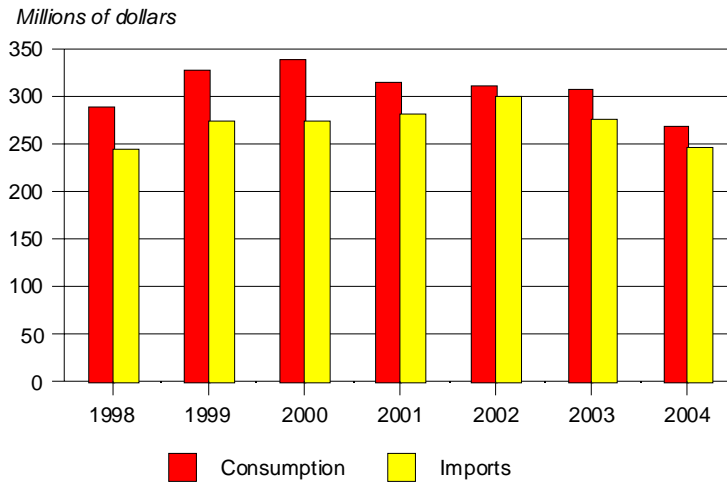
⁸ See, e.g., "Fuel Drives Costs Up," 1, 20-22; and USITC, "Fresh and Chilled Atlantic Salmon From Norway," II-5.

Figure 6-1
Farmed salmon: U.S. production and imports, 1998-2004



Source: Official statistics of the U.S. Department of Commerce; USITC, Fresh and Chilled Salmon From Norway, Inv. Nos. 701-TA-302 and 731-TA-454 (Second Review), USITC Publication 3835, January 2006, appendix C; and company financial statements and press releases.

Figure 6-2
Farmed salmon: U.S. consumption and imports, 1998-2004



Source: Official statistics of the U.S. Department of Commerce; USITC, Fresh and Chilled Salmon From Norway, Inv. Nos. 701-TA-302 and 731-TA-454 (Second Review), USITC Publication 3835, January 2006, appendix C; and company financial statements and press releases.

The Global Market and Major Investors

Major market actors

Norway is by far the world's largest farmed salmon producer and the largest source of FDI in salmon farming markets around the world. Norwegian firms, including Fjord, Stolt-Nielsen, Pan Fish, and Cermaq, operate salmon farms not only in Norway but elsewhere in the world, including Chile, the EU, and the United States (table 6-2). Most production from these subsidiaries goes to the world's two principal markets for farmed salmon, the EU and the United States.

Japan is another source of FDI. In recent years, Japan has channeled FDI into Chile (the world's second largest producer) for production that in turn is destined for the Japanese market. There is no known Japanese FDI in the U.S. farmed salmon industry. Canada, the world's third largest producer of farmed salmon, is another source of FDI, primarily in the U.S. industry.

Norway is by far the largest source of global FDI in the farmed salmon industry.

Most other producers around the world, including all U.S.-owned firms in this industry, operate only in their own country. U.S. salmon producers are small players in the global market, accounting for less than 2 percent of world production of farmed salmon in recent years. Figure 6-3 shows total farmed salmon production by major producing nations.⁹

Investment strategies

The principal factor influencing global FDI in the farmed salmon industry is the availability of a conducive natural environment: salmon are farmed best in areas where cold flowing saltwater is present, in areas protected from large waves (to protect the pens as well as to facilitate harvesting from the pens). Norway's fjords are ideal locations, as is much of the coast of northern Europe (Faeroe Islands, Scotland, Ireland, Iceland), as well as Canada, the northern Atlantic and Pacific coasts of the United States,¹⁰ and Chile.

In addition to the natural environment, FDI decisions are influenced by factors such as cost and capacity. When farm capacity is reached in the home country, the incentive for FDI increases.¹¹ The industry in New Brunswick, Canada, for example, has reached capacity in terms of available space to place salmon pens; this constraint, according to industry sources, was a factor behind the move by Canada-based George Weston, Ltd. southward into Maine and into the Chilean industry. Economies of scale also play a role when the two nations

⁹ U.S. production data include production by foreign-owned firms.

¹⁰ Salmon farming in Alaska is technologically feasible, but it is forbidden by state law. The same is true in California, although ideal natural conditions are less abundant there. In both cases, the reasons for the bans appear to include concerns about competition with the wild fishery and about environmental degradation (including waste build-up under pens, and the accidental release of farmed salmon that then interbreed with wild salmon). "California Bans Salmon Farming in State Waters."

¹¹ The cost of sites for salmon pens is related to physical capacity. If residential/commercial development has raised the cost of land near attractive ocean locations for pens, the cost of operating pens in those locations may be prohibitive.

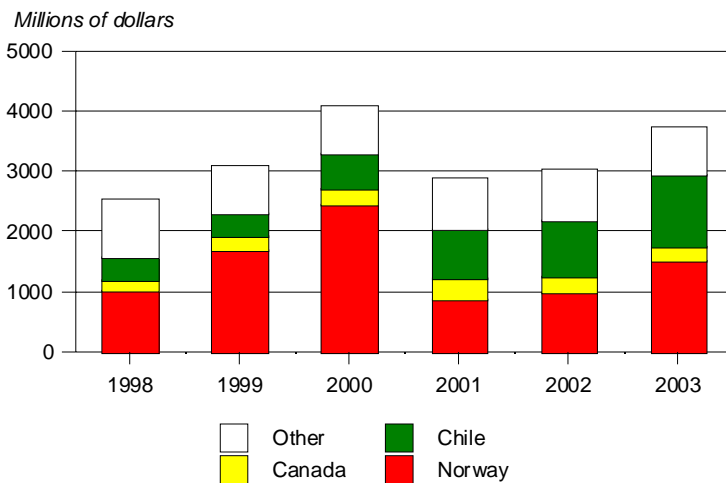
Table 6-2
Fisheries: Largest companies in the global market, 2004

Company	Home country	Total revenue	Total employment	Host countries of affiliates
Marine Harvest	Netherlands	\$2 billion (approx.)	6,000	Norway, Chile, Canada, UK
Cermaq	Norway	\$1,129 million	2,960	Norway, Chile, UK
Fjord	Norway	\$550 million	1,250	Norway, Chile, UK
Pan Fish	Norway	\$350 million	1,173	Norway, Chile, Canada, UK
Cooke Aquaculture	Canada	(¹)	100-200 (U.S.)	USA, Canada

¹ Not available.

Source: Companies' annual reports.

Figure 6-3
Farmed salmon: Production by major producers, 1998-2003



Source: U.N. Food and Agriculture Organization.

involved are adjacent to one another; if capacity is reached in the home country, a natural expansion would be into the industry across the border.

The existence of marketing economies of scale also plays a role. When a firm has operations in different parts of the world -- particularly in both the Northern and Southern Hemispheres -- it has more assurance that it can supply a dependable volume of fish to its customers year-round. According to one industry source, "companies that own farms in both the Northern and Southern hemispheres have a huge production advantage because they have regular supply with fairly regular volume."¹² Although salmon is harvested year-round in most locations, harvesting is easier in warm months than cold months. In addition, having multiple locations helps spread the risk of disease or other problems that might limit production at any one site. Another factor behind recent FDI decisions -- particularly behind divestment -- has been the financial stability of the parent firm. Norway-based Pan Fish recently sold its U.S. subsidiary in Washington State because of cash-flow problems.¹³ The buyer, Smoki Foods, is an American seafood producer and marketer.

Capacity constraints, marketing economies of scale, and regulatory issues all influence FDI in farmed salmon.

The regulatory environment is one of the most significant factors influencing FDI decisions in the farmed salmon industry. Foreign firms may view particular regulations as particularly burdensome including, for example, the number of pens allowed at one site, restrictions on feed additives, or a requirement to tag salmon to identify their source if a pen break allows an escape. Too many regulations may offset the natural cost advantages of an ideal natural environment. Market proximity is also important: it is less expensive to ship salmon to New York from Maine than from New Brunswick or Norway. Long-standing restrictions on the size of salmon farms in Norway, meant to encourage individual rather than conglomerate farms, reportedly have spurred some Norwegian salmon farms to expand by investing overseas, becoming the farmed-salmon giants they are today.¹⁴ Similar restrictions on farm size apply in Maine, where salmon farms are limited to 250 acres.

U.S. Direct Investment Abroad and Foreign Direct Investment in the United States

There is no known USDIA associated with the U.S. farmed salmon industry. Likely reasons include the proximity of the large U.S. market, as well as substantial competition from well-established competitors in other major producing regions, such as Norway, the United Kingdom, and Chile.

The stock of FDIUS in the farmed salmon industry was at least \$24 million in 2004.¹⁵ During 2000-2004, BEA statistics, which are disaggregated only to the "Animal Production" level,

¹² Ingvald Loeyning, managing director of Marine Harvest's salmon business group, quoted in "Salmon Farmers Seek Strategy for Taking Profits to Next Level," 5.

¹³ "Pan Fish Abandons U.S. Farms." These limitations appear to have been addressed, with a reorganization that included the sale of the U.S. operation and acquisitions of European value-added production. "Results of the Fourth Quarter 2005."

¹⁴ "Salmon Farmers Seek Strategy for Taking Profits to Next Level," 5.

¹⁵ Based on company press releases.

show that FDIUS flows in that sector ranged from a high of almost \$1.4 billion in 2001 to a low of \$873 million in 2002 (figure 6-4). This BEA category, however, includes production of cattle and other more traditional agriculture animals, and farmed salmon (indeed, all fish) is a small component of the total.

Norway was a large source of FDI in the U.S. industry for several years, but its share of FDIUS has diminished sharply within the last two years due to divestments by Fjord and Pan Fish. Currently, Canada-based Cooke Aquaculture, which purchased the bulk of Norway's U.S. divestments, is the primary foreign investor in the U.S. industry. A Netherlands firm, Nutreco, in association with a Norwegian firm, Stolt-Neilsen, is also present in the U.S. industry (table 6-3). The U.S. industry has shrunk in size over the years, corresponding with a decline in FDIUS.

There are several factors that influence the FDI decisions of these firms. Market potential is one. The early growth of the U.S. industry (in the 1970s and 1980s) was fueled in part by Canadian and Norwegian FDI in an effort to tap into the small but rapidly growing U.S. market.¹⁶ Canadian FDI has recently been more significant than Norwegian FDI and is said by industry sources to be oriented more toward achieving marketing scale economies, as the industries of both Canada and the United States serve the U.S. market. This effort to achieve scale economies apparently continues, with Cooke Aquaculture's purchase of farms in Maine.¹⁷

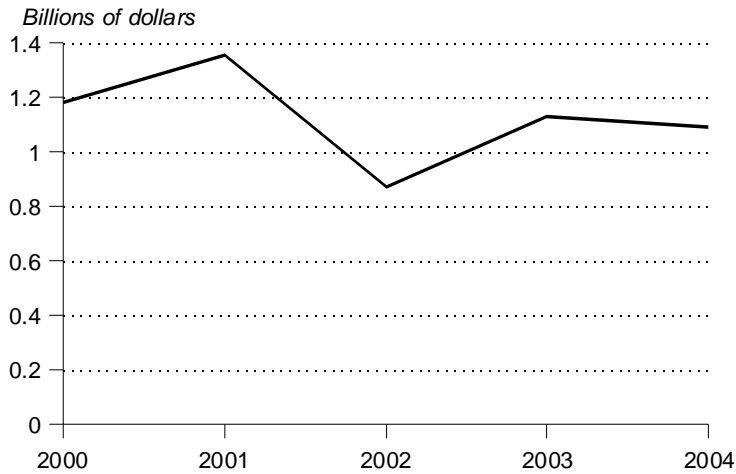
Countervailing and antidumping duty orders on U.S. imports of whole farmed salmon from Norway issued by the U.S. Department of Commerce in 1991 were another factor driving inbound FDI.¹⁸ Norwegian salmon exports to the United States, Norway's second-largest market, immediately declined and have remained low ever since (equal to 1.4 percent of total U.S. farmed salmon imports in 2004). Partly as a result, Norwegian-owned firms increased their investment in the U.S. industry in the late 1990s to the point where, in 2000, more than one-quarter (based on output) of the U.S. farmed salmon industry was Norwegian-owned. Thus the share of the U.S. market held by Norwegian-owned firms did not decline as much as Norway's export shipments did, because production by Norwegian-owned firms shifted from Norway to the United States.

¹⁶ Between 1983 and 1993, according to Department of Commerce data, U.S. production of farmed salmon grew, on average, by 30 percent annually in quantity and by 39 percent annually in value. Between 1993 and 2004, such production grew, on average, by only 4 percent annually in quantity and declined by 2 percent annually in value.

¹⁷ "Cooke Aquaculture Plans to Consolidate Aquaculture Industry in North America."

¹⁸ Antidumping duties are intended to remedy sales at less than fair value ("dumping"), while countervailing duties are intended to offset government subsidies in the exporting country. Investigations of both alleged trade practices are initiated by the USITC and Commerce Department upon receipt of a petition therefor from a domestic industry producing a like or directly competitive product. In the case of Norwegian salmon, a petition was filed by a group of Maine salmon farming firms, which ultimately led to the imposition of both antidumping and countervailing duties on U.S. imports of fresh Atlantic salmon from Norway in 1991. See USITC, *Fresh and Chilled Atlantic Salmon from Norway*, (Final).

Figure 6-4
Animal production: Foreign direct investment stock, 2000-2004



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *U.S. Direct Investment Abroad*.

Table 6-3
Farmed salmon: Ownership structure in the U.S. industry, 2004

Producer name (location)	Parent company (location)	Year acquired and seller	Comments
Atlantic Salmon of Maine (U.S.-Maine)	Cooke Aquaculture (Canada)	2004, from Fjord (Norway)	Atlantic is a subsidiary of Horton's of Maine, a Cooke subsidiary. Horton's also owns two smaller Maine producers, Treat's Island and Island Aquaculture, also acquired from Fjord.
Heritage (formerly known as Connors) (U.S.-Maine)	Cooke Aquaculture	2005, from George Westin (Canada)	
Marine Harvest (U.S.-Maine)	Nutreco (Netherlands) and Stolt Nielsen (Norway)	Formed as a joint venture in 2004, combining two existing firms	Until May 2005, Marine Harvest was called Stolt Sea Farm, the name of Stolt Nielsen's U.S. producing subsidiary. It was merged in 2004 with Nutreco's U.S. marketing subsidiary, Marine Harvest.
American Gold (formerly known as Cypress Island) (U.S.-Washington)	Smoki Foods, Inc. (U.S.-Washington)	2005, from PanFish (Norway)	

Sources: Company press releases and financial statements.

