



United States  
International Trade Commission

# Recent Trends in U.S. Services Trade:

2019 Annual Report

September 2019

Publication Number: 4975

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# United States International Trade Commission

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September 2019  
Publication Number: 4975  
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# Preface

This report is the 23rd in a series of annual reports on recent trends in U.S. services trade that the U.S. International Trade Commission (Commission or USITC) has published. The Commission also publishes an annual companion report on U.S. trade in goods, *Shifts in U.S. Merchandise Trade*. These recurring reports are the products of an investigation instituted by the Commission in 1993 under section 332(b) of the Tariff Act of 1930.<sup>1</sup> This report is one of the regular publications by the Commission that presents expert analysis of trade in services industries. It draws on fieldwork as well as published sources to apprise the Commission's customers and the public of global industry trends, regional developments, and competitiveness issues.<sup>2</sup>

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<sup>1</sup> On August 27, 1993, acting on its own motion under section 332(b) of the Tariff Act of 1930 (19 U.S. C. 1332(b)), the USITC instituted investigation no. 332-345, *Annual Reports on U.S. Trade Shifts in Selected Industries*. On December 20, 1994, the USITC on its own motion expanded the scope of this report to include more detailed coverage of services industries. Under the expanded scope, the USITC publishes two annual reports, *Shifts in U.S. Merchandise Trade* and *Recent Trends in U.S. Services Trade*. The Commission's current report format provides a systematic means of examining and assessing major trade developments with leading U.S. trading partners in the services, agriculture, and manufacturing sectors. Beginning in 2013, *Recent Trends* has rotated its coverage between four services categories: Professional services, electronic services, distribution services, and financial services. The 2018 *Recent Trends* report focused on electronic services. The previous report covering distribution services was published in 2015.

<sup>2</sup> Commissioners Randolph J. Stayin and Amy A. Karpel did not participate in this recurring report.



# Abbreviations and Acronyms

Terms	Definitions
3PL	third-party logistics
APL	American President Lines
AfCFTA	African Continental Free Trade Area
AI	artificial intelligence
AR	augmented reality
BPM6	<i>Balance of Payments Manual, Sixth Edition</i> (IMF)
BEA	Bureau of Economic Analysis (USDOC)
BRI	Belt and Road Initiative (China)
CAGR	compound annual growth rate
CMA CGM	Compagnie Générale Maritime/Compagnie Maritime d'Affrètement (France)
DLT	distributed ledger technology
D2C	direct-to-consumer
EU	European Union
FDI	foreign direct investment
FM	fleet management
FTE	full-time equivalent
GATS	General Agreement on Trade in Services
GDP	gross domestic product
GDPR	General Data Protection Regulation (EU)
GPS	Global Positioning System
GSBN	Global Shipping Business Network (CargoSmart, Hong Kong)
HFO	heavy fuel oil
IMO	International Maritime Organization (United Nations)
IT	information technology
ITA	International Trade Administration (USDOC)
ITF	International Transport Forum (OECD)
K Line	Kawasaki Kisen Kaisha (Japan)
M&As	mergers and acquisitions
MARPOL	International Convention for the Prevention of Pollution from Ships
MNE	multinational enterprise
MOFA	majority-owned foreign affiliates
MOL	Mitsui O.S.K. Lines (Japan)
MOUSA	majority-owned U.S. affiliate
MSC	Mediterranean Shipping Company (Switzerland)
NAICS	North American Industry Classification System
NOL	Neptune Orient Lines (Singapore)
NYK	Nippon Yusen Kabushiki Kaisha (Japan)
OECD	Organisation for Economic Co-operation and Development
ONE	One Network Express (Japan)
OOCL	Orient Overseas Container Line (Hong Kong)
PM	particulate matter
RFID	radio frequency identification
SMEs	small and medium-sized enterprises
SOx	sulfur oxide
TEU	twenty-foot equivalent unit
UK	United Kingdom

## Recent Trends in U.S. Services Trade, 2019 Annual Report

<b>Terms</b>	<b>Definitions</b>
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
USDOC	U. S. Department of Commerce
USITC	U.S. International Trade Commission
USMCA	United States-Mexico-Canada Agreement
USDOL	U.S. Department of Labor
UAE	United Arab Emirates
UBO	ultimate beneficial owner
VR	virtual reality
WTO	World Trade Organization

