

Trade in Goods Within Multinational Companies:
Survey-Based Data and Findings for the United States of America

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Intrafirm trade in goods among nations can be viewed as the interface of two distinct modes of global economic integration: (1) the exchange of goods across national borders, and (2) the international coordination of production through the multinational firm. While information on the first mode has long been available as a byproduct of customs documents, information on the second mode generally must be derived from surveys of the operations of multinational firms in home and/or host countries. Information on intrafirm trade—the interface of these two modes—is thus potentially available from two alternative sources: (1) from customs declarations that include information on specified ownership ties between the foreign and domestic parties to the transactions, or (2) from surveys of multinational firms that include questions on the value of specified trade flows between foreign and domestic units of the firm.

In the economic statistical system for the United States, both approaches are applied to produce two distinct types of data on intrafirm trade in goods. A data series based on customs documents is produced by the U.S. Census Bureau (an agency of the U.S. Department of Commerce), which makes use of a checkoff question in the export and import declaration forms on whether the transactions are between related parties. For exports, the definition of “related party” is based on an ownership share by one of the transacting companies in the other of at least 10 percent, which is consistent with the internationally accepted definition of direct investment. For imports, the definition is based on an ownership share of at least 6 percent, somewhat below the threshold for direct investment (although of the same order of magnitude). Using this information from the customs declarations, the Census Bureau has reported annual data on related-party exports and imports beginning with the year 1991. Some data on related-party imports were reported by the Census Bureau for earlier years—an early study of intrafirm trade by

Helleiner and Lavergne (1979) is based on the related-party import data for 1975-77. The most recent data show that in 2002 related-party trade accounted for \$770 billion, or 42 percent, of total U.S. trade in goods.¹ These data contain considerable detail on the products traded, as well as information on the countries of origin and destination. However, they do not differentiate between trade related to outward investment and trade related to inward investment.

The essential data needed for constructing data on intrafirm trade under the second approach are collected by the U.S. Commerce Department's Bureau of Economic Analysis (BEA), which conducts extensive surveys of the operations of U.S. multinational firms and foreign-owned U.S. affiliates. The data collected in these surveys cover a wide range of information on company operations, including total assets, sales, net income, employment, research and development, and trade in goods. The trade data collected in the surveys of U.S. multinational firms include information on the intrafirm-trade flows between U.S. parent companies and their foreign affiliates (as well as information on total U.S. trade flows for parents and affiliates). Similarly, the trade data collected in the surveys of foreign-owned U.S. affiliates include (in addition to data on their total U.S. trade) information on the intrafirm-trade flows between U.S. affiliates and their foreign parents and/or other foreign companies with strong ownership ties to the parents. The intrafirm-trade data from these two separate sources can be aggregated to produce figures on total U.S. intrafirm exports and imports of goods.

While the intrafirm-trade data collected in BEA's surveys of multinational firms can never match the level of product detail available for the customs-based data, they include

¹ A report summarizing the most recent data on related-party trade is available on the Census Bureau's Web site at <www.census.gov/foreign-trade/www>.

substantially more information on the ownership relations between, and characteristics of, the transacting companies than can be revealed by a tag in customs declarations for transactions between related parties. Unlike the customs-based data, the intrafirm-trade data from BEA's surveys distinguish intrafirm transactions associated with foreign ownership in the United States from intrafirm transactions associated with U.S. ownership abroad; moreover, transactions associated with foreign ownership can be distinguished by investing country. In addition, information collected in the surveys on the industry classification of affiliates (and, for some trade flows, on the intended use of the goods shipped) allows one to distinguish intrafirm-trade flows associated with manufacturing production activities from intrafirm-trade flows associated with distribution activities. BEA's survey-based data on intrafirm trade also have the advantage of being collected together with other data on multinational-firm operations (such as parent or affiliate sales, employment, or trade flows with unaffiliated parties), which allows the data to be viewed in the context of the firms' overall operations.

BEA's Data on Intrafirm Trade

BEA's data on intrafirm trade are collected as part of larger data sets on the overall operations of U.S. and foreign multinational firms. Under the authority of the International Investment and Trade in Services Survey Act (initially enacted in 1976, and amended in 1984 and 1990), BEA conducts mandatory surveys of the operations of U.S. multinational firms (comprising the operations of both U.S. parent companies and their foreign affiliates) and foreign-owned U.S. affiliates. The data collected in these surveys include detailed balance-sheet and income-statement information, plus information on tangible fixed assets, employment, sales

of goods and services, research and development expenditures, and trade in goods. For U.S. multinational firms, data are collected for both U.S. parent companies and their foreign affiliates. Consistent with the internationally accepted definition of direct investment, a foreign affiliate is defined to be a foreign business enterprise in which the U.S. parent owns or controls 10 percent or more of the voting securities or an equivalent interest; however, substantially more detailed information is required for affiliates that are majority-owned by U.S. parents than for affiliates that are not. A foreign-owned U.S. affiliate is similarly defined according to the 10-percent ownership threshold. Until very recently, there were no differences in the amount of data reported for majority-owned and other affiliates in the surveys for U.S. affiliates; however, beginning with the survey for 2002, affiliates that are not majority-owned are being asked to provide substantially less information than that requested for majority-owned affiliates. In contrast to the surveys for U.S. multinational firms, no data are collected on the owners of U.S. affiliates, apart from some identification information, including the country and broad industry classification of the parent and of the ultimate beneficial owner.²

For both U.S. multinational firms and foreign-owned U.S. affiliates, two types of surveys of company operations are conducted: benchmark and annual. Benchmark surveys—the most comprehensive surveys in terms of coverage and subject matter—are currently conducted once every five years. In terms of value, benchmark surveys cover virtually the entire universe of companies in the group being surveyed. In interim years, an annual sample survey is conducted.