As noted, the level of environmental and other regulations is also a significant FDI factor. One large Norwegian salmon producer and investor in the U.S. industry, Fjord, pulled out of the U.S. industry expressly because “court rulings in 2003 relating to the Endangered Species Act and the Clean Water Act have caused tight conditions for fish farming in the state of Maine.”¹⁹ These court actions resulted from complaints by U.S. environmental groups that salmon farming operations were causing adverse environmental effects.²⁰ Fjord stated that it would make up the lost supply from this divestiture with increased sales from its Chilean operations.²¹

Direct Investment and Cross-border Trade

U.S. exports of farmed salmon are directly influenced by FDIUS, particularly through Canadian ownership of U.S. producers. About 99 percent by both value and quantity of U.S. exports of whole farmed salmon are shipped to Canada, almost all for processing into “dressed” (gutted) product, and are then re-imported into the U.S. market.²² Much of this trade is between subsidiaries of related parties,²³ but some re-imports are misclassified as U.S. imports. In addition to re-imports, there is a substantial but unknown volume (because of misclassification) of U.S. imports of Canadian-origin farmed salmon. Table 6-4 shows recent trends in U.S.-Canadian trade in farmed salmon (in thousands of U.S. dollars). The large drop in U.S. exports to Canada after 2001 was due to U.S. court orders requiring temporary closures of some U.S. salmon farm pens because of disease infestations.²⁴

Table 6-4
U.S. farmed salmon trade with Canada, 2000-2004

Item	2000	2001	2002	2003	2004	Percent change, 2000-2004
U.S. exports to Canada (reported)	32,253	35,178	14,534	21,767	23,759	-26.3
U.S. imports from Canada (reported)	219,296	248,810	265,529	207,112	199,320	-9.1

Source: U.S. Department of Commerce.

¹⁹ Fjord Seafood, 2003 Annual Report, 8.

²⁰ Such environmental effects were said to be caused by (a) creating the risk that farmed salmon might accidentally escape from their pens and interbreed with wild Atlantic salmon, hindering the latter’s recovery from its current endangered state (because of genetic weakening caused by the interbreeding), and (b) creating algae and other problems around and below salmon pens. See generally, *Atlantic Salmon in Maine*, ch. 3.

²¹ Fjord Seafood, Quarterly Report, First Quarter 2004, 3.

²² USITC, “Fresh and Chilled Atlantic Salmon from Norway,” (Second Review). This trade refers to fresh, whole or dressed Atlantic salmon classified in HTS subheading 0302.12, which is the principal product of both the U.S. and Canadian farmed salmon industries.

²³ Ibid.

²⁴ Ibid. See also, National Research Council, *Atlantic Salmon in Maine*, 81-90.

CHAPTER 7

Chemical Industry

Summary of Key Findings

The U.S. chemical industry supplies the largest domestic market for chemicals and related products in the world, with 2004 shipments of \$516.2 billion. As a result, several U.S. firms are among the largest in the world. Not only do they supply the U.S. market, but they also supply most foreign markets either through exports or through affiliates established in those markets. Canada was the largest recipient of USDIA in the chemicals industry, primarily due to the highly developed infrastructure connecting it with the United States and its abundant supplies of raw materials. In 2003, U.S.-based chemical firms had more than 2,000 foreign affiliates, with assets of \$414.2 billion and sales of \$286.1 billion. European firms were the largest foreign investors in the U.S. chemical industry, with an FDIUS position of \$148.0 billion in 2004. The major investing countries were based in Switzerland, the United Kingdom, the Netherlands, and Germany. A total of \$253.2 billion in assets was held by the U.S. affiliates of foreign parents in 2003, with the pharmaceuticals segment accounting for approximately 47 percent of the industry.

Cross-border trade in chemicals involving U.S.-owned firms and their affiliates during 1999-2004 was mainly with its NAFTA partners, Canada and Mexico. The free trade provisions of the NAFTA and the common borders have greatly facilitated this trade. Because of the abundant natural gas and crude petroleum in these two countries, U.S. imports from U.S.-owned affiliates in Canada and Mexico consist mainly of basic chemicals, which are used to produce higher valued, more complex chemicals. U.S. exports to these affiliates consist mainly of higher valued, intermediate and specialty chemicals.

Introduction

The chemical industry is a manufacturing industry that provides basic and intermediate chemicals and a variety of finished products to other consuming industries and the public. Chemical plants manufacture these products from raw materials such as crude petroleum, natural gas, or ores, which they transform into the desired products through a series of reactions. In many cases, the products manufactured by one chemical plant are used by another plant to produce a finished product for consumption (e.g., ethylene to polyethylene to plastic film for packaging).¹

The complexity of this industry makes it difficult to define. In its broadest sense, it includes all firms manufacturing products produced by chemical synthesis or formulation. For the purposes of this study, however, Commission staff will follow the definitions and groupings for the chemical industry used in official U.S. Government statistics: basic chemicals, resins, pharmaceuticals, soaps, pesticides, paints, and chemical preparations. Plastics and rubber

¹ Petroleum refining and smelting of metal ores are excluded from this study, as they are normally classified with the petroleum and metal mining industries, respectively.

products are not included in the official data, but are included as needed to compare official data with data from other sources.

U.S. Chemical Industry

In the United States, large corporations account for the majority of domestic chemical shipments. Many of these corporations are large, non-petrochemical firms with manufacturing facilities in a number of countries. U.S. chemical manufacturing firms invest abroad to attain greater access to foreign markets; to take advantage of lower energy, feedstock, and labor costs; or to operate under industry-friendly environmental regulations. As shown in table 7-1, the value of U.S. chemical shipments increased from \$449.2 billion to \$516.2 billion during 1999-2004. According to industry analysts, the chemicals industry generates 2 percent of overall U.S. GDP.²

U.S. exports of chemicals also rose during this period, from \$80.1 billion to \$120.1 billion, mainly because of increasing world demand for higher valued, specialty chemicals such as pharmaceuticals, plastics, and pesticides. Despite this increase, the United States recorded its first trade deficit in chemicals in 2001, which continued through 2004. This deficit was due to rising energy and feedstock costs, declining domestic demand, growing inventories, and the high value of the U.S. dollar compared with other major currencies.

U.S. employment in the chemical industry declined during 1999-2004 from 978,000 to 886,000 workers, or by 9 percent. This decrease was due mainly to efforts by chemical firms to improve their bottom lines by lowering costs. An important aspect in lowering costs was the continued reduction of jobs at many chemical firms. In 2004, employment of chemical workers fell by 2.6 percent as compared with the previous year. In comparison, overall employment in the U.S. manufacturing sector declined by 1.2 percent.³ U.S. chemical manufacturing employment represented 0.9 percent of total U.S. private sector employment, and 6.2 percent of total manufacturing employment in 2004.⁴

The Global Market and Major Investors

For a number of decades, U.S. chemical producers have been increasing their commercial presence outside the United States. In 2004, U.S.-based firms such as Dow Chemical, Dupont, Exxon/Mobil, Huntsman, and Koch were among the world's largest chemical producers with three U.S.-based firms ranked in the top ten globally (table 7-2). The U.S. chemical industry is an integral part of the worldwide chemical industry and is affected by global events both on the demand and supply side, as more than 50 percent of the products it manufactures serve as inputs for other industries.

² Swift, "Guide to the Business of Chemistry 2005," 5.

³ "Facts & Figures for the Chemical Industry," 63.

⁴ U.S. Department of Commerce, BEA, www.bea.gov, table 6.4 D, 2005.

Table 7-1
U.S. chemical industry: Shipments, employment, wages, exports, imports, FDIUS, and USDIA, 1999-2004

Source	1999	2000	2001	2002	2003	2004
Shipments (<i>million dollars</i>)	449,159	438,410	460,451	460,451	477,380	516,215
Employment (<i>1,000 employees</i>)	978	986	959	928	909	886
Wages (<i>dollars per year</i>)	55,415	58,984	58,050	57,306	59,040	60,334
Exports (<i>million dollars</i>)	80,140	91,491	90,197	91,256	101,617	120,092
Imports (<i>million dollars</i>)	75,285	89,372	93,238	100,900	117,276	132,384
FDIUS (flows)(<i>million dollars</i>)	7,435	25,466	16,823	-6,629	7,775	7,485
USDIA (flows)(<i>million dollars</i>)	9,007	3,812	10,210	8,087	7,201	11,488
FDIUS (position)(<i>million dollars</i>)	(¹)	120,413	128,630	123,341	136,466	147,952
USDIA (position)(<i>million dollars</i>)	(¹)	75,807	79,186	82,543	96,283	107,908

¹ Data are not available.

Source: T. Kevin Swift, American Chemistry Council, *Guide to the Business of Chemistry*, 2004; U.S. Department of Commerce, *Survey of Current Business*, Sept. 2005, and USITC Dataweb.

Three U.S. firms ranked among the top ten global chemical producers.

During 1999-2004, the global chemical industry, including the U.S. industry, was affected by a number of events that led to significant changes in production and sales. In the first part of this period, a global economic downturn adversely affected demand for chemicals, which resulted in the industry's global growth declining by nearly 50 percent by December 2001. The chemical industry was also adversely affected by volatile energy and feedstock prices throughout the world, unrest in Iraq and Nigeria, and the appreciation of the U.S. dollar. During the latter part of the period, demand for chemicals increased despite higher energy and feedstock costs as firms replenished their depleted inventories. This shift in the business cycle led to a 9-percent increase in U.S. chemical industry shipments in 2004, to \$500 billion, as well as increases in both exports and imports. Moderating feedstock costs (i.e., natural gas) and the decline of the U.S. dollar also contributed to expanded sales by U.S.-based firms.⁵

⁵ Swift, "Year-End 2004 Situation & Outlook, 1-2.

Table 7-2
Top global chemical companies, by sales, 2004

Rank	Company	Country	2004 sales <i>Billion dollars</i>	Number of countries with operations
1	BASF	Germany	40.8	90
2	Dow Chemical	United States	40.5	51
3	Bayer	Germany	40.2	49
4	Exxon Mobil	United States	28.4	(¹)
5	DuPont	United States	26.7	(¹)
6	Total	France	26.7	20
7	Royal Dutch/Shell	Netherlands/United Kingdom	21.5	68
8	BP	United Kingdom	20.4	72
9	Sinopec	China	16.0	(²)
10	Sabic	Saudi Arabia	15.9	(²)
Next top 10 U.S. firms:				
17	Huntsman	United States	11.5	40
21	Koch Industries	United States	10.0	32
23	Equistar Chemicals	United States	9.3	(²)
24	CP Chem	United States	9.2	5
25	General Electric	United States	8.3	41
30	PPC Industries	United States	7.3	7
31	Rohm and Haas	United States	7.3	15
34	Air Products	United States	7.1	32
38	Praxair	United States	6.6	39
39	Eastman Chemical	United States	6.6	25

¹ Not available. However, firm is known to have international operations.

² Not available. Primarily a domestic operating company.

Source: "Billion Dollar Club," *Chemical Week*, Sept. 14, 2005, pp. 17-26; except "Foreign Operations" from company web sites, where available.

U.S. Direct Investment Abroad

Canada is the largest recipient of USDIA in chemicals.

During 1999-2004, the U.S. direct investment position abroad in chemicals increased from \$81.7 billion to \$107.9 billion, or by slightly less than 6 percent per year, on average (table 7-3). In contrast, total USDIA grew at an annual rate of 11 percent. The major recipients of such USDIA were Canada, the United Kingdom, the Netherlands, and Ireland. Canada, the largest recipient, has historically been a primary destination for U.S. investment, mainly because of the highly developed infrastructure connecting Canada and the United States (i.e., pipelines, highways, and ports) and the abundant supplies of raw materials, particularly natural gas and crude petroleum. In one particularly large transaction in July 2003, U.S.-based Dupont paid \$1.1 billion to acquire the 26 percent equity share in Dupont Canada that it did not already control. In smaller acquisitions

Table 7-3
USDIA: Direct investment in chemicals on a historical-cost basis, selected countries, 1999 and 2004

Country	1999	2004	Percent of total, 2004	Average annual growth, 1999-2004
	——— <i>Million dollars</i> ———			<i>Percent</i>
Canada	7,288	14,280	13.2	14.4
United Kingdom	14,863	12,755	11.8	-3.0
Netherlands	12,437	12,069	11.2	-0.6
Ireland	3,195	10,019	9.3	25.7
France	3,109	5,954	5.5	13.9
Belgium	4,951	5,273	4.9	1.3
Mexico	4,206	3,809	3.5	-2.0
Brazil	5,001	3,560	3.3	-6.6
Germany	2,944	3,337	3.1	2.5
Japan	3,783	2,858	2.6	-5.5
China	995	1,643	1.5	10.6
All countries	81,727	107,908		5.7

Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, Sept. 2005 and Sept. 2003.

of Canadian companies by U.S. chemicals firms, Bayer Crop Science acquired a 50 percent stake in Gustafson to become the sole owner, at a price of \$124 million, and United Industries Corporation acquired Nu-Gro Corporation for \$140 million in March 2004. In all, U.S. firms acquired 52 Canadian chemical companies during 1999-2004.⁶

The United Kingdom, another major recipient of USDIA in chemicals during this period, has a chemical industry characterized by highly skilled workers. Since most of the investment in the U.K. chemical industry is believed to be in the higher valued specialty chemicals area such as pesticides or polymers, the country's highly skilled workers are likely to be a major factor in the investment decisions of U.S.-based firms. In addition, direct investment in the United Kingdom is valuable as a way for U.S. firms to access the EU market. The cumulative stock of USDIA was highest in the pharmaceuticals sub-sector, which registered \$44.6 billion in 2004, or 41 percent of total USDIA in the chemicals industry (table 7-4).

**Pharmaceuticals
accounted for 41
percent of USDIA
stock in chemicals.**

The focus on pharmaceuticals was also apparent in new outflows of investment from the United States. During 1999-2004, the pharmaceuticals segment received U.S. capital outflows of \$25.1 billion, more than half of the \$49.8 billion that U.S. firms invested in the broader chemicals manufacturing industry. In April 2004, U.S.-based General Electric purchased British pharmaceuticals firm Amersham in a \$10.4 billion transaction, accounting for a large share of overall capital outflows.⁷ Ireland received U.S. outflows of \$3.2 billion in 2002, \$1.4 billion in 2003, and \$1.5 billion in 2004. In 2003, the Industrial

⁶ Zephyr Mergers and Acquisitions database.

⁷ Ibid.

Table 7-4
USDIA: Direct investment, by chemical sub-sectors, all countries, 1999 and 2004

Item	1999	2004	Percent of total, 2004	Average annual growth, 1999-2004
<i>—Million dollars—</i>				
Basic chemicals	13,588	17,018	15.8	4.6
Resins and synthetic rubber, fibers, and filaments	11,677	15,217	14.1	5.4
Pharmaceuticals and medicines	29,661	44,623	41.4	8.5
Soap, cleaning compounds, and toilet preparations	8,800	10,469	9.7	3.5
Other	18,001	20,580	19.1	2.7
Pesticides, fertilizers, and other agricultural chemicals	3,781	3,177	2.9	-3.4
Paints, coatings, and adhesives	2,734	4,013	3.7	8.0
Other chemical products and preparations	11,487	13,390	12.4	3.1
Chemicals, total	81,727	107,908		5.7

Source: U.S. Department of Commerce, BEA, *Survey of Current Business*, Sept. 2005.