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# Executive Summary

The United States remained the world's largest services exporter and importer in 2017.<sup>3</sup>

U.S. cross-border services exports totaled \$778.4 billion in 2017, and cross-border imports totaled \$520.4 billion.<sup>4</sup> U.S. cross-border services exports represented the largest single-country share of total services exports in 2017, accounting for 15 percent of such exports worldwide. This was more than double the share of the next-largest single-country exporter, the United Kingdom (UK). Preliminary data indicate that U.S. cross-border services exports grew by 3.4 percent to \$805.7 billion in 2018, while imports grew by 4.3 percent to \$544.3 billion.

U.S. trade in services through foreign affiliate sales is consistently larger than U.S. cross-border trade in services. Sales by foreign affiliates of U.S. services firms totaled \$1.4 trillion in 2016, while purchases from U.S. affiliates of foreign services firms totaled \$876.9 billion.

This report begins with an overview of services trade in all sectors. Its primary focus, however, is developments in trade in distribution services (see highlights box on this page).

## Highlights within Distribution Services

- E-commerce firms are entering the logistics services market, which has also experienced major merger and acquisition activity in recent years.
- In maritime transport services, industry consolidation has increased both in maritime freight shipping and in port services.
- Retail service providers have adapted to the rise of e-commerce by combining sales available via physical stores with e-commerce retail sales and other online services.

<sup>3</sup> Exports and imports of services throughout this report exclude government transactions, which primarily consist of services supplied in support of operations of the U.S. military and embassies abroad.

<sup>4</sup> This report uses the latest available data. Industry-level analyses may cover slightly different years depending on the source, but U.S. services trade data will largely be consistent throughout the report. As of the date of publication, World Trade Organization data were available through 2017; annual data on cross-border trade from the Bureau of Economic Analysis (BEA) of the U.S. Department of Commerce were available through 2017 (with preliminary data available for 2018); and BEA data on affiliate transactions were available through 2016. For details on the different modes of services trade presented in this report, see chapter 1, box 1.1.

## Key Findings

### **The United States Runs a Trade Surplus in both Cross-border Services Trade and Foreign Affiliate Sales**

In 2017, the U.S. trade surplus in cross-border services trade was \$258.0 billion, while in 2016, U.S. sales of services by foreign affiliates exceeded purchases from U.S. affiliates of foreign services firms by \$507.3 billion. The United States also ran a cross-border trade surplus in most services sectors in 2017, with the largest surpluses in travel services, professional services and financial services. The largest U.S. cross-border services trading partner in 2017 was the UK, in terms of both imports and exports. After the UK, top destinations for cross-border exports included Canada, China, Ireland, and Japan, while top sources of imports were Germany, Japan, Canada, and India.

### **Distribution Services Accounted for 6 Percent of U.S. Cross-border Services Exports in 2017 and for 29 Percent of U.S. Foreign Affiliate Sales in 2016**

Beginning in 2013, *Recent Trends* has rotated its coverage among four services categories: professional services, electronic services, distribution services, and financial services. The 2018 *Recent Trends* report focused on electronic services. The previous report covering distribution services was published in 2015.

Distribution services, the focus of this report, refers to the wide range of activities that facilitate the movement of goods through the supply chain—from producer to end consumer. The sector includes wholesale and retail, logistics, and transportation services, along with intermediaries like freight forwarders and third-party logistics providers. Distribution services contributed \$2.7 trillion to U.S. private sector gross domestic product (GDP) in 2017, representing 17.2 percent of GDP. Distribution services were also a leading contributor to U.S. private sector employment in 2017, accounting for 21.1 percent of the private sector workforce, or 25 million full-time equivalent (FTE) employees.

An efficient distribution services sector enables the global trading system and improves overall economic welfare, whereas an inefficient distribution sector can increase costs and misallocate resources. This report includes chapters on logistics services, maritime transport services, and retail services. Over the past several years, the distribution services sector has been characterized by ongoing mergers and acquisitions, service innovation, and digitization.