² An affiliate's ultimate beneficial owner is defined to be that person, proceeding up the affiliate's ownership chain, beginning with and including the foreign parent, that is not owned more than 50 percent by another person. The ultimate beneficial owner of each U.S. affiliate is identified to ascertain the person that ultimately owns or controls the U.S. affiliate and that therefore ultimately derives the benefits from ownership or control.

To obtain universe estimates of operations for nonbenchmark years, data reported in the benchmark surveys for nonsample companies are extrapolated forward, based on the movement of the sample data reported in the annual surveys. In this manner, consistent series are obtained for all years.³

In the benchmark and annual surveys of U.S. multinational firms, separate survey forms are filed for the U.S. parent company and each of its foreign affiliates. Thus, information on trade in goods by U.S. parent companies is collected on a survey form for the parents, and information on U.S. trade in goods with foreign affiliates is collected on a separate survey form for the affiliates. In the survey form for affiliates, information on intrafirm trade in goods between the foreign affiliate and its U.S. parent company is reported annually for majority-owned affiliates, but is reported only in benchmark-survey years for other affiliates. Separate information on intrafirm trade in goods between a given U.S. parent company and all of its foreign affiliates (whether majority-owned or not) is collected annually in the survey form filed by parents; however, this information cannot be broken down by country or industry of affiliate. Thus, tabulations of intrafirm-trade flows by country or industry of affiliate can be produced annually for trade with majority-owned affiliates, but can only be produced for benchmark-survey years for trade with all affiliates.

Some added information on intrafirm trade between U.S. parent companies and their majority-owned affiliates is collected only in benchmark surveys. This information includes a breakdown of intrafirm-trade flows by broad product category and a breakdown of parent-

³ The published data from the benchmark and annual surveys of U.S. multinational firms and foreign-owned U.S. affiliates can be accessed on BEA's Web site at <www.bea.gov/bea/ai/iidguide.htm>.

company exports to the affiliate by intended use (that is, whether for further processing by the affiliate, for resale without further processing, or for use by the affiliate as a capital input).

In the benchmark and annual surveys of foreign-owned U.S. affiliates, the data collected on U.S.-affiliate exports and imports of goods include information on intrafirm transactions with the affiliate's foreign parent group, which consists of the foreign parent company and other foreign firms with strong ownership ties to the parent.⁴ The data on intrafirm exports and imports by affiliates are tabulated annually by industry of affiliate and by country of ultimate beneficial owner (which may be different from the country of an affiliate's immediate foreign parent).⁵ Information on the country of destination or origin of intrafirm exports and imports is collected only in benchmark-survey years. Other data collected only in benchmark surveys include data on intrafirm-trade flows broken down by broad product category and data on affiliate intrafirm imports broken down by intended use.

The first benchmark survey of U.S. multinational firms conducted under the International Investment and Trade in Services Survey Act covered the year 1977; it was followed by benchmark surveys covering the years 1982, 1989, 1994, and 1999. The annual sample surveys of U.S. multinational firms have been conducted since 1983. For foreign-owned U.S. affiliates, benchmark surveys have been conducted for the years 1980, 1987, 1992, and 1997 (a benchmark

⁴ Stated more formally, a foreign parent group consists of (1) the foreign parent, (2) any foreign person, proceeding up the foreign parent's ownership chain, that owns more than 50 percent of the person below it, up to and including the affiliate's ultimate beneficial owner, and (3) any foreign person, proceeding down the ownership chain(s) of each of these members, that is owned more than 50 percent by the person above it.

⁵ For the vast majority of affiliates, however, the country of ultimate beneficial owner is identical to the country of foreign parent.

survey for 2002 is currently in process), and annual sample surveys have been conducted since 1977. An annual data series on intrafirm-trade flows can thus be constructed for every year since 1982 in the case of U.S. multinational firms and for every year since 1977 in the case of foreign-owned U.S. affiliates.

Some earlier data on intrafirm trade in goods were collected in surveys conducted before the enactment of the International Investment and Trade in Services Survey Act. Extensive data on the operations of U.S. multinational firms—including data on trade flows between U.S. parent companies and their majority-owned affiliates—were first collected in a mandatory benchmark survey for 1966, which was conducted under authority of a law known as the Bretton Woods Agreements Act. Similar data were collected in a follow-up voluntary sample survey for 1970; the published data from this survey on U.S.-parent-company exports to their majority-owned foreign affiliates formed the basis for an early study of intrafirm trade by Lall (1978). For U.S. affiliates of foreign companies, data on affiliate operations—including data on intrafirm trade—were collected in a one-time benchmark survey mandated by the Foreign Investment Study Act of 1974; results from the survey were published as Volume 2 of a nine-volume Report to Congress required by the Act. Largely because of differences in the degree of consolidation required in company reports (particularly those for U.S. parent companies and for foreign-owned U.S. affiliates), the data from these earlier surveys are not entirely comparable with the data collected in the surveys for 1977 and later years.