Development Agency of Ireland identified six new pharmaceutical facilities in the country, including a \$1 billion expansion project by U.S.-based Wyeth Labs.⁸

In 2003, U.S.-based parent firms in the global chemical industry had more than 2,000 foreign affiliates, with assets of \$414.2 billion and sales of \$286.1 billion. The major chemical segments were pharmaceuticals and basic chemicals, with 435 and 431 affiliates, respectively. Foreign affiliates in Europe accounted for 59 percent of U.S. firms' global sales, followed by affiliates in the Asia-Pacific region, with 19 percent. By segment, pharmaceuticals comprised 38 percent of global sales by chemicals affiliates, followed by basic chemicals with 21 percent, soaps and cleaning compounds with 12 percent, and resins with 11 percent.

Foreign chemical industry affiliates of U.S.-based multinational companies (MNCs) employed 660,300 workers around the world in 2003. Almost half of these were in Europe, with the largest shares in France (59,300), the United Kingdom (56,600), and Germany (43,200). Ireland, which has received the largest share of new investment in recent years, employed 12,200 workers in U.S. firms' affiliates. U.S.-owned chemicals affiliates also employed 52,600 workers in Brazil and 48,600 in Mexico. In France, approximately one-half of employees of U.S.-owned chemical industry affiliates worked in the pharmaceuticals segment, which also employed the largest share of chemicals workers in the United Kingdom, Germany, and Mexico. In Brazil, the largest share of employees worked in the basic chemicals segment.

⁸ Van Arnum, "U.S. Faces Rising Pharmaceutical Trade Deficit," 14.

Foreign Direct Investment in the United States

Chemical firms based in Germany and Switzerland were the largest investors in the U.S. industry.

During 1999-2004, the foreign investment position in the U.S. chemical industry increased from \$96.6 billion to \$148.0 billion, or by 9 percent per year, compared with 10-percent growth in FDIUS stock overall (table 7-5). The major investing countries were Switzerland, the United Kingdom, the Netherlands, and Germany. The EU-25 countries together accounted for 67 percent of total foreign investment stock. During 2003 and 2004, the two most recent data years, German- and Swiss-owned firms were the largest investors in the U.S. chemical industry, with capital flows of \$4.5 billion and \$8.8 billion, respectively, in the two years combined. Most foreign firms that invest in the U.S. chemical industry are large MNCs, including BASF and Bayer (Germany), Ciba and Sandoz (Switzerland), Royal Dutch/Shell (the Netherlands), and BP (the United Kingdom). These firms tend to invest in the United States principally because it is the world's largest chemical market. Foreign firms generally establish a chemical or petroleum affiliate in the United States and, as a result, develop an intimate knowledge of the U.S. market and a staff that can quickly respond to the U.S. customers' requests.

In 2003, U.S. affiliates of foreign parents held \$253.2 billion in total assets in the U.S. chemical industry, of which 47 percent were accounted for by pharmaceutical firms. The pharmaceutical segment also accounted for more than 83 percent of the \$10 billion in U.S. research and development spending by foreign-owned U.S. affiliates during this period.

As of 2003, foreign-owned U.S. chemicals affiliates held \$115.8 billion in gross property, plant and equipment in the United States, of which 84 percent is owned by firms based in Europe. Three chemical industry segments accounted for the majority of U.S. affiliate operations in 2003: pharmaceuticals (31 percent), basic chemicals (29 percent), and resins (22 percent). Foreign-owned U.S. chemicals affiliates employed 331,800 U.S. workers in 2003, with the largest shares employed by Swiss, British, and German-owned firms. Pharmaceutical firms accounted for 51 percent of foreign firms' U.S.-based affiliate's employees. A total of 29,200 employees of foreign-owned U.S. chemicals affiliates were engaged in research and development (R&D) jobs.⁹ The extent of such R&D employment is significant, as R&D positions tend to be highly paid positions requiring skilled workers, and most MNCs perform the largest share of their R&D in their home countries.

Direct Investment and Cross-border Trade

U.S. imports of chemicals shipped by U.S.-owned foreign affiliates increased at an average annual rate of 7 percent during 1999-2003, to \$16.6 billion (table 7-6), which was faster than the growth rate of 6 percent for all intrafirm U.S. imports. Affiliates in Ireland were the largest exporters of chemicals to the United States during this period, accounting for 28 percent (\$4.6 billion) of the total in 2003. Canadian owned affiliates ranked second, with \$4.1 billion and Mexican-owned affiliates ranked third, with \$1.1 billion of such imports.

⁹ Includes majority-owned U.S. affiliates (MOUSAs) only. USDOC, BEA, FDIUS, Table No. 3.I.6.

Table 7-5
FDIUS: Direct investment in the chemical industry on a historical-cost basis, selected countries, 1999 and 2004

Country	1999	2004	Percent of total, 2004	Average annual growth, 1999-
				2004
				Percent
—Million dollars—				
Canada	2,326	5,066	3.4	16.8
France	19,455	18,482	12.5	-1.0
Germany	18,548	24,389	16.5	5.6
Netherlands	10,054	24,641	16.7	19.6
Switzerland	13,841	29,954	20.2	16.7
United Kingdom	17,864	25,416	17.2	7.3
Japan	4,944	6,072	4.1	4.2
All countries	96,614	147,952	100.0	8.9

¹ Data are not available.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, Sept. 2005 and Sept. 2003.

Table 7-6
USDIA: U.S. imports of chemicals shipped by foreign affiliates, by major country, 1999 and 2003

Country	1999	2003	Percent of total, 2003	Average annual growth, 1999-
				2003
				Percent
—Million dollars—				
Canada	3,444	4,058	24.4	4.2
France	393	736	4.4	17.0
Germany	311	455	2.7	10.0
United Kingdom	1,005	1,094	6.6	2.1
Mexico	1,006	1,072	6.5	1.6
Japan	185	121	0.7	-10.1
Ireland	3,830	4,591	27.6	4.6
All countries	12,743	16,610	100.0	6.8

¹ Data are not available.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, U.S. Direct Investment Abroad, table II.I.19, 1999-2003.

During 1999-2003, U.S. chemical exports to U.S.-owned, foreign affiliates increased at an average annual rate of 4 percent, to \$20.9 billion (table 7-7), compared with an average annual growth of 2 percent for all intrafirm exports. Canada and Mexico were the leading markets for these exports in 2003, with exports valued at \$5.3 billion and \$1.8 billion, respectively. In general, exports of chemicals to U.S.-owned affiliates in the NAFTA countries mainly consist of higher valued, intermediate and specialty chemicals. Exports to U.S.-owned affiliates in 2004 accounted for 17 percent of total U.S. exports of chemicals in 2004. This figure, however, likely underestimates the extent of intrafirm exports, as total U.S. chemical exports include plastics and rubber products, which are not included in affiliate data.

Table 7-7
USDIA: U.S. exports of chemicals shipped to foreign affiliates, by major country, 1999 and 2003

Country	1999	2003	Percent of total, 2003	Average annual growth, 1999-2003
	<i>— Million dollars —</i>			<i>Percent</i>
Canada	(1)	5,302	25.3	(1)
France	1,106	1,084	5.2	-0.5
United Kingdom	1,741	1,505	7.2	-3.6
Mexico	1,576	1,782	8.5	3.1
Japan	1,361	1,225	5.9	-2.1
Belgium	890	673	3.2	-6.7
Germany	513	481	2.3	-1.6
All countries	18,057	20,926	100.0	3.8

¹ Data are not available.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, U.S. Direct Investment Abroad, USDIA, table II.I.5, 1999 and 2003.

Canada and Mexico together accounted for 31 percent of chemical imports shipped by affiliates in 2003. Chemicals trade between the United States and its NAFTA partners is facilitated by the NAFTA free-trade provisions and by Canada's and Mexico's common borders with the United States. Further, access to an extensive infrastructure of pipelines, highways, and ports enables Canada and Mexico to efficiently move their products to the U.S. markets. These two countries have abundant natural gas and crude petroleum, the raw materials used to produce basic chemicals such as primary olefins (e.g., ethylene) and aromatics (e.g., benzene, toluene, and xylenes). As a result, chemical imports from U.S.-owned affiliates located in Canada and Mexico consist mainly of basic chemicals, which are then used to produce more complex and higher valued chemical products at plants in the United States.

CHAPTER 8

Computer Services

Summary of Key Findings

Incentives for FDI in computer services include improved market access abroad and lower labor costs.

U.S.-based firms provide the majority of FDI within the global computer services industry, and the United States is the single largest recipient of such investment. Computer services firms generally invest in foreign markets either to acquire new clients or to access resources that contribute to the production, delivery, and servicing of their products. Multinational computer services providers operate in foreign markets through subsidiaries, joint ventures, and branch offices, which provide immediate market access, local language skills, and knowledge of the local business culture and regulatory environment. Globally, USDIA and FDIUS in computer services face relatively few significant barriers. Government legislation and regulatory policies such as taxes and subsidies are generally not considered major hurdles. However, certain factors that affect international trade in computer services, such as intellectual property rights and data protection issues, are often actual or potential constraints on FDI as well.

Introduction

For this study, computer services include computer-systems design and related information technology (IT) services such as systems integration, consulting, and custom programming.¹ Most of the world's major computer services markets are highly fragmented. They generally include numerous small and medium sized firms that are often very specialized, and a few very large firms that account for a large share of a country's domestic and international business. Large U.S.-based firms are present in most major international markets, where they often dominate the local computer services market.

The Computer Services Industry in the U.S. Economy

The total size of the U.S. computer services market increased in every year from 1995 to 2004, achieving a 10.5-percent average annual rate of growth during the period.² This growth was achieved despite the global high-tech market crash in 2000-01, when the information technology (IT) sector not only slowed down in terms of job growth, but

¹ Computer services encompasses a wide variety of activities, and may be defined differently by different firms. Consequently, the portfolio of services provided by the firms discussed in this chapter may not exactly coincide with the services included as part of the industry's definition.

² U.S. BEA, *Gross Domestic Product by Industry Accounts*.

experienced a decline in wages.³ Both the gross product of the U.S. computer services industry and the number of employees within the industry accounted for less than two percent of total U.S. gross product and employment, respectively, in 2004 (table 8-1).

U.S. cross-border exports of computer services have increased steadily since 1997, reaching \$8.5 billion in 2004. U.S. cross-border imports of computer services have increased at a faster pace, and their share of total U.S. services imports more than doubled during 1997-2004.

Global Market & Major Investors

Five of the six leading IT services firms are U.S. companies.

The global computer services market includes a large number of participants and is highly competitive. Computer services firms face competition from other firms within the industry, as well as from large accounting and other professional services firms such as law firms and management consultants, telecommunications companies, and packaged software vendors and resellers, among others. Large multinational computer services firms also experience competition from numerous smaller, niche-oriented, and regional service providers. In addition to intense industry competition, several other factors may have an adverse effect on revenues and profit margins. For example, while the IT outsourcing market continues to grow, many industry segments are increasingly considered “commodity” services. Such services are no longer considered to have competitive differentiation, resulting in standard, interchangeable products that are purchased primarily based on cost. This trend is decreasing profit margins on many core offerings.⁴ Further, the competition from companies based in India is increasing due to the abundance of highly skilled workers in that country, policy changes that have created a regulatory environment that increasingly supports business, and lower labor costs compared to the United States and much of the European Union.

Five of the six leading IT services firms, by revenue, are U.S. companies (table 8-2).⁵ These firms are also the most significant sources of FDI in the industry, although revenue levels do not reflect their level of international investment activity. For example, Fujitsu, the world’s third-largest IT services provider, derives most of its business from the Japanese market, and thus is not a major competitor in the United States or other international markets.⁶

³ In the United States, the average annual number of computer-related jobs rose sharply in absolute and relative terms throughout the end of the last decade. However, in 2002, the number of computer jobs contracted sharply, then began to recover in 2003. By the end of 2004, employment growth in computer jobs exceeded growth in all other occupations. Industry wages also recovered. For example, wages of computer systems analysts recorded stronger increases than those for all occupations, on average, between September 1997 and July 2003. World Trade Organization, *World Trade Report 2005*.

⁴ From the supply side, products are often standardized so as to reach a greater number of customers, and from the demand side, many clients often require virtually identical products. However, this leads to commodization and a marketplace in which it is difficult to gain a competitive advantage.

⁵ IBM Global Services remained the world’s leading IT services company in 2005; worldwide revenues from services increased 2 percent in 2005. IBM implemented a new management system in Europe in 2005 that nearly doubled the number of executives that were working in-country, as opposed to out of offices in the United States. IBM is expected to replicate this strategy in the Asia-Pacific region, and Central and South America in coming years. Further, IBM tripled the number of employees working in or serving emerging markets such as China, India, Brazil and Russia. IBM, *IBM Annual Report 2005*.

⁶ Fujitsu, *Corporate Profile*.

Table 8-1
Computer services in the U.S. economy, 2004

	Total	Share of total U.S.
		<i>Percent</i>
Gross product (<i>billion dollars</i>)	133.1	1.3
Employment (<i>millions</i>)	1.6	¹ 1.4
U.S. exports (<i>billion dollars</i>)	8.5	² 2.6
U.S. imports (<i>billion dollars</i>)	5.8	2.3
U.S. direct investment abroad (<i>billion dollars</i>)	33.2	1.6
Foreign direct investment in the U.S. (<i>billion dollars</i>)	13.8	0.9

¹ As a percentage of total private employment.

² As a percentage of total cross-border trade of private services.

Source: USDOC, BEA, Gross Domestic Product by Industry Accounts, Gross Domestic Product (GDP) by Industry, Summary data for trade in private services by type, U.S. Direct Investment Abroad: Balance of Payments and Direct Investment Position Data, and Foreign Direct Investment in the U.S.: Balance of Payments and Direct Investment Position Data.

Table 8-2
Computer services: Largest companies in the global market, 2005

Company	Home country	Total revenue	Total employment	Host countries of affiliates
IBM Global Services	USA	\$47.4 billion	¹ 198,000	worldwide
Electronic Data Systems	USA	\$19.8 billion	117,000	worldwide
Fujitsu Limited	Japan	\$19 billion (services & software)	² 151,000	worldwide
Computer Sciences Corporation	USA	\$14.6 billion	80,000	worldwide
Hewlett Packard Services	USA	\$15.6 billion	² 150,000	worldwide
Accenture Inc.	USA	\$15.6 billion	126,000	worldwide

¹ Revenue from services activities only.

² Revenue from all activities.

Source: Company websites and annual reports.