In 2017, U.S. cross-border exports of distribution services totaled \$49.4 billion, or 6.3 percent of all U.S. cross-border service exports. Imports totaled \$64.6 billion (12.4 percent of total imports), resulting in a cross-border trade deficit of \$15.2 billion. Top markets for U.S. cross-border distribution exports included the UK, Japan, and Germany, and logistics services represented 49.8 percent of total distribution service exports in 2017.

In 2016, U.S.-owned foreign affiliates supplied \$407.9 billion in exports through sales abroad, accounting for 28.6 percent of all U.S.-owned foreign affiliate sales and representing the largest source of services supplied through foreign affiliates of U.S. firms. The value of distribution services purchased from affiliates of foreign firms located in the United States totaled \$294.8 billion, resulting in a trade surplus of \$113.1 billion. Within distribution services, wholesale services accounted for the majority of trade via affiliate transactions, in terms of both U.S. sales abroad and foreign company sales in the United States.

## **The Logistics Sector Is Facing Increased Competition from E-commerce Firms That Provide Logistics Services In-house**

Logistics services facilitate the transport and distribution of goods from producers, through supply chains, to consumers. These services may be supplied either in-house (e.g., by manufacturers or retailers) or by outside (third party) firms. In 2017, global third-party logistics revenues were \$869.0 billion (an 8.1 percent increase from 2016), and \$184.3 billion of those revenues were generated in the United States.

Increases in e-commerce sales have driven changes in the logistics industries. To keep more inventory close to consumers, online retailers are increasingly decentralizing their distribution centers and using more “last-mile” fulfillment centers. The logistics industry has seen increased competition and consolidation in recent years as a result, as e-commerce platform companies such as Amazon have built up strong logistics capabilities.

U.S. cross-border exports of logistics services totaled \$24.6 billion in 2017 (an 8.1 percent increase from 2016), while imports totaled \$21.9 billion (a 6.1 percent increase from 2016). The UK was the largest destination for exports and the largest source of imports. Sales by foreign affiliates of U.S. logistics services firms totaled \$64.6 billion in 2016 (a 7.0 percent decrease from 2015), and purchases from U.S. affiliates of foreign logistics services firms totaled \$40.8 billion (an 11.1 percent decrease from 2015).

## **Industry Consolidation Has Shaped Competition in the Maritime Services Sector**

The maritime transport industry, including maritime freight transportation and port services, encompasses the transport of cargo on ships; port and waterway operation services; and cargo handling services. In 2017, the revenues of the top 10 container shipping firms worldwide were approximately \$135.8 billion, or 65.4 percent of global industry revenue. The revenues of the top 10 container shipping lines increased at an annual rate of 3.0 percent between 2013 and 2017, slightly higher than the 2.7 percent growth rate recorded across the entire global industry during the same period.

The maritime services industry has been most affected in recent years by industry consolidation, a changing environment for international trade, and the adoption of blockchain technology by firms. Among these factors, industry consolidation has had the most pronounced impact on competition in the maritime sector. Consolidation has occurred principally through (1) mergers and acquisitions, as well as alliances, between large container shipping firms; (2) vertical integration between shipping lines and

port services providers; and (3) the increasing deployment of large container ships (megaships) by maritime firms.

In 2017, the United States posted a trade deficit of \$18.4 billion in maritime transportation services, largely reflecting the deficit in U.S. merchandise trade. The top countries for U.S. exports of maritime services in 2017 were Japan, Taiwan, and Germany. Separately, in 2016, sales by U.S.-owned foreign affiliates in maritime services reached \$7.0 billion, down from \$9.9 billion in 2015. In 2016, available data indicate that the largest decrease in sales of water transportation services by U.S. foreign affiliates occurred in China.

## **E-commerce Also Continues to Transform the Retail Services Sector**

Retailers are the critical link between producers and consumers, operating via physical “brick and mortar” stores and through multiple nonstore channels, such as business-to-consumer (B2C) e-commerce, catalogs, television, and direct selling. Global retail sales expanded modestly, rising less than 1 percent per year on average during 2014–18, as static to negative growth in many large developed countries was offset by relatively strong growth in emerging markets. By contrast, despite relatively slow overall retail growth in many leading retail economies, e-commerce sales increased on average by 85 percent.