Aggregate Figures on U.S. Intrafirm Trade in Goods

BEA's data on trade between U.S. parent companies and their foreign affiliates can be

combined with the data on trade between U.S. affiliates and their foreign parent groups to derive figures on total U.S. intrafirm exports and imports of goods.⁶ Consistent with the recommendations of the draft OECD *Manual on Economic Globalisation Indicators* for multinational-company operating data, the data used for this paper cover only trade involving affiliates that are majority-owned (and thus subject to control by their parent companies).⁷ The total for U.S. intrafirm exports is constructed as the sum of exports by U.S. parent companies to their majority-owned foreign affiliates and exports by majority-owned U.S. affiliates to their foreign parent groups. Similarly, the total for U.S. intrafirm imports is constructed as the sum of imports by U.S. parent companies from their majority-owned foreign affiliates and imports by majority-owned U.S. affiliates from their foreign parent groups.

Table 1 presents annual totals for U.S. intrafirm exports and imports of goods using the definition of multinational firm based on majority ownership of affiliates. The series spans the years 1987-2000, 1987 being the earliest year for which the required information on foreign-ownership shares for U.S. affiliates is readily available.⁸ Following the language recommended

⁶ Unlike the data collected on total trade flows for U.S. multinational firms and foreign-owned U.S. affiliates—which may overlap in cases where a U.S. parent company is itself a foreign-owned affiliate—the data on intrafirm-trade flows between U.S. parent companies and their foreign affiliates (collected in the survey of U.S. multinational firms) and intrafirm-trade flows between U.S. affiliates and their foreign parent groups (collected in the survey of foreign-owned U.S. affiliates) are mutually exclusive, and thus pose no problem of double-counting when added together.

⁷ In the BEA data, “majority-owned” is defined from a national perspective, rather than from the perspective of the individual direct investor. Thus, majority ownership of an affiliate means that the combined ownership shares of all U.S. (or foreign) direct investors exceeds 50 percent. However, cases of multiple ownership are relatively rare and do not have a significant impact on the aggregate data for intrafirm trade.

⁸ An annual series for 1982-94 on total U.S. intrafirm exports and imports that include trade with minority-owned affiliates is presented in Table 1 of Zeile (1997). In most years since

in the draft OECD *Manual*, the term “controlled affiliates” is used in the balance of this paper to refer to affiliates that are majority-owned by direct investors.

In most years, intrafirm transactions have accounted for about a third of U.S. exports and about 40 percent of U.S. imports. For both exports and imports, the intrafirm-trade flows are predominantly flows from parent companies to their affiliates (rather than flows from affiliates to parents): U.S. intrafirm exports mainly consist of shipments from U.S. parent companies to their foreign affiliates, and U.S. intrafirm imports mainly consist of shipments from foreign parent groups to U.S. affiliates.

Exports by U.S. parent companies to their controlled foreign affiliates have generally accounted for 20-25 percent of total U.S. exports (and for 70-75 percent of U.S. intrafirm exports). By industry of affiliate, about two-thirds of the intrafirm exports by U.S. parents have gone to manufacturing affiliates, mainly those in the motor-vehicle, computer-and-electronic-equipment, and chemical industries. Most of the remaining intrafirm exports have been shipped to affiliates in wholesale trade. Data from the benchmark surveys reveal that U.S.-parent-company exports to manufacturing affiliates have largely consisted of intermediate products intended for further assembly or processing by the affiliates, whereas U.S.-parent-company exports to wholesale trade affiliates have largely consisted of goods intended for resale by the affiliates without further processing.⁹

1987, intrafirm-trade flows for majority-owned affiliates have accounted for more than 95 percent of U.S. intrafirm exports and imports for all affiliates (both for trade flows between U.S. parent companies and their foreign affiliates and for trade flows between U.S. affiliates and their foreign parent groups).

⁹ Data from the latest benchmark survey, covering the year 1999, indicate that goods intended for further manufacture by affiliates accounted for 92 percent of U.S.-parent-company

Intrafirm imports by U.S. parent companies have generally accounted for 14-17 percent of total U.S. imports (and for about 40 percent of U.S. intrafirm imports). In most years, more than 80 percent of these intrafirm imports have been shipped by manufacturing affiliates. As with intrafirm exports, most of these intrafirm imports involve affiliates in the motor-vehicle, computer-and-electronic-equipment, and chemical industries, suggesting that a number of affiliates in these industries re-export to their U.S. parents finished goods produced using materials or components supplied by the parents.

Intrafirm exports by foreign-controlled U.S. affiliates to their foreign parent groups have generally accounted for 8-10 percent of total U.S. exports (and for 25-30 percent of U.S. intrafirm exports). Through the mid-1990's, more than two-thirds of these intrafirm exports were shipped by wholesale trade affiliates, reflecting in part the important role of affiliates of Japan's large general trading companies in mediating U.S. exports to Japan. In the latter half of the decade, however, the share accounted for by manufacturing affiliates gradually increased, from less than a third in 1995 to more than half in 1999 and 2000.