The total market for IT services in the EU-15 was valued at \$146 billion in 2004, comprising implementation services (\$60 billion), support services (\$39 billion), operations management, (\$31 billion) and consulting (\$13 billion). The United Kingdom was the largest EU market for IT services in 2004, followed by Germany, France, Italy, the Netherlands, Sweden, Spain, and Belgium. The combined IT services market in the ten new EU members in Central and Eastern Europe was valued at \$3.7 billion in 2004.⁷

IT outsourcing is one of the fastest growing market segments within the global computer services industry, particularly in Europe.⁸ In 2004, the EU, led by the United Kingdom and Germany, surpassed the United States as the world's leading market for new outsourcing contracts. Europe accounted for almost half of the total value of major outsourcing contracts (those worth over \$53 million) awarded worldwide in 2004, surpassing the United States (44 percent) and the Asia/Pacific region (7 percent).⁹ The industry's largest service providers (IBM, CSC, EDS, Accenture, Affiliated Computer Services (ACS), and HP -- all U.S. firms) maintained their dominant position in the European outsourcing market in 2004. However, smaller European-based companies such as Capgemini, Siemens, Xchanging, Atos Origin, and T-systems were some of the fastest growing firms in Europe during the year. This was accomplished without diminishing the market leaders' positions, as the overall market expanded.

Cross-border mergers and acquisitions (M&A) are the most common form of international investment in the computer services industry, as firms seek to expedite access to local markets. Computer services firms generally invest abroad in order to increase sales or to lower the costs associated with supplying their services. In seeking the greatest return on their investment, such firms invest in markets that are believed to have high demand for their services, as well as the ability to support high profit margins. Large multinational computer services firms tend to derive the bulk of their sales from wealthier, more mature markets. Although such firms often explore unproven markets, major investments are generally preceded by associations with local firms.

Supply issues, such as access to competitively priced labor, are another driver of foreign investment within the computer services industry. Increasingly, investment strategies focusing on supply issues involve outsourcing or offshoring. The objective is not to recruit clients, but to access skills and technology that are superior in quality and/or lower in cost than in one's home market. To minimize such costs, computer services suppliers invest in low-cost markets such as India, the Philippines, and China. Generally, the services produced under such arrangements are provided to clients outside of the country that is supplying the services.

⁷ Swiss Import Promotion Programme (SIPPO) and the Centre for the Promotion of Imports from Developing Countries (CBI), 7.

⁸ Outsourcing is a generalized term that covers many different applications in many different industries. IT outsourcing commonly refers to the practice of contracting out internal functions, ranging from low-skill services such as data entry to more complex functions such as payroll, invoicing, or the management of a client's telecommunication and computer networks.

⁹ *BPO Insight*, "Europe Takes Centre Stage."

U.S. Direct Investment Abroad

USDIA in the computer services industry has recovered rapidly from the bursting of the IT bubble in 2001.

U.S.-based firms are the leading international investors within the global computer services industry. Leading targets for USDIA include the United Kingdom, Germany, Canada, and Japan. During 1999-2004, the U.S. direct investment position (historical-cost basis) in computer services increased from \$15 billion to \$22 billion,¹⁰ reflecting average annual growth of 8 percent. U.S. outbound investment stock decreased slightly in 2002, following the contraction of the information technology sector in 2001 (figure 8-1), but recovered quickly. Investment in the computer services industry abroad as a percentage of total USDIA stock remained fairly consistent during the period, ranging between 1 and 2 percent.

The number of foreign computer services firms¹¹ acquired by U.S. firms rose rapidly during 1999 and 2000, then decreased during the next two years, reflecting the growth and subsequent downturn in the global market for IT services. In 2003, the number of acquisitions rebounded sharply, moving from a 27 percent decrease in 2002 to a 47 percent increase in 2003 (figure 8-2).¹² U.S. firms most often acquired computer services companies in the United Kingdom, followed by Germany, France, Canada, and Israel.¹³ Of particular significance was IBM's acquisition of PwC Consulting UK, valued at \$1.1 billion and completed in October 2002.¹⁴ IBM's acquisition of these UK operations was part of the firm's overall acquisition of PwC Consulting, the global management consulting and technology services unit of PricewaterhouseCoopers. The sale created IBM Business Consulting Services (part of IBM Global Services), which became the world's largest consulting services organization, with operations in more than 160 countries.¹⁵

Similar factors drove U.S. outbound and inbound investment in the computer services industry during 1995-2004. The late 1990s were a period of worldwide economic expansion and global computer services markets were boosted by rapidly rising IT and telecommunication stock prices, which encouraged additional investment in both sectors. The high-tech stock market crash that began in 2000 ushered in a broad economic slowdown that lasted more than two years. By 2003, the strengthening U.S. economy, as measured by GDP, contributed to a recovery in the computer services industry.

The majority of USDIA in the computer services industry is located in Europe. The highly competitive environment within the European IT sector relies on U.S.-based companies primarily due to their technical sophistication, broad range of products and services, strong marketing, long-term presence, and reliable image. Many U.S. companies are already established in related European markets, such as hardware or software, and can take advantage of their strong local presence, name recognition, and existing sales force to enter

¹⁰ USDOC, BEA, *U.S. Direct Investment Abroad*.

¹¹ Includes all firms classified within NAICS industry code 5415, computer systems design and related services.

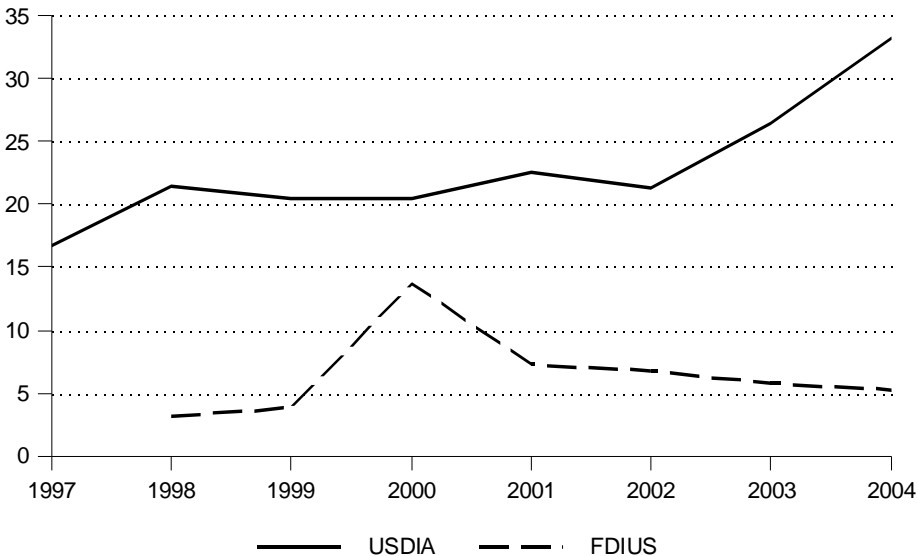
¹² Bureau van Dijk, Zephyr Mergers and Acquisitions database.

¹³ Bureau van Dijk, Zephyr Mergers and Acquisitions database.

¹⁴ Bureau van Dijk, Zephyr Mergers and Acquisitions database, Dec. 2005.

¹⁵ The deal was valued at approximately \$3.5 billion in cash and stock. IBM, "IBM, PricewaterhouseCoopers Complete Sale of PwC Consulting."

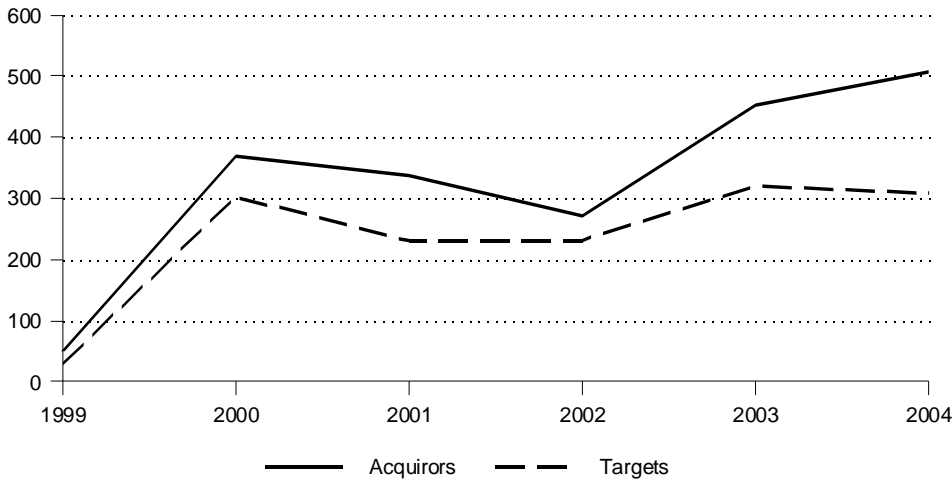
Figure 8-1
USDIA and FDIUS:¹ Direct investment position, computer services, 1997-2004



¹ 1997 data is not available for FDIUS.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*,

Figure 8-2
Cross-border computer services mergers and acquisitions by U.S. firms as acquirers and targets, 1999-2004



Source: Bureau van Dijk, Zephyr Mergers and Acquisitions database.

the computer services sector. While competition from local companies exists, U.S.-based firms are often perceived as having superior IT experience. However, U.S.-based computer services companies are likely to encounter growing competition in price, service, and technology from European firms, particularly those from the United Kingdom, Germany, France and the Netherlands, as such firms benefit from the deepening of the EU's common market. India's computer services industry also has attracted an increasing amount of USDIA. For example, EDS recently announced its offer to acquire a majority stake in a leading applications and business process outsourcing (BPO) services company based in Bangalore, India. The offer is part of the firm's overall strategy to enhance their presence and capabilities in India.¹⁶

Foreign Direct Investment in the United States

As of 2002, the United States was the world's largest consumer of computer services, exceeding the combined size of Western Europe and Japan, the next largest markets.¹⁷ The U.S. industry is also the world's largest provider of computer services. Consequently, while abundant opportunity exists, the U.S. computer services market is intensely competitive, which often limits FDIUS. Since the IT market crash, FDIUS in the computer services industry has not recovered as quickly as USDIA. Instead, such investment has decreased steadily since 2001 (figure 8-1). Foreign direct investment in the U.S. computer services industry has also decreased as a percentage of total FDIUS, dropping from a high of 2.4 percent in 2000 to 0.9 percent in 2004.

Strong competition in the U.S. computer services market has contributed to the slow recovery of FDIUS since 2001.

As was the case for outbound FDI, acquisitions of U.S. computer services firms by foreign investors rose rapidly from 1999 through 2001, then fluctuated through 2004 (figure 8-2).¹⁸ During 2000-2004, overall FDIUS stock in the computer services industry decreased from \$29.5 billion to \$13.8 billion, registering an average annual decline of 17.2 percent.¹⁹ During 1999-2004, firms based in the United Kingdom accounted for the largest share of such acquisitions, followed by Canada, France, Switzerland, the Netherlands, Spain, Japan, Australia, Germany, and Bermuda.²⁰ Major European-based firms with investments in the U.S. computer services market include Bull Group SA (France),²¹ Capgemini SA (France),²² and Siemens AG (Germany).

¹⁶ EDS, "EDS To Announce Conditional Open Offer To Acquire Majority Stake In Indian Outsourcer."

¹⁷ Gartner, Inc, *Worldwide IT Services Forecast by Region (2002)*.

¹⁸ Bureau van Dijk, *Zephyr Mergers and Acquisitions Database*.

¹⁹ USDOC, BEA, *Foreign Direct Investment in the United States*.

²⁰ Bureau van Dijk, *Zephyr Mergers and Acquisitions database*.

²¹ Bull has major business operations, as well as research and development centers in the United States. Bull corporate website.

²² In 2000, Capgemini acquired Ernst & Young Consulting in a \$11.5 billion takeover, tripling the size of the firm's operations in North America and strengthening its position in Europe. Capgemini corporate website.

CHAPTER 9

Effects of Foreign Direct Investment (FDI) on Host-Country Economies

Summary of Key Findings

U.S. direct investment abroad (USDIA) contributes to economic growth in recipient countries both by adding to the capital stock and by providing access to advanced technology. The United States is the main supplier of FDI in many countries, and FDI in turn is an important component in overall capital formation in many countries. Manufacturing wages paid by foreign affiliates of U.S.-owned firms operating abroad are generally higher than wages paid by local firms, with the difference being largest in low-wage countries.

Introduction

This section focuses on the impact of FDI in general, and USDIA in particular, on the economies of host countries. It considers, in turn, the effects of FDI on capital formation, on the level of manufacturing wages, and on overall economic growth. While the focus is on developing economies which are hosts to USDIA, some data is presented for developed economies as well, for comparison purposes.

Capital formation, wages, and economic growth are interlinked. Investment in plant, equipment, and inventories can be financed either by domestic savings or by foreign investment. FDI is one form of foreign capital, along with portfolio investment and borrowing.¹ The level of wages is determined in part by the productivity of labor, which increases both with improved technology and with growth in capital per worker. Since FDI brings with it both capital and technology to the host economy, it may be associated with higher wages in host countries. Similarly, increases in the rate of investment and in the level of technology have been associated with more rapid rates of economic growth. Since FDI brings with it both capital investment and technology, one might also expect FDI to be more strongly associated with economic growth than domestically financed investment.

This section makes use of both of the available literature and data from a variety of sources including the Department of Commerce's Bureau of Economic Analysis (BEA), the World Bank, and the United Nations Industrial Development Organization (UNIDO), as analyzed by USITC staff. There are significant challenges involved in comparing FDI data from different sources as well as in comparing FDI data with other economic data. These challenges are addressed in the footnotes below.

¹ Overseas development assistance (ODA) and remittances may also, in part, be sources of capital formation. These are somewhat different from the capital flows mentioned in the text, in that ODA and remittances are usually considered to be part of the current account in the balance of payments, while FDI, portfolio investment, and international loans are considered to be part of the capital (or financial) account.

Effects on Capital Formation

Table 9-1 looks at USDIA outflows as a share of total FDI and overall capital formation, for a selected group of countries.² Data are presented for all countries for which data on USDIA outflows, total FDI, and gross capital formation were available for the years 2000-2003 as well as for Canada, for which gross capital formation data was missing. Since this excludes some significant economies³, the totals presented for regions should be considered as indicative rather than definitive. Nonetheless, the available sample of 90 countries plus Canada represents a significant portion of the global economy. Three indicators of the importance of FDI are calculated: (1) The share of U.S. outbound FDI in total FDI inflows; (2) the share of USDIA in total capital formation; and (3) the share of total FDI inflows in total capital formation.⁴

For the full sample, USDIA capital outflows account for 18 percent of FDI inflows (16 percent excluding Canada). For the sample excluding Canada, 21 percent of gross capital formation is financed through inbound FDI, and thus 3.3 percent is financed through inflows of FDI from the United States.⁵ While domestic savings is the most important component of domestic investment worldwide, in particular countries and regions USDIA is a significant source of overall FDI and a non-trivial source of overall capital formation.

² Cumulative data are presented for the four-year period 2000-2003, in nominal dollars. This period is chosen in order to provide coverage of a broader range of countries. Extending the comparison to include data from 1999 or earlier would restrict the sample to a subset of the approximately 50 countries appearing in most public BEA tabulations on FDI. Data on USDIA are taken from U.S. Department of Commerce, *Direct Investment: U.S. Direct Investment Abroad*, while data on total net FDI from the world and gross capital formation (i.e. investment) are taken from World Bank, *World Development Indicators*.