Traditional brick-and-mortar retailers continue to face enormous challenges from e-commerce, but they are transforming their supply models in an effort to meet customer expectations. This trend is reflected in the rise of multichannel retailers, which serve customers through physical stores and e-commerce websites, and omnichannel retail services, which integrate in-store and e-commerce purchasing using a wide array of online tools. China’s giant e-commerce platforms are at the forefront of retail sector innovation, using cutting-edge digital capabilities and investing heavily in technology, and these innovations are key factors in the rapid growth of the Chinese retail market.

Unlike other distribution services covered in this report, there are no official U.S. data for cross-border trade in retail services; the cross-border component of retail services is reflected in U.S. merchandise trade statistics. U.S.-owned foreign affiliates supplied \$108.6 billion in retail services in 2016, and leading U.S. trading partners included the UK, Canada, Mexico, Germany, and China. Sales by foreign-owned U.S. affiliates in 2016 were valued at \$60.9 billion, and Canada accounted for 19.7 percent of foreign-owned affiliate sales in 2016.

## **USITC Services Roundtable**

The Commission hosted its 12th annual Services Roundtable on November 7, 2018. These roundtable discussions are held regularly to encourage dialogue among individuals from government, industry, and academia about issues affecting trade in services. The 2018 event focused on two themes: (1) how services trade is affected by tariffs, World Trade Organization commitments, other rules and agreements for trade in goods, and related crosscutting issues, and (2) differences between the services economies of developed and emerging markets. Commissioner Meredith Broadbent moderated the first half of the discussion, and Commissioner Jason Kearns moderated the second half.

# Chapter 1

## Introduction

The services sector represents the largest sector of the U.S. economy, and the United States is the world's top exporter and importer of cross-border services. In 2017, the U.S. services sector accounted for 68.6 percent of U.S. gross domestic product (GDP) and 70.7 percent of total U.S. employment.<sup>5</sup> The World Trade Organization (WTO) reports that U.S. cross-border commercial services exports totaled \$778.4 billion in 2017, and imports totaled \$520.4 billion, resulting in a \$258.0 billion trade surplus.<sup>6</sup>

The *Recent Trends in U.S. Services Trade* report, published annually by the U.S. International Trade Commission (Commission or USITC), examines U.S. services trade, global market conditions, and important U.S. trading partners both in the aggregate and in selected industries. This year, *Recent Trends* covers distribution services (a category created for the purpose of these reports), which includes transportation, logistics, and retail services.<sup>7</sup> Chapter 2 of this report discusses distribution services as a whole, while later chapters focus on three specific industries: logistics services (including express delivery services), maritime transport services (including port services), and retail services (including e-commerce services).

## Data and Organization

Because of the intangible nature of services, data on services trade tend to be more limited than data on goods trade. As a result, this report relies on a variety of sources to present the most complete picture of global trade in services. A large share of the trade data used in this report comes from the Bureau of Economic Analysis (BEA) at the U.S. Department of Commerce (USDOC). BEA publishes annual data on U.S. trade in services, both cross-border and affiliate. Together they account for a substantial portion of the services provided through all four “modes of supply” specified in the WTO’s General Agreement on Trade in Services (GATS) (box 1.1). As defined by BEA, cross-border trade occurs when suppliers in one country sell services to consumers in another country, with people, information, or money crossing national borders.<sup>8</sup> Firms also provide services to foreign consumers through affiliates established in host (i.e., foreign) countries.<sup>9</sup> The BEA categories for services trade—cross-border trade and affiliate transactions—do not correspond exactly to the channels of service delivery described in GATS. Mode 1 and mode 2 transactions, as well as some mode 4 transactions, generally are grouped together in BEA’s

<sup>5</sup> USDOC, BEA, “Real Value Added by Industry,” November 1, 2018; USDOC, BEA, table 6.5D, “Full-Time Equivalent Employees by Industry,” July 31, 2018.

<sup>6</sup> WTO, Statistics Database, Times Series on International Trade, “Trade in Commercial Services, 2005–onward” (accessed February 13, 2019).

<sup>7</sup> Since 2013, each year’s *Recent Trends* has focused on a particular category of services, rather than on all services in the economy. Other categories of services, covered in a four-year rotation, include financial services, professional services, and electronic services.

<sup>8</sup> This definition of cross-border trade is generally consistent with the WTO’s GATS definitions of mode 1, mode 2, and part of mode 4, as described in box 1.1.