Intrafirm imports by foreign-controlled U.S. affiliates have generally accounted for 20-25 percent of total U.S. imports (and for about 60 percent of U.S. intrafirm imports). Affiliates in wholesale trade—many of which were set up specifically to market the products of their parent companies—have consistently accounted for a dominant share of intrafirm imports by U.S. affiliates; however, the share has decreased over time (from more than 80 percent in 1987 to less than 60 percent in 2000). Most of the remaining intrafirm imports by U.S. affiliates have been

exports to affiliates in manufacturing, but accounted for only 4 percent of their exports to affiliates in wholesale trade.

by manufacturing affiliates—in 2000, about half of these imports were by affiliates in the motor-vehicle and computer-and-electronic-equipment industries.

Patterns of Intrafirm Trade Across U.S. Trading Partners

Data on intrafirm-trade flows by country of destination or origin are collected annually for U.S. multinational firms, but are collected only in benchmark-survey years for foreign-owned U.S. affiliates. Thus, the most recent figures on total U.S. intrafirm exports and imports by trading partner cover 1997, the last year for which a benchmark survey for U.S. affiliates has been completed. Making use of these data, Table 2 presents the shares of U.S. trade in goods with major trading partners that are accounted for by total intrafirm trade, by intrafirm trade between U.S. parent companies and their controlled foreign affiliates, and by intrafirm trade between foreign-controlled U.S. affiliates and their foreign parent groups. The individual countries listed in the table are the 28 largest U.S. trading partners for 1997.

An examination of Table 2 reveals that the intrafirm-trade shares of U.S. exports and imports vary widely across trading partners. Among the countries shown, the share of U.S. exports in 1997 accounted for by total intrafirm exports ranges from 70 percent for Switzerland and Hong Kong to 2 percent for Saudi Arabia. In addition to Switzerland and Hong Kong, intrafirm exports account for a majority of U.S. exports to Japan and the Netherlands. For all but a few of the major trading partners, U.S. intrafirm exports mainly take the form of shipments by U.S. parent companies to their foreign affiliates rather than shipments by U.S. affiliates to their foreign parent groups. A salient exception is Japan, reflecting the above-mentioned role of Japanese general trading companies in mediating U.S. exports to Japan.

Intrafirm exports by U.S. parent companies account for more than a third of U.S. exports to six of the countries shown: Hong Kong, Switzerland, the Netherlands, Singapore, Australia, and Canada. With the exception of Canada, these countries also have the highest shares for U.S.-parent-company intrafirm exports in 2000 (the most recent year for which country-level data on intrafirm-trade flows for U.S. multinational firms are available), with the shares for exports to Switzerland and Singapore continuing to exceed 40 percent. The decline in the share for Canada, from 36 percent in 1997 to 26 percent in 2000, may partly reflect an expansion in trade between unrelated parties as a result of the elimination of tariffs under the U.S.-Canada Free Trade Agreement.¹⁰

On the import side, the share of U.S. imports in 1997 accounted for by total intrafirm imports ranges across the 28 trading partners from 74 percent for Singapore to 1 percent for India. Intrafirm transactions also account for a majority of U.S. imports from 8 other major trading partners (including Belgium and Luxembourg, for which the specific figures on intrafirm-trade shares are suppressed), with the share exceeding 60 percent for Japan, Hong Kong, Switzerland, and the Netherlands. For Japan and most of the major trading partners in Europe, U.S. intrafirm imports mainly consist of imports by U.S. affiliates from their foreign parent groups. Imports by U.S. parent companies from their foreign affiliates abroad account for a dominant share of U.S. intrafirm imports from the two border countries (Canada and Mexico)

¹⁰ Under the terms of the Free Trade Agreement (which were incorporated into the North American Free Trade Agreement), virtually all tariffs on U.S.-Canada trade in goods originating in the two countries were eliminated as of January 1, 1998. Much of the trade within U.S. multinational companies between the United States and Canada had already been tariff-free under the provisions of the 1965 United States-Canada Auto Agreement.

and from a number of countries in East Asia and Latin America.¹¹

For both U.S. exports and imports, intrafirm transactions tend to be most prominent in trade with high-income countries. Among the trading partners listed in Table 2, all of the countries for which the intrafirm-trade share of U.S. exports or imports exceeds 45 percent had a per capita gross national product (GNP) of more than \$20,000 in 1997, which places them in the top quintile of countries listed in statistical tables for that year in the World Bank's *World Development Report*.¹² In contrast, most of the countries in the table for which the intrafirm-trade share of U.S. exports or imports is less than 20 percent had a per capita GNP below \$5,000.

The prominence of intrafirm transactions in U.S. trade with high-income countries was noted in Zeile (1997), which examined the relation between intrafirm-trade shares of U.S. exports and imports and the per capita GNP of U.S. trading partners across 59 countries in 1992. For this sample, per capita GNP of the trading partner was found to be positively correlated with both the intrafirm-trade share of U.S. exports to the country (reflecting a strong correlation with the share accounted for by U.S.-parent-company exports to their foreign affiliates) and the intrafirm-trade share of U.S. imports from the country (reflecting a strong correlation with the share accounted for by U.S.-affiliate imports from their foreign parent groups). On the export side, the correlation with per capita GNP was particularly strong for the share of U.S. exports accounted for by intrafirm shipments to foreign wholesale trade affiliates, suggesting that cross-

¹¹ For Canada and Mexico, the shares of U.S. imports accounted for by the intrafirm imports of U.S. parent companies are slightly lower in 2000 (29 percent and 25 percent) than in 1997 (33 percent and 28 percent). In contrast, the shares for Hong Kong and Singapore are higher in 2000 (52 percent and 66 percent) than in 1997 (41 percent and 63 percent).