³ E.g. France, Indonesia, Ireland, Russia, Taiwan, and the United Arab Emirates.

⁴ These figures are related to each other in the following manner:

$$\frac{\text{U.S. outbound FDI in country x}}{\text{country x}} * \frac{\text{Total FDI inflows in country x}}{\text{country x}} = \frac{\text{U.S. outbound FDI in country x}}{\text{Total FDI inflows in country x}}$$

$$\frac{\text{U.S. outbound FDI in country x}}{\text{Total FDI inflows in country x}} * \frac{\text{Gross capital formation in country x}}{\text{country x}} = \frac{\text{U.S. outbound FDI in country x}}{\text{Gross capital formation in country x}}$$

or, (1)*(3) = 2.

⁵ The totals above include intra-EU FDI. The relative importance of USDIA in developing economies compared to FDI from other developed countries or region varies considerably by geography. USITC staff calculations based on OECD data, covering FDI originating in OECD countries, indicate that for the period 1999-2001, the primary sources for developing-country FDI were as follows:

Latin America and Caribbean:	55 percent EU, 31 percent United States, 14 percent other OECD
Africa:	77 percent EU, 17 percent United States, 6 percent other OECD
North Africa and Middle East:	64 percent United States, 30 percent EU, 6 percent other OECD
Developing Asia:	46 percent United States, 30 percent EU, 18 percent Japan, 6 percent other OECD.

Comparisons for years after 2001 are made more difficult by changes in the reporting of FDI for Luxembourg, which accounted for approximately 27 percent of FDI outflows from the European Union during 2002-04 (USITC staff calculation based on UNCTAD data). Through 2001, FDI data for the Belgium-Luxembourg Economic Union (BLEU) were reported by the Belgium National Bank. The dissolution of BLEU caused Belgium and Luxembourg to report their FDI data separately, using methodologies which are not comparable with the earlier period. See also footnote 6.

Table 9-1
USDIA: Relative importance of capital outflows, 2000-2003

	USDIA capital outflows	Total net FDI from world	U.S. share	Gross capital formation	Share of USDIA in gross capital formation	Share of total FDI inflows in capital formation
	<i>Millions of dollars</i>		<i>Percent</i>	<i>Millions of dollars</i>	<i>Percent</i>	
All selected countries	391,216	2,196,792	17.8	(¹)	(¹)	(¹)
All selected countries, except Canada	327,449	2,075,905	15.8	9,840,147	3.3	21.1
Canada	63,767	120,886	52.7	(¹)	(¹)	(¹)
Europe and former Soviet Union, selected countries	227,919	1,369,189	16.6	3,405,788	6.7	40.2
Austria	1,393	22,024	6.3	104,312	1.3	21.1
Czech Republic	597	21,639	2.8	75,048	0.8	28.8
Denmark	2,793	50,915	5.5	77,481	3.6	65.7
Finland	590	24,458	2.4	55,336	1.1	44.2
Germany	20,628	312,363	6.6	786,968	2.6	39.7
Greece	386	3,438	11.2	77,056	0.5	4.5
Italy	13,688	59,287	23.1	524,209	2.6	11.3
Luxembourg	40,967	213,273	19.2	10,178	402.5(²)	2095.5
Netherlands	41,983	159,174	26.4	85,807	48.9	185.5
Norway	1,646	10,472	15.7	75,958	2.2	13.8
Poland	744	23,308	3.2	122,913	0.6	19.0
Portugal	1,162	21,246	5.5	30,870	3.8	68.8
Spain	8,446	126,912	6.7	384,445	2.2	33.0
Sweden	12,839	50,186	25.6	88,748	14.5	56.5
Turkey	625	6,848	9.1	171,596	0.4	4.0
United Kingdom	75,455	222,227	34.0	550,542	13.7	40.4
Armenia	0	406	0.0	2,065	0.0	19.6
Azerbaijan	1,068	5,034	21.2	10,195	10.5	49.4
Belarus	-1	634	-0.2	10,680	0.0	5.9
Bosnia and Herzegovina	-2	914	-0.2	4,171	0.0	21.9
Bulgaria	30	4,139	0.7	12,858	0.2	32.2
Croatia	-47	5,770	-0.8	24,694	-0.2	23.4
Estonia	-11	2,105	-0.5	8,366	-0.1	25.2
Kazakhstan	1,701	8,789	19.4	24,975	6.8	35.2
Kyrgyzstan	-4	53	-7.6	591	0.0	8.9
Macedonia	0	788	0.0	2,969	0.0	26.6
Moldova	0	404	0.0	1,320	0.0	30.6
Romania	173	5,182	3.3	40,465	0.4	12.8
Slovakia	888	8,204	10.8	26,251	3.4	31.3
Slovenia	-16	2,662	-0.6	20,909	-0.1	12.7
Turkmenistan	71	481	14.8	2,812	2.5	17.1
Ukraine	75	3,504	2.1	31,256	0.2	11.2

See footnotes at end of table.

Table 9-1—Continued
USDIA: Relative importance of capital outflows, 2000-2003

	USDIA capital outflows	Total net FDI from world	U.S. share	Gross capital formation	Share of USDIA in gross capital formation	Share of total FDI inflows in capital formation
	<i>Millions of dollars</i>		<i>Percent</i>	<i>Millions of dollars</i>	<i>Percent</i>	
South America, selected countries	4,926	133,025	3.7	510,815	1.0	26.0
Argentina	-1,410	14,698	-9.6	58,696	-2.4	25.0
Brazil	3,904	81,970	4.8	295,332	1.3	27.8
Chile	1,662	13,930	11.9	54,306	3.1	25.7
Colombia	550	8,780	6.3	38,669	1.4	22.7
Ecuador	238	4,880	4.9	21,046	1.1	23.2
Peru	-56	5,487	-1.0	34,754	-0.2	15.8
Bolivia	22	2,286	1.0	3,193	0.7	71.6
Uruguay	16	994	1.6	4,817	0.3	20.6
Central America and Caribbean, selected countries	35,663	82,074	43.5	469,180	7.6	17.5
Costa Rica	592	2,101	28.2	11,089	5.3	18.9
Honduras	4	845	0.5	3,826	0.1	22.1
Mexico	30,751	68,999	44.6	413,125	7.4	16.7
Panama	2,927	1,974	148.3 ⁽²⁾	10,157	28.8	19.4
Belize	28	143	19.6	432	6.5	33.0
El Salvador	28	1,011	2.8	7,405	0.4	13.7
Nicaragua	154	822	18.7	4,541	3.4	18.1
Dominican Republic	290	3,259	8.9	12,591	2.3	25.9
Trinidad and Tobago	889	2,921	30.4	6,015	14.8	48.6
Africa, selected countries	4,958	42,066	11.8	317,150	1.6	13.3
Egypt	1,032	2,629	39.3	42,103	2.5	6.2
Nigeria	712	4,516	15.8	40,411	1.8	11.2
South Africa	618	9,794	6.3	83,811	0.7	11.7
Algeria	2,212	3,333	66.4	61,315	3.6	5.4
Angola	122	6,111	2.0	5,534	2.2	110.4
Benin	0	200	0.0	1,971	0.0	10.2
Botswana	7	569	1.2	5,958	0.1	9.6
Central African Republic	0	16	0.0	319	0.0	5.0
Ghana	42	451	9.3	5,313	0.8	8.5
Guinea	0	121	0.0	1,150	0.0	10.5
Lesotho	0	358	0.0	1,339	0.0	26.7
Madagascar	0	197	0.0	2,670	0.0	7.4
Mauritania	0	464	0.0	165	0.0	280.4
Morocco	122	5,991	2.0	30,553	0.4	19.6
Mozambique	13	1,079	1.2	3,293	0.4	32.8
Seychelles	20	203	9.8	343	5.8	59.3
Sierra Leone	8	54	14.9	447	1.8	12.0
Sudan	1	3,029	0.0	9,945	0.0	30.5

See footnotes at end of table.

Table 9-1—Continued
USDIA: Relative importance of capital outflows, 2000-2003

	USDIA capital outflows	Total net FDI from world	U.S. share	Gross capital formation	Share of USDIA in gross capital formation	Share of total FDI inflows in capital formation
	<i>Millions of dollars</i>	<i>Millions of dollars</i>	<i>Percent</i>	<i>Millions of dollars</i>	<i>Percent</i>	
Swaziland	11	229	4.8	1,017	1.1	22.5
Togo	2	179	1.1	977	0.2	18.3
Tunisia	36	2,545	1.4	18,517	0.2	13.7
Middle East, selected countries	3,449	16,833	20.5	246,304	1.4	6.8
Israel	2,974	14,361	20.7	58,968	5.0	24.4
Bahrain	87	1,178	7.4	3,988	2.2	29.5
Iran	3	490	0.6	159,898	0.0	0.3
Lebanon	62	358	17.3	11,751	0.5	3.0
Oman	166	260	63.7	5,992	2.8	4.3
Yemen	157	187	84.1	5,707	2.8	3.3
Asia and Pacific, selected countries	50,534	432,717	11.7	4,890,911	1.0	8.8
China	6,036	185,453	3.3	1,880,712	0.3	9.9
Hong Kong	10,703	109,007	9.8	108,666	9.8	100.3
India	1,595	14,233	11.2	253,621	0.6	5.6
Japan	11,382	29,744	38.3	1,980,780	0.6	1.5
Korea, Republic of	6,255	18,425	33.9	336,885	1.9	5.5
Malaysia	1,698	10,018	16.9	69,092	2.5	14.5
Philippines	293	4,445	6.6	41,398	0.7	10.7
Singapore	9,658	49,306	19.6	53,382	18.1	92.4
Thailand	2,819	10,161	27.7	110,355	2.6	9.2
Bangladesh	76	514	14.8	36,488	0.2	1.4
Cambodia	1	530	0.2	2,872	0.0	18.4
Laos	0	102	0.0	1,270	0.0	8.1
Nepal	0	9	0.0	2,850	0.0	0.3
Sri Lanka	18	770	2.3	12,540	0.1	6.1

¹ Not available.

² Luxembourg's FDI data includes transactions made by special-purpose entities (SPEs) such as holding companies and similar financial vehicles, although not investment by and from SPEs. The very high ratios reported for Luxembourg are probably due to the fact that most of these transactions represent FDI which ultimately originates outside Luxembourg and is destined for a location outside Luxembourg, thus not becoming part of Luxembourg's capital stock proper. The figure of 148.3 percent for the share of FDI in Panama's gross capital formation might arise as a result of FDI data being gathered independently from the national income accounts.

Sources: BEA, World Bank, and USITC staff calculations.

USDIA accounts for about 50 percent of total FDI inflows to Canada and Mexico.

In the NAFTA partners, USDIA accounts for 53 percent and 45 percent of total FDI inflows in Canada and Mexico respectively. In Mexico, USDIA accounts for 7 percent of total capital formation. The share of USDIA in total FDI is above average in most of Central America and the Caribbean, in certain European countries, and in some oil exporting countries. Within Europe, the share of USDIA in total FDI inflows ranges from 20-35 percent in Italy, the Netherlands, Sweden, and the United Kingdom. For three oil-exporting countries, Algeria, Oman, and Yemen, the share of USDIA in total FDI is in the range of 60-85 percent. Within Asia, the share of USDIA in total FDI is relatively high for Korea, Japan, and Thailand, in the 25-40 percent range.

Countries vary widely in their dependence on FDI in total capital formation. A high dependence on FDI may be associated either with a low rate of national savings, national policies which encourage FDI, or both. Regionally, overall dependence on FDI for capital formation is about twice as high in Latin America than in Africa, Asia, or the Middle East, due largely to differences in national savings rates. The high measured share of FDI in Europe's capital formation is probably due to the presence of intra-European FDI.⁶

USDIA is more than 10 percent of total capital formation in 8 countries.

A large role for USDIA in total capital formation depends on the coincidence of high overall FDI dependence and, within that dependence, a high degree of orientation towards the United States. USDIA outflows account for 10 to 20 percent of total capital formation in Sweden, the United Kingdom, Azerbaijan, Trinidad and Tobago, and Singapore, and even higher shares in Luxembourg, the Netherlands, and Panama. In the case of these very open economies, the high apparent degree of penetration reflects both statistical anomalies and economic realities.⁷ The United Kingdom, Azerbaijan, and Trinidad and Tobago are also significant energy producers.

It may not necessarily be the case that FDI inflows make a dollar-for-dollar contribution to national capital formation. One can imagine situations in which FDI either “crowds out” domestic investment, discouraging projects funded with domestic savings that would otherwise be undertaken, so that \$1 of FDI means less than \$1 of total gross capital formation, or “crowds in” domestic investment, perhaps stimulating related projects so that \$1 of FDI leads to more than \$1 of total gross capital formation. One study found that, during the 1970s and 1980s, “crowding in” was most likely, with \$1 of FDI being associated with perhaps \$1.50 to \$2.30 of total investment.⁸

⁶ The cumulative value of intra-EU FDI during 1999-2001 was approximately \$1.15 trillion. During this period approximately 56 percent of FDI for which an EU country was the source was invested in the EU, and approximately 77 percent of FDI for which an EU country was the destination originated in an EU country (USITC staff calculation based on OECD data. These data exclude FDI originating in the six non-OECD members of the EU - Cyprus, Estonia, Malta, Latvia, Lithuania, and Slovenia.)

⁷ Luxembourg's FDI data includes transactions made by special-purpose entities (SPEs) such as holding companies and similar financial vehicles, although not investment by and from SPEs. The very high ratios reported for Luxembourg in Table 9-1 are probably due to the fact that most of these transactions represent FDI which ultimately originates outside Luxembourg and is destined for a location outside Luxembourg, thus not becoming part of Luxembourg's capital stock proper. The figure of 148.3 percent for the share of FDI in Panama's gross capital formation might arise as a result of FDI data being gathered independently from the national income accounts.

⁸ Borenszentein, et al., “How Does Foreign Direct Investment Affect Economic Growth?”, 115-135.

Wages in U.S. Manufacturing Affiliates Abroad⁹

Table 9-2 contains a comparison of the levels of wages in U.S. manufacturing affiliates abroad, taken from the BEA data, with overall wages in manufacturing in different countries taken from the UNIDO data. Wages per employee are calculated by dividing total payments for wages and salaries by the number of employees. The most recent data for wages in U.S. majority-owned affiliates are for the 1999 benchmark survey. The annual surveys for 2000-2002 contain data on employees and total compensation, but not wages. In order to obtain more recent estimates and expand the sample of countries, wages in U.S. majority-owned affiliates were estimated by assuming the share of wages in total compensation in 2000-2002 was the same as in 1999.

In most countries, wages are higher in U.S.-owned firms than in local firms.