<sup>9</sup> After income generated through affiliate transactions has been repatriated to the United States, it appears as direct investment income in the balance of payments.

data on cross-border trade, while mode 3 transactions are included, with some exceptions, in BEA's affiliate transactions data.<sup>10</sup> This report focuses on the BEA's "private services" data, which means that the export and import data presented throughout the report exclude government transactions, which primarily consist of services supplied in support of operations of the U.S. military and embassies abroad.

At an aggregated level, cross-border services trade appears in balance of payment statistics published quarterly for the United States by BEA, and annually in the WTO's global services trade data.<sup>11</sup> The term "commercial services," as used in the WTO services trade data, is roughly equivalent to the term "private services" used in BEA services trade data. Like the BEA cross-border trade data, the WTO cross-border trade data roughly correspond to modes 1, 2, and 4 specified in GATS.

BEA also publishes more detailed annual services trade information for cross-border and foreign affiliate transactions for the United States using survey data. These data are broken down by country and by industry, at the highest level of detail that its surveys and confidentiality policies allow.<sup>12</sup> Data are suppressed for certain countries or sectors for which disclosure could potentially reveal confidential information about individual company respondents. For distribution services sectors, cross-border trade data are available for both logistics services and maritime transport services, while foreign affiliate transactions are available for logistics services, maritime transport services, and retail services. More information on the data coverage for each distribution services sector is available in the "trade trends" sections of chapters 3 through 5.

It is important to note that BEA's survey-based statistics are collected and published in two different ways: for cross-border services trade, statistics are based on the type of service, while for services supplied through affiliates, statistics are based on the affiliate's primary industry.<sup>13</sup> This means that it is not necessarily accurate to directly compare cross-border trade and foreign affiliate sales. For example, a multinational e-commerce company like Amazon could report cross-border trade in a distribution service such as airfreight transport services but because Amazon is not primarily a transportation company, their affiliate sales data may not appear under the air transportation services category in BEA's foreign transactions data.

This report uses the latest available services trade data for each source described above. As of the date of publication, World Trade Organization data were available through 2017; annual data on cross-border trade from BEA were available through 2017 (with preliminary data available for 2018); and BEA data on affiliate transactions were available through 2016. Data on market conditions in each of the specific

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<sup>10</sup> BEA data include only affiliate transactions between residents and nonresidents, while certain transactions that fall under GATS's mode 3 could involve only residents of the host country. Some statistics on services supplied through mode 4 may also be commingled with statistics on compensation of employees. The channel of delivery that service providers use is determined primarily by the nature of the service. For example, legal and accounting services are generally supplied through affiliates, while audiovisual services are generally supplied across borders. Sales of services by foreign affiliates of U.S. firms tend to exceed U.S. cross-border exports of services in value. USDOC, BEA, U.S. International Economic Accounts: Concepts and Methods, September 2014.

<sup>11</sup> WTO, Statistics Database, Times Series on International Trade, "Trade in Commercial Services, 2005–onward" (accessed February 13, 2019); USDOC, BEA, table 1.1, "U.S. International Transactions" (accessed June 20, 2019).

<sup>12</sup> Data are suppressed for certain countries or sectors for which disclosure could potentially reveal confidential information about individual company respondents.

<sup>13</sup> See chapter 2 for further discussion of the ways that services trade data are classified, as well as chapters 3–5 for information about sector-specific data collection and classification.

industries in this report may also report different years based on the latest year for which data are available.

The report is organized into six chapters. This chapter gives an overview of the U.S. domestic services sector, global cross-border trade in services, and U.S. cross-border trade and foreign affiliate sales by sector. It also includes a discussion of cross-border trade in franchises as a special topic. Franchising is a business model rather than an industry; therefore, U.S. cross-border exports of rights to use intellectual property and of training services associated with setting up franchises abroad span a variety of service sectors, including distribution services. However, data on franchise service exports do not fully capture the internationalization of U.S.-based services sectors that use the franchise model. This special topic section considers the importance of the franchise model in the U.S. economy, the role of franchise fees in services trade data, and the international reach of major U.S. service sector franchisors.