¹² The dollar-value figures on per capita GNP are presented in Table 1 of the section on World Development Indicators in *World Development Report 1998/99*.

border transactions in finished goods tend to be internalized by firms for the sorts of differentiated manufactured products that make up a large portion of trade among high-income countries.¹³ The share of U.S. exports accounted for by U.S.-parent-company exports to manufacturing affiliates was also found to be positively correlated with per capita GNP; however, the share of U.S. imports accounted for by parent-company imports from manufacturing affiliates was not. This latter finding reflects the fact that manufacturing affiliates in high-income countries, while sourcing intermediate inputs from their U.S. parent companies, tend to have a local-market orientation, with only a small portion of their sales going back to the parent. In contrast, manufacturing affiliates in several middle-income countries (such as Mexico and Malaysia) tend to ship a large portion of their output to their U.S. parents. For intrafirm imports by foreign-owned U.S. affiliates, per capita GNP of the trading partner was found to be positively correlated with the shares of U.S. imports accounted for by intrafirm transactions of affiliates in both manufacturing and wholesale trade, reflecting the fact that foreign direct investment in the United States has largely come from high-income countries.

Turning to the geographic concentration of intrafirm-trade flows, much of the intrafirm trade of U.S. multinational firms consists of U.S. trade flows with the two border countries, Canada and Mexico. As shown in Table 3, Canada is the largest trading partner for U.S.-parent-company trade with foreign affiliates, accounting for close to 30 percent of exports and 40

¹³ For these sorts of products, a manufacturing firm seeking to expand sales in foreign markets may find it advantageous to establish wholesale trade affiliates abroad to monitor customer requirements or tastes and to provide on-site after-sales service.

percent of imports.¹⁴ For both exports and imports, most of this trade is with affiliates in motor-vehicle manufacturing, reflecting Canada's proximity to the major automobile centers in the United States and the legacy of the free-trade regime for producers of motor vehicles and parts that has been in place since the 1965 United States-Canada Auto Agreement. Affiliates in the motor-vehicle industry also account for a major share of U.S.-parent-company trade with affiliates in Mexico, which is the second-largest trading partner for trade within U.S. multinational firms. Intrafirm trade flows with U.S. parent companies are also substantial for Mexican affiliates in other manufacturing industries, particularly machinery and electronics.

Trade with affiliates in Europe accounts for 29 percent of the intrafirm exports of U.S. parent companies but for only 17 percent of their intrafirm imports. Reflecting the local- and regional-market orientation of European affiliate sales, trade flows from these affiliates to their U.S. parents are less than half as large as the trade flows from parents to affiliates. For U.S.-parent-company exports to affiliates, the largest trading partners in Europe are the United Kingdom, the Netherlands, and Germany. The intrafirm exports to the United Kingdom and Germany are mainly to manufacturing affiliates, while intrafirm exports to the Netherlands are mainly to affiliates in wholesale trade.

About a quarter of the intrafirm exports and a fifth of the intrafirm imports of U.S. parent companies is accounted for by trade with affiliates in Asia and Pacific. Within this region, intrafirm exports by U.S. parent companies are largest for Japan, while intrafirm imports by U.S. parent companies are largest for Singapore and Malaysia. In the case of Japan, the trade flows

¹⁴ The shares for Canada in 1997 remain essentially unchanged in 2000, the latest year for which country-level data on trade within U.S. multinational firms are available.

within U.S. multinational firms largely consist of one-way flows from parents to wholesale trade affiliates that perform marketing and distribution services. In contrast, almost all of the intrafirm imports from Singapore and Malaysia are from manufacturing affiliates, mainly affiliates in the computer and electronic equipment industries.

For trade between U.S. affiliates and their foreign parent groups, the dominant trading partner is Japan: as shown in Table 4, intrafirm-trade flows with Japan account for 39 percent of U.S.-affiliate intrafirm exports and 44 percent of U.S.-affiliate intrafirm imports. Most of the exports are intrafirm shipments by wholesale trade affiliates of Japanese trading companies, while most of the imports are shipments to wholesale trade affiliates by Japanese parent companies in manufacturing. Canada is the second-largest country of destination for U.S.-affiliate intrafirm exports and the third-largest country of origin for U.S.-affiliate intrafirm imports. Table 5 shows that most of the intrafirm exports to Canada are by affiliates whose ultimate beneficial owners are countries other than Canada; a large share of these exports are by European- and Japanese-owned affiliates in manufacturing and wholesale trade. On the import side, however, Canadian-owned affiliates do account for a dominant share of U.S.-affiliate intrafirm imports from Canada. Germany ranks as the second-largest country of origin for affiliate intrafirm imports, and as the third-largest country of destination for affiliate intrafirm exports. For both exports and imports, most of this intrafirm trade with Germany involves German-owned affiliates; the intrafirm exports are mainly by German-owned manufacturing affiliates, while the intrafirm imports are by German-owned affiliates in both manufacturing and wholesale trade.