In 34 of the 38 countries for which data are available, wages and salaries per employee¹⁰ in U.S. majority-owned affiliates in manufacturing exceed local wages. Table 9-2 presents the ratio of wages in U.S. majority-owned firms to wages in all firms.¹¹ The difference in wages is in fact substantial, exceeding 50 percent in 22 countries, 100 percent in 12 countries, and 200 percent in four countries (Colombia, India, Indonesia, and Russia). In general, the premium for working in U.S. multinationals is greater in instances in which the general wages in the home country are lower, though there are exceptions. This pattern, which is illustrated in Figure 9-1, is strongly consistent with the observation that U.S. multinationals are likely to possess superior technology and be more capital-intensive than comparable domestic firms. Both capital intensity and technology intensity are associated with higher wages.

Even in advanced economies, the technological edge associated with direct investment may lead to higher wages in affiliates as compared to domestically-owned firms. In the U.S. labor market, affiliates of foreign-owned firms with operations in the United States typically pay higher wages than domestic firms. Analysis by USITC staff shows that in 1997, total compensation paid in all U.S. firms was 80.9 percent of the level paid by foreign affiliates in the United States. Stated differently, wages paid to Americans by foreign multinationals were 34 percent higher than wages economywide. High wages in foreign affiliates, in turn, were positively correlated with capital intensity and productivity in those affiliates.¹² By comparison, U.S. capital inflows associated with foreign direct investment were approximately 11 percent of U.S. gross private domestic investment during 1999-2003.¹³

⁹ Due to data limitations, this chapter addresses wages in foreign affiliates; chapters 2 and 3 include discussions of employee compensation. Employee compensation is equal to wages plus benefits paid to employees.

¹⁰ This measure does not include benefits.

¹¹ The ratio presented, which compares wages in U.S. majority-owned affiliates to wages in all firms, understates to some extent the difference in wages between U.S. affiliates and other firms, since the affiliates are included in both totals.

¹² USITC, *Examination of U.S. Inbound and Outbound Direct Investment*, 4-26 to 4-31. The above calculation includes all sectors of the economy. Results for sub-sectors imply that compensation in foreign multinationals was 20.9 percent higher in services, 5.9 percent higher in manufacturing, 60 percent higher in agriculture, 171.7 percent higher in mining, and 6.7 percent lower in petroleum than overall U.S. compensation. The comparisons for FDI in the United States are for total compensation, while those for U.S. direct investment abroad are for wages and salaries, given differences in data coverage.

¹³ USITC staff calculation. FDI capital inflows were taken from U.S. Department of Commerce, "Foreign Direct Investment in the U.S.". Gross private domestic investment was taken from Council of Economic Advisers, *Economic Report of the President 2006*, Table B-1, p. 280.

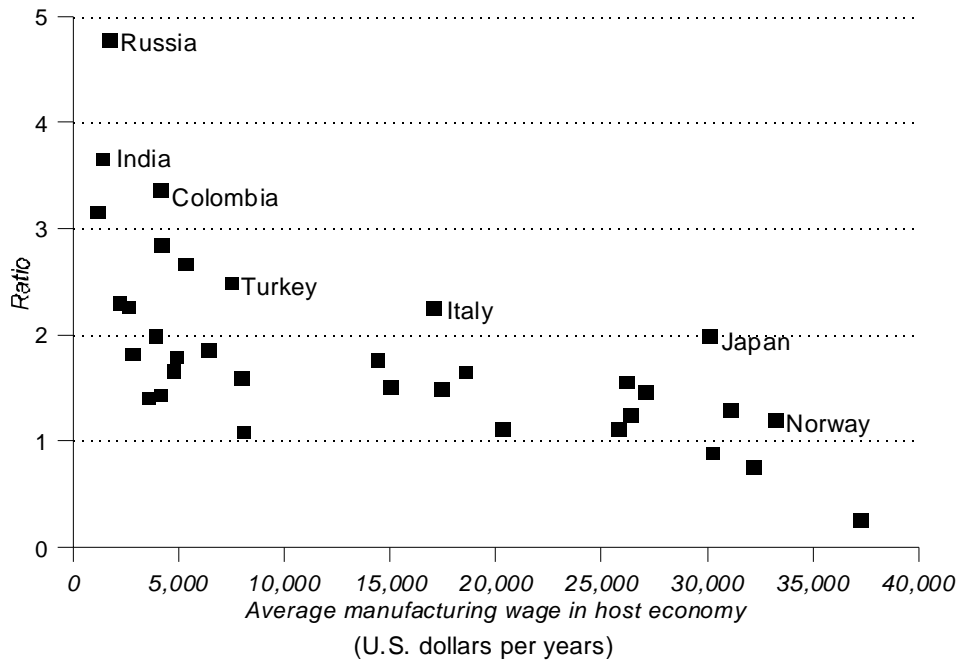
Table 9-2
Wages and salaries per employee in manufacturing, by year

Country	U.S. majority-owned affiliates		Ratio	Year
	All firms			
<i>Current dollars</i>				
Luxembourg	37,216	10,000	0.27	1999
Israel	32,108	24,825	0.77	2001
Denmark	30,208	27,069	0.90	2000
Mexico	8,048	8,869	1.10	2000
Singapore	20,267	22,665	1.12	2002
Finland	25,750	28,843	1.12	2000
Norway	33,174	40,151	1.21	2001
Canada	26,346	33,291	1.26	2001
Germany	31,070	40,237	1.30	2000
Ecuador	3,534	5,022	1.42	2002
Czech Republic	4,127	5,976	1.45	1999
Austria	27,076	39,846	1.47	2000
Spain	17,395	26,130	1.50	2000
Korea	14,971	22,747	1.52	2001
Belgium	26,140	40,933	1.57	2000
Portugal	7,916	12,770	1.61	2000
Italy	18,524	30,731	1.66	2000
Malaysia	4,686	7,843	1.67	2001
Argentina	14,343	25,583	1.78	1999
Poland	4,850	8,712	1.80	2000
Thailand	2,759	5,063	1.83	2000
South Africa	6,362	11,921	1.87	2002
Hungary	3,889	7,772	2.00	2000
Japan	30,086	60,154	2.00	2001
Netherlands Antilles	17,019	38,397	2.26	2001
Philippines	2,563	5,822	2.27	1999
Egypt	2,155	4,988	2.31	2002
Turkey	7,478	18,670	2.50	2000
Panama	5,332	14,297	2.68	2001
Brazil	4,164	11,900	2.86	2002
Indonesia	1,142	3,617	3.17	2002
Colombia	4,096	13,804	3.37	2000
India	1,343	4,929	3.67	2001
Russia	1,699	8,133	4.79	2002

Note.--Wages in U.S. majority-owned affiliates for 2000-2002 are estimates: see text for details.

Source: UNIDO, BEA, and USITC staff calculations.

Figure 9-1
Ratio of wages and salaries per employee in manufacturing paid by U.S. affiliates
abroad to wages and salaries paid by all manufacturing firms, by country



Note.--Wages for U.S. majority-owned affiliates for 2000-2002 are estimates, see text for details.

Sources: UNIDO, BEA, and USITC.

Effects on Economic Growth

The rate of technological change is a primary determinant of the rate of economic growth. In developing countries, where productivity levels lag behind international best practice, there is substantial scope for rapid “catch-up” economic growth through technology transfer. Poorer countries which benefit from higher rates of technology transfer are thus likely to grow faster.¹⁴ This fact has led to research into the role that multinational firms play in technology transfer, either to their own affiliates or to other firms via either contractual transfer or “spillover” effects. Previous literature¹⁵ has shown that affiliates of multinational firms receive technology of more recent vintage than other firms, as well as ongoing support for the technology on a flow basis. Technical efficiency in domestically-owned firms may improve as a result of competition with foreign multinationals, providing one form of “spillover.” Another arises as a result of managers moving from affiliates of foreign-owned firms to their domestic competitors, taking the expertise acquired in the foreign-owned firm

¹⁴ The theory of economic growth, and its empirical determinants, are discussed in U.S. International Trade Commission, *The Dynamic Effects of Trade Liberalization*, ch. 2. For a more comprehensive treatment, see Barro and Sala-i-Martin, *Economic Growth*.

¹⁵ This literature is reviewed in U.S. International Trade Commission, *The Dynamic Effects of Trade Liberalization*, 3-13 and 3-14.

with them. Earlier studies making broad country-comparisons found that high rates of FDI are associated with high rates of economic growth, and that the contribution of FDI to growth may exceed that of domestically-funded investment. The positive growth effects of FDI tend to manifest themselves only when the host country has achieved a certain threshold of development, which may be defined variously by per capita income, export orientation, or other country attributes.¹⁶ These findings are consistent both with the idea that foreign-owned enterprises are likely to be more technologically advanced on average than their domestic counterparts, and that the ability of multinational firms to transfer technology to overseas locations depends on the capacity of the host country to absorb new technologies.

More recent results confirm the finding that open economies are more likely to experience growth effects from FDI.¹⁷ The direction of causation between FDI and growth is an open question: do countries which attract FDI experience more growth, or do growing countries attract more FDI? Results analyzing growth rates over a broad pattern of countries have been inconclusive.¹⁸ Another study, focusing on three countries, found that the causal relationship between FDI and growth was bi-causal in Malaysia and Thailand, but that GDP growth caused FDI in Chile.¹⁹ Yet another approach, combining cross-country analysis with causation testing, found that the experiences of countries were very heterogeneous.²⁰

¹⁶ Balasubramanyam, et al., "Foreign Direct Investment and Economic Growth in EP and IS Countries," 92-105; Blömstrom, et al., "Is Fixed Investment the Key to Economic Growth?", 269-276; Borenszentein, et al., "How Does Foreign Direct Investment Affect Economic Growth?", 115-135.

¹⁷ Nair-Reichert and Weinhold, "Causality Tests for Cross-Country Panels."

¹⁸ Khawar, "Foreign Direct Investment and Economic Growth."

¹⁹ Chowdhury and Mavrotas, "FDI and Growth: What Causes What?"

²⁰ Nair-Reichert and Weinhold, "Causality Tests for Cross-Country Panels."

CHAPTER 10

Offshoring of Services and Foreign Direct Investment¹

Summary of Key Findings

Although expanding rapidly in recent years, services offshoring remains small compared to manufacturing offshoring.² Most of the attention on services offshoring has been focused on services that traditionally were considered non-tradeable: white-collar, professional services associated with high-paying jobs. Advances in communications, the digitalization of information, the widespread use of the Internet, and the availability of a lower-wage, well educated labor force abroad have made possible the recent increase in services offshoring. Other factors promoting the offshoring of services include the liberalization of international trade in services, the international convergence of legal and regulatory systems, and the increasing ease of foreign direct investment (FDI). Services offshoring has a positive effect on labor productivity of the home country but a small negative effect on employment in certain sectors of the economy, which is absorbed at the aggregate level. However, overall job losses are small compared to those that occur in the normal course of a business cycle. Offshoring of services is a distinctive characteristic of contemporary globalization, and is expected to continue to grow as firms strive to minimize production costs and establish foreign affiliates to remain globally competitive. The United States has historically maintained a trade surplus in services and U.S. firms are considered world leaders in FDI related to services offshoring.

Introduction

Recently, much attention and extensive public debate have focused on the rapid growth in the offshoring of services to foreign countries with lower wages and well educated segments

¹ “Offshoring generally refers to the practice, by either U.S. companies or government entities, of replacing goods or services previously produced domestically with goods and services produced abroad,” U.S. Government Accountability Office (GAO), *Offshoring of Services*, 1. “A company may offshore services either by purchasing services from another company based overseas or by obtaining services in-house through an affiliate located overseas,” U.S. GAO, *Offshoring of Services*, 5. In this chapter offshoring refers to both outsourcing the production of goods and services inputs to another firm outside of the United States, and the production or use of goods and services produced at offshore locations but within the firm. Outsourcing refers to a firm’s purchasing of material inputs from outside of the firm, and may be domestic or offshore.

² In 2003, U.S. offshoring of services measured 0.4 percent of GDP, while U.S. material offshoring amounted to 27 percent of GDP, Amiti and Wei, “Fear of Service Outsourcing,” 13.

of their labor force.³ The growth in services offshoring is a relatively recent phenomenon. Services traditionally have been considered non-tradeable and certain services are characterized as high-paying jobs. For instance, professional services such as accounting or engineering could not be supplied economically to U.S. firms from overseas until the Internet and other technological developments facilitated cross-border communications. Potential benefits for the home country associated with offshoring include lower consumer prices, increases in productivity, and increased employment,⁴ while the costs of offshoring may include job displacement in certain sectors of the economy.⁵

Offshoring in the global manufacturing sector has been increasing over several decades and remains substantially larger than offshoring of services,⁶ providing economists with a fairly clear understanding of the phenomenon. In contrast, offshoring of services is not fully understood, mainly because its analysis is subject to data limitations. Despite its rapid growth rate, offshoring of services continues to account for a small portion of overall services trade. Because services account for more than 70 percent of U.S. employment and output, the offshoring of certain services potentially may have important effects on the U.S. economy. This chapter presents the likely effects of the offshoring of services through a review of recent literature. With few exceptions, the discussion presented here is applicable to both manufacturing and service offshoring. The empirical evidence is presented first, followed by a brief review of the theoretical literature.

Foreign Direct Investment and Trade in Services

Firms invest abroad for many reasons: to take advantage of resources that are unique to another country, to be more cost-effective, and to gain access to foreign markets.⁷ Multinational corporations (MNCs) are characterized in the theoretical literature as arising through either horizontal or vertical FDI. In the horizontal-FDI view, firms build production plants both at home and abroad to avoid high trade costs.⁸ In the vertical-FDI view, firms locate production where manual labor costs are low.⁹ The empirical literature on FDI provides stronger support for horizontal FDI than for vertical FDI. However, recent work that addressed the question of why MNCs invest abroad suggests that vertical FDI is more

³ Between January and May 2004, there were 2,634 reports in U.S. newspapers on services outsourcing, mainly focusing on the fear of job losses. Amiti and Wei, "Fear of Service Outsourcing," 4. In addition, the U.S. GAO, in response to widespread congressional interest, prepared two reports on offshoring of services analyzing its data limitations and some of its benefits and costs. U.S. GAO, *International Trade*, and *Offshoring of Services*. Also, the National Academy of Public Administration prepared a report for the U.S. Congress and the Bureau of Economic Analysis, *Off-Shoring: An Elusive Phenomenon*.

⁴ Empirical evidence suggests that increased employment at the foreign subsidiaries of U.S. firms also increases employment in the U.S. parent company. Research also shows that one dollar of spending in foreign direct investment is associated with an additional \$3 of spending on capital investment at home. Council of Economic Advisers, *Economic Report of the President*, 180.

⁵ U.S. GAO, *Offshoring of Services*, 3.

⁶ The growing role of manufacturing outsourcing in the world economy has been documented extensively, Borgia and Zeile, "International Fragmentation of Production." See a recent survey by Feenstra and Hanson, "The Impact of Outsourcing." Important theoretical research includes Deardorff, "Fragmentation Across Cones," Deardorff, "A Trade Theorist's Take on Skilled-Labor Outsourcing," Jones and Kierzkowski, "Globalization," and the collection of papers in Arndt and Kierzkowski, *Fragmentation: New Production Patterns in the World Economy*.