Chapter 2 gives an overview of distribution services and identifies key trends affecting the sector as a whole. It also provides sector-level data on U.S. trade in distribution services, as well as the sectors' contribution to U.S. economic output, employment, wages, and labor productivity. Chapters 3–5 focus on logistics services, maritime transport services, and retail services, respectively. Each of these chapters provides information on market conditions, emerging trends affecting the supply of and demand for these services, and trends in cross-border trade and foreign affiliate sales. Finally, chapter 6 summarizes the views expressed at the 12th annual USITC Services Roundtable, hosted by the Commission on November 7, 2018. Appendix A summarizes recent research conducted by Services Division staff at the Commission, and appendix B presents underlying data for the figures presented in this report. The report is accompanied by web-based interactive charts, available on the Commission's website, which allow users to explore U.S. services trade trends over time and for select industries and countries.<sup>14</sup>

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<sup>14</sup> Interactive charts are available at:

[https://www.usitc.gov/publications/industry\\_econ\\_analysis\\_332/2019/recent\\_trends\\_us\\_services\\_trade\\_2019\\_annual\\_report.htm](https://www.usitc.gov/publications/industry_econ_analysis_332/2019/recent_trends_us_services_trade_2019_annual_report.htm)

**Box 1.1** Services Trade “Modes of Supply” under the World Trade Organization's General Agreement on Trade in Services (GATS)

The GATS identifies four “modes of supply” for services trade, or four ways that services can be traded:

**Mode 1** is cross-border supply. In this mode, a service is supplied by an individual or firm in one country to an individual or firm in another (i.e., the service crosses national borders). An example would be a firm’s digital file of an architectural design emailed (i.e., exported) to a foreign client.

**Mode 2** is consumption abroad. In this mode, an individual from one country travels to another country and consumes a service in that country. An example of a U.S. export of travel services in mode 2 would be a foreign tourist staying in hotels and eating at restaurants while vacationing in the United States.

**Mode 3** is commercial presence. In this mode, a firm based in one country establishes a local affiliate in another country and supplies services through that affiliate. An example would be a U.S.-based law firm providing legal services in a foreign country from an affiliated office located in that country.

**Mode 4** is the temporary presence of natural persons. In this mode, an individual from one country travels to another country on a short-term basis to supply a service—for instance, as a consultant, contract employee, or intracompany transferee at an affiliate.<sup>a</sup> An example would be a U.S.-based engineer traveling to a foreign country to help local staff on a construction project.

The U.S. Bureau of Economic Analysis (BEA) categories for services trade—cross-border trade and affiliate transactions—do not correspond exactly to the channels of service delivery described in GATS. Mode 1 and mode 2 transactions, as well as some mode 4 transactions, generally are grouped together in BEA’s data on cross-border trade, while mode 3 transactions are included, with some exceptions, in BEA’s affiliate transactions data.<sup>b</sup>

<sup>a</sup> USDOC, BEA, *Survey of Current Business*, October 2009, 40–43, tables 1 and 2. For more information on the four modes of supply under GATS, see WTO, “Basic Purpose and Concepts” (accessed March 11, 2018).

<sup>b</sup> BEA includes only affiliate transactions between residents and nonresidents, while certain transactions that fall under GATS’s mode 3 could involve only residents of the host country. Some statistics on services supplied through mode 4 may also be commingled with statistics on compensation of employees. The channel of delivery that service providers use is determined primarily by the nature of the service. For example, legal and accounting services are generally supplied through affiliates, while audiovisual services are generally supplied across borders. Sales of services by foreign affiliates of U.S. firms tend to exceed U.S. cross-border exports of services in value. USDOC, BEA, *U.S. International Economic Accounts: Concepts and Methods*, September 2014.

## The U.S. Services Sector

The U.S. services sector represented a substantial portion of the U.S. economy in 2017. In real value-added terms, U.S. private service-supplying industries contributed \$12.4 trillion, or 68.6 percent of

output to total U.S. GDP.<sup>15</sup> In contrast, goods-producing industries contributed only \$3.3 trillion or 18.4 percent to GDP.<sup>16</sup> In terms of employment, service-supplying industries also represented the majority of full-time equivalent (FTE) employees in the U.S. economy in 2017, accounting for 70.7 percent of all employment, or 95.3 million FTE employees. Goods-producing industries accounted for 15.5 percent of employment, or 20.9 million FTE employees.<sup>17</sup>