Research Based on BEA's Data on Intrafirm Trade

BEA's data on intrafirm trade have been used in a wide variety of studies on topics related to economic globalization. Some studies have focused specifically on intrafirm trade *per se* and its economic implications. Several other studies have used the intrafirm-trade data in conjunction with other data on multinational-company operations to address broader issues in international production and trade.¹⁵ The following paragraphs present a quick overview of a few representative studies that mainly focus on the topic of intrafirm trade.

In an investigation of the industry-level determinants of intrafirm trade, Siddharthan and Kumar (1990) use published data from the 1982 benchmark survey of U.S. multinational firms to relate the intrafirm-trade shares of U.S.-parent-company exports and imports to a number of parent and affiliate characteristics. They find that the intrafirm-trade share of parent exports is positively correlated across industries with parent-company measures of R&D intensity, employee skill level, and selling and administrative expenses. The intrafirm-trade share of parent imports is found to have a strong positive relation to parent R&D intensity, but a negative relation to parent-company selling and administrative expenses.

The relative sensitivity of intrafirm and arm's-length trade flows to changes in exchange rates is investigated by Rangan and Lawrence (1999), who make use of annual data on U.S.-parent-company imports from affiliates in selected manufacturing industries and host countries. Contrary to the oft-expressed view that intrafirm transactions are relatively insensitive to price fluctuations, they find a stronger and speedier response to exchange-rate changes for trade within

¹⁵ Examples include Lipsey (1995); Brainard (1997); Clausing (2000); Desai, Foley, and Hines (2003); and Hanson, Mataloni, and Slaughter (2003).

multinational firms, which they attribute to information advantages.

Clausing (2001) uses BEA's annual data on the trade and other operations of U.S. multinational firms to investigate the extent to which tax-minimizing behavior influences intrafirm trade. Noting that multinational firms may be able to shift profits between countries by underpricing U.S. goods sold *to* affiliates in low-tax countries, and overpricing goods sold to the United States *by* affiliates in low-tax countries, she shows that tax considerations imply that U.S. intrafirm trade balances between U.S. parent companies and their foreign affiliates should be larger with affiliates in high-tax countries than with affiliates in low-tax countries. A measure of the intrafirm-trade balance with a given host country in a given year is regressed on the host country's effective corporate tax rate and a number of control variables that would be expected to determine the trade balance. The results show a positive relation between the intrafirm trade balance and the effective tax rate, which supports the hypothesis of income shifting through transfer-price manipulation.

Intrafirm trade in intermediate inputs is the focus of a study by Borga and Zeile (2003), who make use of BEA's microdata on U.S. multinational firms to examine the propensity of foreign affiliates to source inputs from their U.S. parents. The share of parent-supplied intermediate inputs in affiliate net output is related to a number of characteristics measured at the level of the parent company, of the affiliate, and of the affiliate's host country and industry. Results indicate that this trade is positively related to parent and affiliate characteristics that favor internalized transactions and the active coordination of the production process, to industry and affiliate characteristics associated with fragmented production processes, and to host-country characteristics that offer cost advantages. The signs on the coefficients for a number of variables

suggest vertical specialization between higher-skilled, or more technologically advanced, activities performed by the parent and lower-skilled, or more rudimentary, activities performed by the affiliate.

In other research using BEA's microdata on U.S. multinational firms, Feinberg and Keane (2001) investigate how the bilateral trade flows between U.S. parent companies and their affiliates in Canada responded to U.S.-Canada tariff reductions over the period 1983-92. They find that reductions in U.S. tariffs led to greater affiliate production for export to the United States (both to the U.S. parents and to unaffiliated buyers) and to reductions in affiliates' sales to the Canadian market. They also find the effect of reductions in Canadian tariffs on U.S.-parent-company exports to Canadian affiliates to have been positive but relatively small. In addition, they find substantial heterogeneity within industries in the response by firms to tariff reductions, which they suggest may indicate that government policies designed to protect vulnerable industries from trade liberalization may end up helping only a few firms (at the expense of others) within a given industry rather than helping the entire industry.

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Table 1.A. U.S. Intrafirm Exports of Goods, 1987-2000

[Millions of U.S. dollars or as a percentage of total U.S. exports of goods]

	Total U.S. intrafirm exports (\$M)	Exports from U.S. parent companies to their controlled affiliates abroad (\$M)	Exports from foreign-controlled U.S. affiliates to their foreign parent groups (\$M)	Total U.S. intrafirm exports (%)	Exports from U.S. parent companies to their controlled affiliates abroad (%)	Exports from foreign-controlled U.S. affiliates to their foreign parent groups (%)
1987	83,925	65,248	18,677	33.0	25.7	7.3
1988	104,205	78,204	26,001	32.3	24.3	8.1
1989	119,828	86,050	33,778	32.9	23.7	9.3
1990	125,552	88,375	37,177	31.9	22.5	9.4
1991	137,152	95,779	41,373	32.5	22.7	9.8
1992	148,304	100,737	47,567	33.1	22.5	10.6
1993	153,068	106,827	46,241	32.9	23.0	9.9
1994	182,558	132,694	49,864	35.6	25.9	9.7
1995	203,464	147,622	55,842	34.8	25.2	9.5
1996	220,903	161,359	59,544	35.3	25.8	9.5
1997	246,353	185,065	61,288	35.7	26.9	8.9
1998	229,546	173,431	56,115	33.7	25.4	8.2
1999	216,960	158,575	58,385	31.2	22.8	8.4
2000	232,431	167,646	64,785	29.7	21.4	8.3

Note: The data on total U.S. exports of goods used to calculate the shares in this table are from the U.S. Census Bureau.