⁷ Hanson, Mataloni, and Slaughter, "Expansion Strategies," 1-2.

⁸ Markusen, "Multinationals."

⁹ Helpman, "A Simple Theory of International Trade. If FDI is vertical, multinationals may reduce absolute wage differentials across countries, whereas if it is horizontal, multinationals contribute to rising income in each country where they operate, Hanson, Mataloni, and Slaughter, "Expansion Strategies," 3.

common than previous research suggested.¹⁰ The study examined three types of foreign activities of U.S. multinationals: global outsourcing, the use of export platforms, and wholesale trading, and showed that foreign affiliates respond to the policies and characteristics of host countries in very different ways. Both the theoretical and the empirical literature help to explain why MNCs and FDI have played a significant role in the process of globalization of production, which is evolving from manufacturing into services.¹¹

Advances in communications technology, the digitalization of information, and the development of the Internet, among other factors, have made it possible for trade in services to almost double during 1994-2004. Over this period, U.S. exports of services increased 73 percent to \$323 billion, while imports of services rose 114.5 percent to \$258 billion (figure 10-1).¹² Although it declined slightly relative to 2003, the U.S. trade surplus in services reached \$65 billion in 2004, in contrast to the widening and persistent U.S. trade deficit in goods, which reached \$665 billion in the same year (figure 10-2).¹³

The United States is the world leader in services offshoring, followed by Germany.

The United States exports services when a U.S. firm provides services to residents of foreign countries in the form of education, financial, insurance, telecommunications, business, professional, and technical services.¹⁴ U.S. exports of business, professional, and technical services alone increased by almost \$25 billion during 1989-2004. When a U.S. firm outsources services that were previously performed in-house to a foreign firm, the parent firm's resulting purchase of those services becomes cross-border imports of services, which rose by \$10 billion in the same period.¹⁵ The U.S. trade surplus in services underscores the United States' comparative advantage in services, but the growth in cross-border services imports likely reflects increased offshoring of services by U.S.-based MNCs. The United States is the world leader in services offshoring, followed by Germany.¹⁶

¹⁰ Hanson, Mataloni, and Slaughter, "Expansion Strategies," 1.

¹¹ Jensen and Kletzer, "Tradable Services."

¹² Data refer to sales of services to foreign and U.S. markets through cross-border trade, U.S. Department of Commerce (USDOC), Bureau of Economic Analysis (BEA), *Survey of Current Business*, 26.

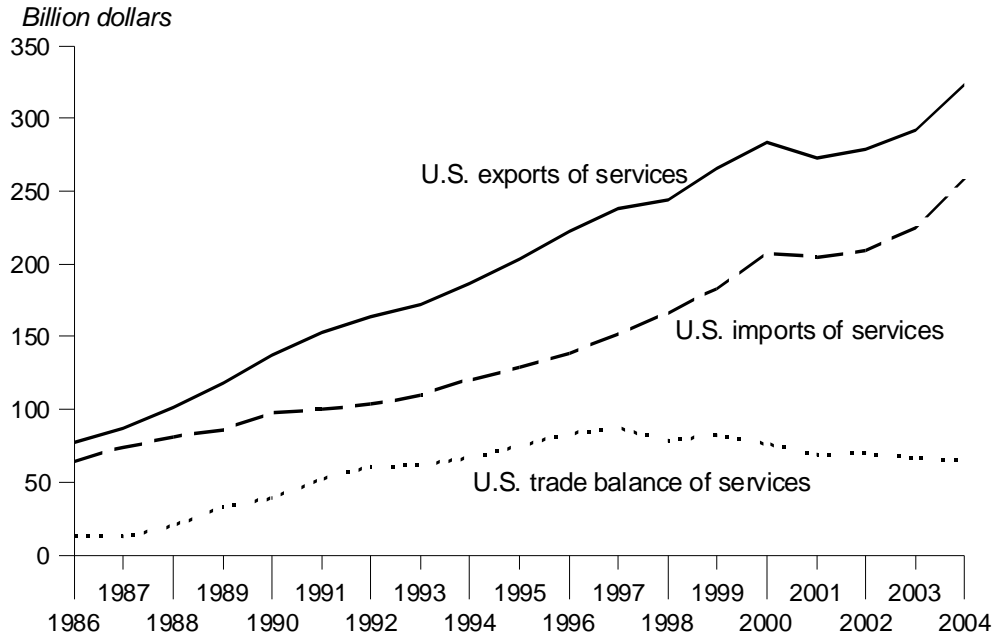
¹³ Ibid. Further analysis of U.S. trade in services can be found in U.S. International Trade Commission, *Recent Trends in U.S. Services Trade*.

¹⁴ Technical services include advertising services; computer and data processing services; research, development, and testing services; management, consulting, and public relations services; legal services; construction, engineering, architectural, and mining services; and medical services, among others.

¹⁵ Council of Economic Advisers, *Economic Report of the President*, 178.

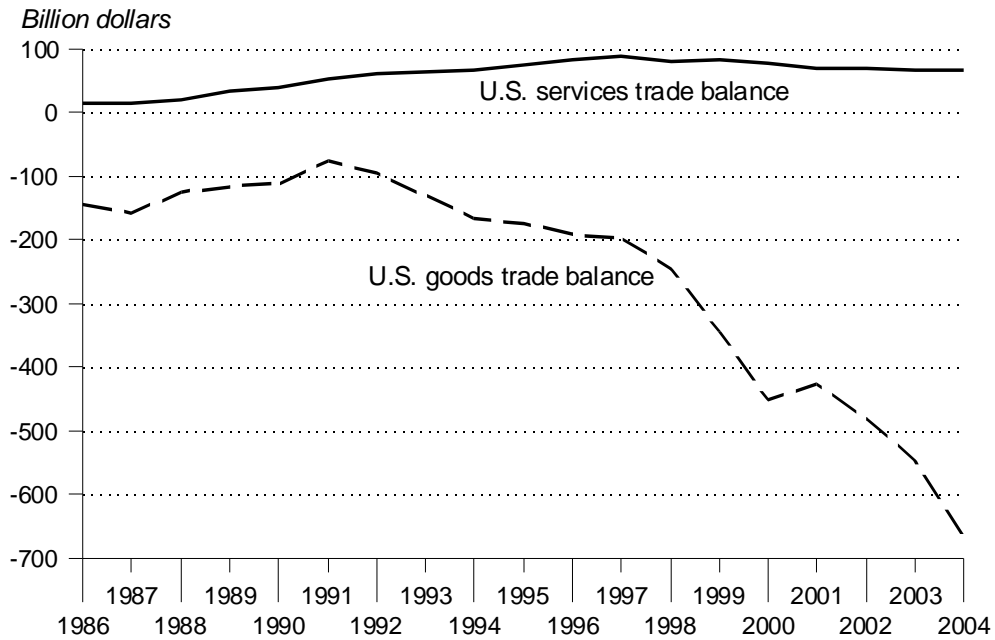
¹⁶ Ibid., and Amiti and Wei, "Fear of Service Outsourcing," 14, and UNCTAD, *The Shifts Towards Services*.

Figure 10-1
U.S. trade in services, 1986-2004



Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Figure 10-2
U.S. trade balance in goods and services, 1986-2004



Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Offshoring of services

In general, outsourcing refers to a firm's purchase of material inputs or services from outside of the firm.¹⁷ Outsourcing can be domestic or international. Domestic outsourcing, for instance, takes place when a U.S. auto maker contracts out the production of some of its parts to another firm located within the United States. In the service sector, the automaker might choose to have an outside firm handle its customer service call center, or payroll data processing. International outsourcing, or "offshoring," takes place when a firm procures a service or material input from a source located in a foreign country. International outsourcing is part of a country's imports of goods and services and includes both intra-firm and arm's length¹⁸ international outsourcing.¹⁹ For the United States and the United Kingdom, services offshoring has been steadily increasing at a fast rate. However, it is still at very low levels compared to offshoring by manufacturing firms.²⁰

There is not yet a consensus on the impact of services offshoring on the U.S. economy.

International outsourcing of material inputs (i.e., offshoring) has been practiced over many decades and has several recognized economic effects. For instance, studies have found important contributions of international outsourcing to productivity, but only in the long-run.²¹ Others have found that international outsourcing increases the demand for skilled labor in the United States, thus increasing U.S. wages.²² The study focused on U.S. outsourcing to foreign assembly plants created by U.S. firms and located on the U.S.- Mexico border producing less skill-intensive parts.²³ Here, the demand for skilled labor rises as a firm relocates the unskilled-intensive parts of the production process from the relatively skill-abundant countries to unskilled-abundant countries. Investments in outsourcing, or alternatively production sharing operations, have contributed to cross border integration of manufacturing in North America and helped its industrial competitiveness.²⁴

Services offshoring is a relatively new phenomenon, so there is not yet a consensus as to its extent or its impact on the U.S. economy. In many instances, the general empirical effects of services offshoring are in line with traditional trade theory, e.g. services offshoring involves benefits and costs with benefits exceeding costs in the aggregate. But costs,

¹⁷ Outsourcing is not new. David Landes, in *The Wealth and Poverty of Nations*, describes outsourcing dating back to the 13th century in Europe. He describes it as "the putting out system" whereby urban textile firms would employ cheap labor in the countryside as part of the production process. Irwin, "Comments on James Markusen," 2.

¹⁸ Arm's length international outsourcing refers to purchases of inputs from a foreign firm which is independent of the firm buying the inputs, whereas intra-firm international outsourcing includes purchases of inputs from a foreign provider which is owned by the firm buying the inputs

¹⁹ Amiti and Wei, "Fear of Service Outsourcing," 6.

²⁰ *Ibid.*, 13.

²¹ Egger and Egger, "International Outsourcing."

²² Feenstra and Hanson, "Globalization," and Feenstra and Hanson, "The impact of Outsourcing."

²³ These firms are commonly known as maquiladoras.

²⁴ Watkins and Tafoya, "Production Sharing," 9.

primarily the loss of domestic jobs, are narrowly concentrated on specific industries and local communities.²⁵

Measuring services offshoring is difficult because official data are not available to measure the parts of the production process that are contracted out.²⁶ Thus, researchers rely on indirect measures. For instance, one study measures services offshoring as imports of computing and computer software design, in addition to other business services including accounting and other back-office operations.²⁷ Another defines offshoring of services as those of Mode 1 in the language of the World Trade Organization, under its General Agreement on Trade in Services.²⁸ In that terminology, trade in services involves arm's-length supply of services with both the supplier and the buyer remaining in their respective countries. Those services are provided by independent designers, architects, consultants, firms that manage call centers, back offices, and programmers that sell their services electronically. Others use input-output tables and trade data to calculate offshoring of services.²⁹ So far, there is no consensus in the literature on the definition of services offshoring nor on its measurement.³⁰ However, several examples are presented in table 10-1. Nevertheless, the empirical research on services offshoring and FDI provides some evidence of its effects on productivity and employment.

Most empirical studies find a positive effect of services offshoring on productivity in the home country. A study for Ireland shows that international outsourcing of services had a positive effect on productivity in the electronics industry between 1990 and 1995.³¹ Another for the United Kingdom finds positive evidence of services offshoring on labor productivity between 1980 and 1992.³² A study focusing on the U.S. information technology (IT) sector documented that offshoring by IT industries translated into high job growth and higher productivity during the period from 1995-2002.³³ Similarly, empirical estimation of the effects of services offshoring on productivity in U.S. manufacturing industries between 1992 and 2000 found that services offshoring accounts for approximately 11 percent of productivity growth during this period.³⁴

Some empirical research on services offshoring and employment provides evidence of a negative effect. Research for the United States concluded that there is a small negative effect

²⁵ Recent contributions include Amiti and Wei, "Fear of Service Outsourcing," Amiti and Wei, "Service Offshoring," Arora and Gambardella, "The Globalization of the Software," Bardhan and Kroll, "The New Wave of Outsourcing," Bhagwati, Panagariya, and Srinivasan, "The Muddles over Outsourcing," Brainard and Litan, "Offshoring Service Jobs," Bronfenbrenner and Luce, "The Changing Nature," Dossani and Kenney, "Went for Costs," Dossani and Kenney, "The Next Wave of Globalization," U.S. GAO, "Offshoring of Services," Jensen and Kletzer, "Tradable Services," Mann, "Globalization," Kirkegaard, "Outsourcing," Samuelson, "Where Ricardo and Mill," and Schultze, "Offshoring."

²⁶ The U.S. GAO provides recommendations to improve the collection of data on offshoring of services, U.S. GAO, "International Trade." Existing data sources on offshoring for the United States are found in U.S. GAO, "International Trade," and Appendix D of National Academy of Public Administration, "Off-Shoring."

²⁷ Amiti and Wei, "Fear of Service Outsourcing."

²⁸ Bhagwati, Panagariya, and Srinivasan, "The Muddles over Outsourcing."

²⁹ Amiti and Wei, "Service Offshoring."

³⁰ For a discussion of alternative definitions of offshoring, see National Academy of Public Administration, *Off-shoring* and U.S. GAO, *Offshoring of Services*.

³¹ Gorg and Hanley, "International Outsourcing."

³² Girma and Gorg, "Outsourcing."

³³ Mann, "Globalization."

³⁴ The study also found that material inputs contribute to productivity growth but only by approximately 5 percent. Amiti and Wei, "Service Offshoring."

Table 10-1
Definitions of export-oriented FDI projects related to offshore services

Contact center services	Back-office services	IT services
Help desk	Claims processing	Software development
Technical support/advice	Account processing	Application testing
After-sales support	Transaction processing	Content development
Employee enquires	Query management processing	Engineering and design
Claims enquires	Customer administration processing	Product optimization
Customer support/advice	HR/payroll processing	<u>Other High-End</u>
Market research	Data processing	Regional Headquarters
Answering services	IT outsourcing	Architectural services
Prospecting	Logistics processing	Biotech and pharma R&D
Information services	Quality assurance	Radiology, X-ray
Customer relationship management	Supplier invoices	Distant education

Source: Trefler (2005) with information from UNCTAD.

of less than one-half of one percent on the employment rate in U.S. manufacturing industries when considering disaggregated data for 450 industries. However, this effect disappears at a more aggregated level of 96 industries, indicating that there is sufficient growth in employment demand in other industries to offset any overall negative effects.³⁵ A related paper for the United Kingdom found no evidence to support the notion that higher growth in services offshoring leads to slower job growth.³⁶ Similarly, an analysis of U.S. imports of business, professional, and technical services provides evidence of some job losses related to services offshoring but finds the effect to be small relative to the size of the U.S. labor market and the magnitude of annual job creation and destruction in the United States.³⁷ Other studies on services offshoring and employment have been conducted by management consultants including McKinsey and Deloitte Touche Tohmatsu. For the most part, those studies also conclude that overall job losses are small compared to those of the normal course of a business cycle.³⁸ A review of most of those consultant studies point out that low paid jobs are being replaced by higher-paying jobs.³⁹

Recently, two well defined trends have emerged in manufacturing and services offshoring. First, the rise of China as the world's manufacturer has allowed MNCs based in the United

³⁵ Ibid.

³⁶ Amiti and Wei, "Fear of Service Outsourcing."

³⁷ Shultze, "Offshoring," 6.

³⁸ McKinsey Global Institute, "Offshoring," McKinsey Global Institute, "The Emerging Global Labor Market," and Deloitte Touche Tohmatsu, "Global Financial Services."

³⁹ Brainard and Litan, "Offshoring Service Jobs."

States and elsewhere to offshore significant manufacturing work to Chinese factories.⁴⁰ Second, the growth of traded services involving technology-intensive processes and employing highly-paid white collar workers has resulted in India becoming a leading provider of information technology services for non-Indian companies.⁴¹ The success of these countries has raised some concern that the abilities of China and India to undertake high-end services work, such as semiconductor design and information technology (IT), may threaten employment, income, and wages in developed countries.⁴² The available empirical evidence does not support such a claim, however.⁴³ One study concluded that the development of skills and the high growth in Indian IT was due to a high level of infant industry protectionism and local entrepreneurship, but that the bulk of the work done by the Indian IT industry is low value-added and relatively low-skilled.⁴⁴ Another study points out that although there have been improvements, institutions that protect property rights, provide a fully functional legal framework, and balance the needs of innovators inside the corporations against the needs of investors are only beginning to take shape in both China and India. Further, the study emphasizes, as those institutions are not likely to evolve rapidly, China and India are a long way from being world innovators.⁴⁵

Another argument suggests that the pattern of international outsourcing to India follows, to some extent, the product cycle of trade in goods.⁴⁶ According to such a cycle, products would be innovated in the country where they are potentially demanded and will be first sold and debugged there. Eventually, the innovator country becomes an importer of the product as the production process moves to a location with the lowest production costs, once the product process has been completely standardized. But, in outsourcing to India, only some specific components of services appear to be standardized; therefore, various components remain non-traded.⁴⁷ Finally, India's capacity to create the skills to sustain the high growth of offshoring is limited, as, with few exceptions, India's higher education system can only provide a small workforce for employment in the country's offshoring activities.⁴⁸

Incentives for services offshoring

Offshoring has been referred to in the literature as international production sharing, fragmentation, international outsourcing, globalized production, de-localization, intra-

⁴⁰ Studies dealing with international outsourcing in China include Feenstra and Hanson, "Ownership and Control," Feenstra and Hanson, "Intermediaries," Feenstra, Hai, Woo, and Yao, "Discrepancies," Cheng and Kierzkowski, "Global Production," and Bronfenbrenner and Luce, "The Changing Nature." India's success in offshoring of services has been studied by Dossani and Kenney, "Went for Cost," Dossani and Kenney, "The Next Wave," Dossani, "Globalization," Srinivasan, "Information Technology," and Greene, "Growth in Services."

⁴¹ Trefler, "Offshoring: Threats and Opportunities," 4.

⁴² Most of the concern is based on wage differentials given that wages in China and India are low compared to those of developed countries. But, it is unit labor costs that matter not wage differentials, Krueger, "Comments," 2. "Even Japan, whose wages in 1959 were 10 percent of U.S. levels, has yet to devastate the United States and never will." Trefler, "Offshoring: Threats and Opportunities," 2.

⁴³ Dossani, "Globalization," Trefler, "Offshoring: Threats and Opportunities," Krueger, "Comments," Panagariya, "Discussion," and Aspray, Mayadas, and Vardi, "Globalization."

⁴⁴ Dossani, "Globalization," 3.

⁴⁵ Trefler, "Offshoring: Threats and Opportunities," 3.

⁴⁶ Panagariya, "Discussion," 3. The product cycle of trade in goods was pioneered by Vernon, "International Investment."

⁴⁷ Notably, only in the application development, which is the standardized component of many services, does India have a significant presence. In addition, only few complex tasks such as systems integration and IT education and training have been outsourced to India, Panagariya, "Discussion," 4.

⁴⁸ Panagariya, "Discussion," 5.

product specialization, middle products, and slicing up of the production chain. When the production stage abroad is owned by the same firm buying the input it is referred to as vertical foreign direct investment or intra-firm trade; when the production stage abroad is owned by a foreign firm it is referred to as arm's-length trade. The literature on services offshoring FDI evolved from the literature on manufacturing outsourcing and the literature on where the firm locates the different stages of production. This section will review each of these in turn.

Manufacturing offshoring, or trade of intermediate inputs, has become an important component of both U.S. imports and exports. On the import side, computer makers import semiconductors, screens and motherboards, while airplanes designed in Europe or the United States are assembled using components from various countries. On the export side, consumer appliances and automobiles are assembled in Mexico with parts designed and made in the United States. This requires the phases of the production process to be physically separable or subject to fragmentation. This type of fragmentation and outsourcing in the manufacturing process “probably represent one of the most important distinguishing features of contemporary globalization.”⁴⁹

When the production process can be fragmented, there is a greater incentive to employ offshoring of services.

When the production process is fragmented, the various phases of production can be separated and undertaken at locations where production costs are the lowest. But the physical dispersion of production implies certain costs such as coordination and communication, or more generally, coordination and related costs called “service links.” A pioneer article provided a framework involving alternative production processes with various degrees of fragmentation.⁵⁰ In Figure 10-3, the upper panel shows the traditional production process in which inputs are combined to produce final products in one location. The middle and lower panels show two examples of fragmentation, one simple and one more complex. Here, coordination and related services are provided through “service links.” “A service link is a composite of activities such as transportation, insurance, telecommunications, quality control, and management coordination to ensure that the production blocks interact in the proper manner.”⁵¹ The speed and efficiency with which service links operate is important to minimize costs of production. In the past, the cost and availability of “service links” were such that they were easier to establish and cheaper to operate domestically. This, in effect, acted as a barrier to trade preventing the proliferation of international outsourcing of services.

In recent years, however, technological innovations, liberalization of international trade in services, and convergence of legal and regulatory systems have significantly reduced the costs of “service links.” As cross-border service links become cheaper, more reliable, and more readily obtainable, outsourcing has turned international.⁵² The liberalization of FDI regulations in developing countries, particularly in East and South East Asia, have also played an important role in the international fragmentation of production.⁵³

⁴⁹ Arndt and Kierzkowski, *Fragmentation*, 2.

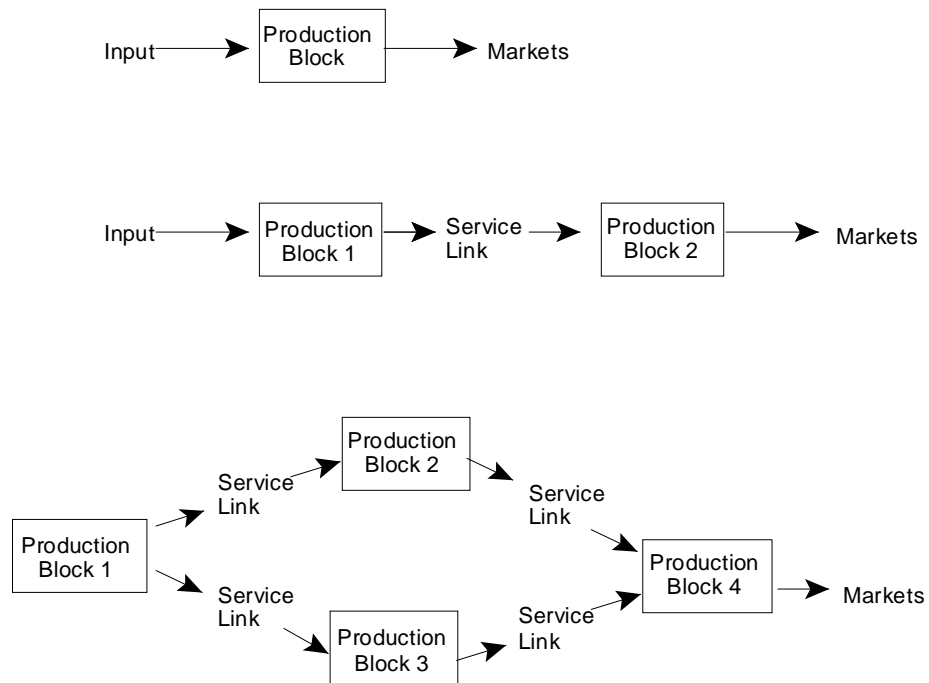
⁵⁰ Jones and Kierzkowski, “The Role of Services.”

⁵¹ Arndt and Kierzkowski, *Fragmentation*, 4.

⁵² Cheng and Fung, “The Globalization of Trade and Production.”

⁵³ Cheng, Qiu, and Tan, “Foreign Direct Investment,” and Cordella and Grilo, “Globalization.”

Figure 10-3
Fragmentation and service links



Source: Jones and Kierzkowski (1990) as reported in Arndt and Kierzkowski (eds) (2001).

Moreover, in a fragmented system, production activities may be separated not only spatially but by ownership as well. Separability of ownership is an important determinant in cross-border production sharing, which may result in either FDI or arm's-length operations. Where separation of ownership is not feasible, the result of international outsourcing is MNCs and FDI operations, as MNCs establish affiliates abroad to perform certain production activities. Where separation of ownership is feasible, the result of international outsourcing is arm's-length operations and FDI will be less important.

The literature on manufacturing offshoring is based on traditional trade theory that explains and assesses trade in final products, but has been augmented to allow for cross-border fragmentation and trade in intermediate and final products, as well as technological change and the costs of service links. In international outsourcing and fragmentation models, as in the traditional models, the principle of comparative advantage carries through to trade in components and parts. Factor endowments and factor intensities determine the allocation of production blocks, but the relative cost and efficiency of service links play a crucial role in determining such a comparative advantage. Production blocks will be undertaken in the lowest-cost country, and since service links often exhibit increasing returns to scale, they may determine specialization among countries with identical factor endowments. In addition, high

Offshoring can increase the competitiveness of an industry facing competition from imports, leading to increased employment, output, and wages.

wage countries can increase output and employment and raise workers' wages by offshoring the most labor intensive parts of the production process to lower wage countries. Thus, offshoring can increase the competitiveness of the industry facing competition from imports, and with increased competitiveness, employment, output, and wages increase as well. In general, these models are welfare-enhancing for the entire home economy in the long run, but some industries and individuals will see increasing levels of unemployment.⁵⁴ One important prediction of the product fragmentation and international outsourcing models is that income and intra-industry trade will increase with the lowering of service link costs.⁵⁵ This result, however, stands in contrast to the prediction of the new geography and trade theory that agglomeration⁵⁶ increases with economic growth.⁵⁷

The product fragmentation and offshoring models assumed implicitly that reliability of goods or service providers is assured in order to focus on the cost-price relationship. But in the case of international outsourcing, factors such as contractual arrangements, firm structures, organization structures, incentives systems, and networks between the contracting parties are particularly important to the costs of service links, and thus to offshoring and FDI decisions. In this context, the next set of outsourcing models were developed based on transaction cost theory.⁵⁸ In dealing with the firms' decision to "make-or-buy," these new theories conclude that if a project is sufficiently well known that it can be fully described to the input or service provider then offshoring or arm's-length trade will be the appropriate decision. If, however, the project is difficult to describe, then the decision should be to produce it in-house, albeit offshore, using FDI.⁵⁹

The literature reviewed so far in this discussion relies on microeconomic factors. However, macroeconomic factors, such as exchange rate crises and longer-term exchange rate trends, also have an impact on fragmentation decisions. Research that explores the link between the international financial performance of a country and its international goods trade observes that the Asian crisis of 1997 caused contraction in the affected countries' trade, i.e. both their imports and exports declined.⁶⁰ By contrast, conventional theory suggests that exchange rate depreciation causes imports to decrease but exports to increase. Based on a model of financial crisis, trade, and fragmentation, the study notes that fragmented trade appears to make the economy more sensitive to international financial crises, while at the same time it expands the gains from trade. Referring to the Asian economies, the study suggests that the most successful of such economies achieved rapid economic growth by exploiting opportunities offered by fragmentation. By doing so, however, they increased their vulnerability to international financial crises. The study suggests that the world economy needs to find better ways to prevent such crises. There are few theoretical models dealing specifically with offshoring of services.⁶¹ One study, after defining offshoring of services as Mode 1's arm's-length trade of services, notes that services offshoring arises in two

⁵⁴ Dixit and Grossman, "Trade and Protection," Krugman and Venables, "Globalization," Arndt, "Globalization," Jones and Kierzkowsky, "The Role of Services," Jones and Kierzkowsky, "Globalization," Deardorff, "Fragmentation," Deardorff, "Fragmentation Across Cones," Deardorff, "A trade theorist," Cheng, Qiu, and Tan, "Foreign Direct Investment," and Yi, "Can Vertical Specialization."

⁵⁵ Jones, Kierzkowski, and Lurong, "What does evidence tell."

⁵⁶ An example of agglomeration in services is the case of financial services and insurance.

⁵⁷ Fujita, Krugman, and Venables, *The Spatial Economy*, Amiti, "Service Offshoring," and Jones and Kierzkowski, "International Trade and Agglomeration."

⁵⁸ Grossman and Helpman, "Integration," and Grossman and Helpman, "Outsourcing."

⁵⁹ Trefler, "Offshoring," 6.

⁶⁰ Deardorff, "Financial Crisis," 9.

⁶¹ For instance Bhagwati, Panagariya, and Srinivasan, "The Muddles over Outsourcing," Samuelson, "Where Ricardo and Mill," Deardorff, "A trade theorist's take," and Markusen, "Modeling the Offshoring."

ways.⁶² First, new technology may convert previously nontraded services into traded services. Second, information technology skills accumulate in countries such as China and India that can augment internationally traded services. The main conclusion of the study is that services offshoring is a trade phenomenon leading to gains from trade, with its effects on jobs being the same as for conventional trade in goods.⁶³

Another study on skilled-labor international outsourcing addressed the recent concern that firms in developed countries utilize the services of skilled workers in developing countries for activities that were once performed domestically.⁶⁴ The study notes that within the fragmentation model of trade one would expect offshoring of activities that intensively use unskilled, not skilled, labor. The study departs from the standard model by allowing differences in technology, while maintaining differences in skills and wages in a one sector-two activity model. Further, the study asks, why did offshoring not take place long ago and erase the differences in technology and wages? The argument is that wages in the skill-abundant country are higher not because all technologies in that country are superior but because enough different sectors have such superiority. Thus, when offshoring becomes possible, only those activities that had no superior technology in the home market will relocate overseas. The study concludes that offshoring will generate gains to all factors if differences in factor endowments generate substantially more trade.

⁶² Bhagwati, Panagariya, and Srinivasan, "The Muddles over Outsourcing," 94.

⁶³ For a discussion on the effects of international trade on labor, see Chapter 7 in U.S. International Trade Commission, *The Economic Effects*.

⁶⁴ Deardorff, "A trade theorist's take on skilled-labor outsourcing."

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