Table 1.B. U.S. Intrafirm Imports of Goods, 1987-2000

[Millions of U.S. dollars or as a percentage of total U.S. imports of goods]

	Total U.S. intrafirm imports (\$M)	Imports by U.S. parent companies from their controlled affiliates abroad (\$M)	Imports by foreign-controlled U.S. affiliates from their foreign parent groups (\$M)	Total U.S. intrafirm imports (%)	Imports by U.S. parent companies from their controlled affiliates abroad (%)	Imports by foreign-controlled U.S. affiliates from their foreign parent groups (%)
1987	158,034	55,867	102,167	38.9	13.8	25.1
1988	177,476	65,464	112,012	40.2	14.8	25.4
1989	194,182	71,283	122,899	41.0	15.1	26.0
1990	206,916	75,251	131,665	41.8	15.2	26.6
1991	205,721	77,578	128,143	42.1	15.9	26.2
1992	215,477	83,260	132,217	40.5	15.6	24.8
1993	237,903	93,205	144,698	41.0	16.1	24.9
1994	273,288	107,203	166,085	41.2	16.2	25.0
1995	300,507	118,359	182,148	40.4	15.9	24.5
1996	321,277	133,388	187,889	40.4	16.8	23.6
1997	337,810	143,841	193,969	38.8	16.5	22.3
1998	349,449	149,925	199,524	38.3	16.4	21.9
1999	384,090	158,958	225,132	37.5	15.5	22.0
2000	439,830	172,643	267,187	36.1	14.2	21.9

Note: The data on total U.S. imports of goods used to calculate the shares in this table are from the U.S. Census Bureau.

Table 2.A. U.S. Intrafirm Exports of Goods
as a Percentage of Total U.S. Exports of Goods
to the Country of Destination, 1997

	Total U.S. intrafirm exports	Exports from U.S. parent companies to their controlled affiliates abroad	Exports from foreign- controlled U.S. affiliates to their foreign parent groups
All countries	35.7	26.9	8.9
Canada	41.5	35.7	5.7
Europe	41.0	32.8	8.2
Belgium and Luxembourg	31.9	27.5	4.4
France	38.1	28.2	10.0
Germany	46.2	32.1	14.1
Ireland	(D)	31.0	(D)
Italy	37.4	28.6	8.7
Netherlands	57.7	53.4	4.3
Spain	23.3	20.6	2.7
Sweden	46.0	15.0	31.0
Switzerland	70.3	55.4	14.9
United Kingdom	40.0	32.2	7.7
Other	(D)	21.7	(D)
Latin America and Other Western Hemisphere	25.3	21.7	3.7
Brazil	32.6	22.1	10.5
Mexico	30.0	27.6	2.5
Venezuela	22.8	20.6	2.2

Other	14.7	11.4	3.3
Africa	7.2	4.7	2.5
Middle East	3.8	2.0	1.8
Israel	5.6	3.8	1.7
Saudi Arabia	2.3	0.3	2.0
Other	4.1	2.7	1.4
Asia and Pacific	38.7	22.8	15.9
Australia	43.0	36.9	6.1
China	20.2	9.7	10.5
Hong Kong	69.7	64.9	4.8
India	7.5	3.5	4.0
Indonesia	8.0	4.0	4.0
Japan	59.1	22.4	36.7
Korea, Republic of	21.3	8.5	12.8
Malaysia	26.0	24.7	1.4
Philippines	18.6	16.4	2.2
Singapore	46.3	40.9	5.4
Taiwan	14.4	10.4	4.0
Thailand	20.1	14.5	5.6
Other	7.7	6.7	1.0

D Suppressed to avoid disclosure of data of individual companies.

Note: The countries listed in this table are the 28 U.S. trading partners for which the sum of U.S. exports and imports of goods was at least \$10 billion in 1997. The data on total U.S. exports of goods by country of destination that were used to calculate the shares in this table are from the U.S. Census Bureau.

Table 2.B. U.S. Intrafirm Imports of Goods
as a Percentage of Total U.S. Imports of Goods
from the Country of Origin, 1997

	Total U.S. intrafirm imports	Imports by U.S. parent companies from their controlled affiliates abroad	Imports by foreign- controlled U.S. affiliates from their foreign
All countries	38.8	16.5	22.3
Canada	44.1	33.1	11.0
Europe	44.9	13.2	31.7
Belgium and Luxembourg	(D)	(D)	43.2
France	42.5	14.1	28.4
Germany	59.4	9.4	50.0
Ireland	55.7	47.6	8.1
Italy	18.4	6.2	12.2
Netherlands	60.0	27.1	32.9
Spain	27.2	13.7	13.5
Sweden	57.8	5.6	52.3
Switzerland	65.2	13.6	51.5
United Kingdom	48.6	21.4	27.2
Other	(D)	(D)	15.1
Latin America and Other Western Hemisphere	29.8	23.0	6.8
Brazil	35.6	23.1	12.5
Mexico	34.1	28.2	5.9
Venezuela	12.9	0.7	12.2

Other	23.3	18.3	5.1
Africa	(D)	5.5	(D)
Middle East	(D)	3.8	(D)
Israel	(D)	(D)	6.9
Saudi Arabia	(D)	0.0	(D)
Other	(D)	(D)	(D)
Asia and Pacific	40.0	8.9	31.1
Australia	22.8	13.6	9.2
China	3.6	2.1	1.5
Hong Kong	67.7	41.4	26.3
India	1.1	0.8	0.4
Indonesia	12.5	4.3	8.1
Japan	72.1	1.9	70.1
Korea, Republic of	33.9	1.1	32.8
Malaysia	34.7	28.9	5.9
Philippines	13.4	9.4	4.0
Singapore	73.7	63.0	10.7
Taiwan	14.2	4.4	9.8
Thailand	13.3	5.3	8.0
Other	6.0	0.5	5.5

D Suppressed to avoid disclosure of data of individual companies.

Note: The countries listed in this table are the 28 U.S. trading partners for which the sum of U.S. exports and imports of goods was at least \$10 billion in 1997. The data on total U.S. imports of goods by country of origin that were used to compute the shares in this table are from the U.S. Census Bureau.

Table 3. Distribution Across U.S. Trading Partners
of Intrafirm-Trade Flows Between U.S. Parent Companies
and Their Controlled Affiliates Abroad, 1997

[Millions of U.S. dollars or as a percentage of all-countries total]

	Intrafirm exports by U.S. parents (\$M)	Intrafirm imports by U.S. parents (\$M)	Intrafirm exports by U.S. parents (%)	Intrafirm imports by U.S. parents (%)
All countries	185,065	143,841	100.0	100.0
Canada	54,223	55,592	29.3	38.6
Europe	53,509	24,026	28.9	16.7
Germany	7,848	4,046	4.2	2.8
Netherlands	10,589	1,979	5.7	1.4
United Kingdom	11,744	6,986	6.3	4.9
Other	23,328	11,015	12.6	7.7
Latin America and Other Western Hemisphere	29,147	32,125	15.7	22.3
Mexico	19,668	24,228	10.6	16.8
Other	9,479	7,897	5.1	5.5
Africa	535	1,096	0.3	0.8
Middle East	427	785	0.2	0.5
Asia and Pacific	47,221	30,217	25.5	21.0
Hong Kong	9,808	4,255	5.3	3.0
Japan	14,689	2,349	7.9	1.6
Malaysia	2,660	5,205	1.4	3.6
Singapore	7,231	12,647	3.9	8.8
Other	12,833	5,761	6.9	4.0

Table 4. Distribution Across U.S. Trading Partners
of Intrafirm-Trade Flows Between Foreign-Controlled U.S. Affiliates
and Their Foreign Parent Groups, 1997

[Millions of U.S. dollars or as a percentage of all-countries total]

	Intrafirm exports by U.S. affiliates (\$M)	Intrafirm imports by U.S. affiliates (\$M)	Intrafirm exports by U.S. affiliates (%)	Intrafirm imports by U.S. affiliates (%)
All countries	61,288	193,969	100.0	100.0
Canada	8,696	18,581	14.2	9.6
Europe	13,451	57,476	21.9	29.6
France	1,589	5,863	2.6	3.0
Germany	3,446	21,579	5.6	11.1
Switzerland	1,238	4,331	2.0	2.2
United Kingdom	2,821	8,884	4.6	4.6
Other	4,357	16,819	7.1	8.7
Latin America and Other Western Hemisphere	4,922	9,498	8.0	4.9
Mexico	1,759	5,093	2.9	2.6
Other	3,163	4,405	5.2	2.3
Africa	285	(D)	0.5	(D)
Middle East	369	(D)	0.6	(D)
Asia and Pacific	32,946	106,094	53.8	54.7
Japan	24,062	85,337	39.3	44.0
Korea, Republic of	3,213	7,598	5.2	3.9
Other	5,671	13,159	9.3	6.8

D Suppressed to avoid disclosure of data of individual companies.

Table 5. Contribution of Investing Country's Affiliates to the Intrafirm Trade of All Foreign-Controlled U.S. Affiliates With the Investing Country, for Selected Major Trading Partners, 1997

	Percentage of U.S.- affiliate intrafirm exports of goods to country accounted for by affiliates with UBO's in the country	Percentage of U.S.- affiliate intrafirm imports of goods from country accounted for by affiliates with UBO's in the country
Canada	20-40	60-80
Belgium and Luxembourg	0-20	40-60
France	60-80	60-80
Germany	60-80	80-100
Italy	40-60	60-80
Netherlands	40-60	80-100
Sweden	80-100	80-100
Switzerland	60-80	60-80
United Kingdom	40-60	60-80
Mexico	0-20	0-20
Hong Kong	0-20	0-20
Japan	80-100	80-100
Korea, Republic of	80-100	80-100
Singapore	0-20	0-20
Taiwan	0-20	40-60

UBO Ultimate beneficial owner

Note: The countries listed in this table are the 15 U.S. trading partners for which the sum of intrafirm exports and imports of goods by foreign-controlled U.S. affiliates was at least \$3 billion in 1997. In this table, size ranges are given for the percent shares in order to avoid the potential disclosure of data of individual companies.