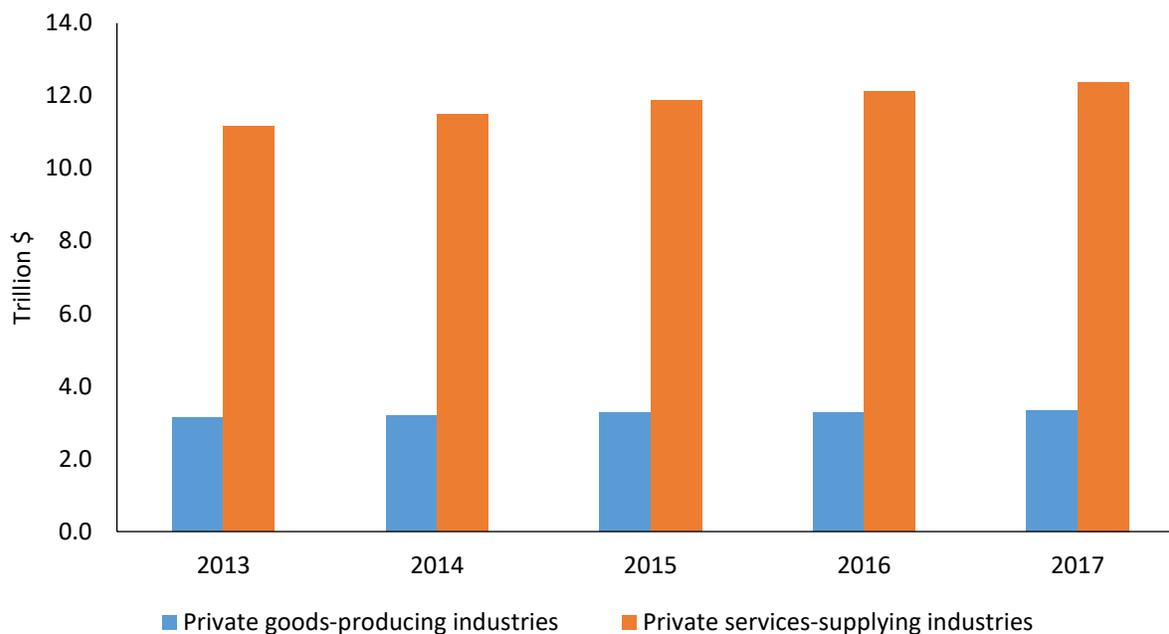
Figure 1.1 compares real total value added in the services sector from 2013 to 2017 to value added in goods-producing industries over the same period. Between 2013 and 2017, U.S. service-supplying industries increased real output by 10.9 percent, from \$11.2 trillion to \$12.4 trillion, representing an average annual growth rate of 2.6 percent. This represents a faster growth than goods-producing industries, which grew 6.1 percent from 2013 to 2017, with an average annual growth rate of 1.5 percent. U.S. service-supplying industries have also grown faster than goods-producing industries in terms of employment, increasing the number of FTE employees by a total of 21.2 percent from 2013 to 2017, compared to 17.1 percent for goods-producing industries.

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<sup>15</sup> Value added is a measure of an industry's contribution to GDP; it is the difference between the value of an industry's gross output and the cost of its intermediate inputs. Service-producing industries include utilities; wholesale trade; retail trade; transportation and warehousing; information; finance, insurance, real estate, rental, and leasing; professional and business services; educational services, health care, and social assistance; arts, entertainment, recreation, accommodation, and food services; and other services, except government services. USDOC, BEA, "Real Value Added by Industry," November 1, 2018.

<sup>16</sup> Goods-producing industries include mining; construction; manufacturing; and agriculture, forestry, fishing, and hunting. USDOC, BEA, "Real Value Added by Industry," November 1, 2018.

<sup>17</sup> Full-time equivalent employees (FTEs) equal the number of employees on full-time schedules plus the number of employees on part-time schedules converted to a full-time basis. The number of FTEs in each industry is the product of the total number of employees and the ratio of average weekly hours per employee for all employees to average weekly hours per employee on full-time schedules. USDOC, BEA, table 6.5D, "Full-Time Equivalent Employees by Industry," July 31, 2018.

**Figure 1.1** Real value added by U.S. industry, 2013–17

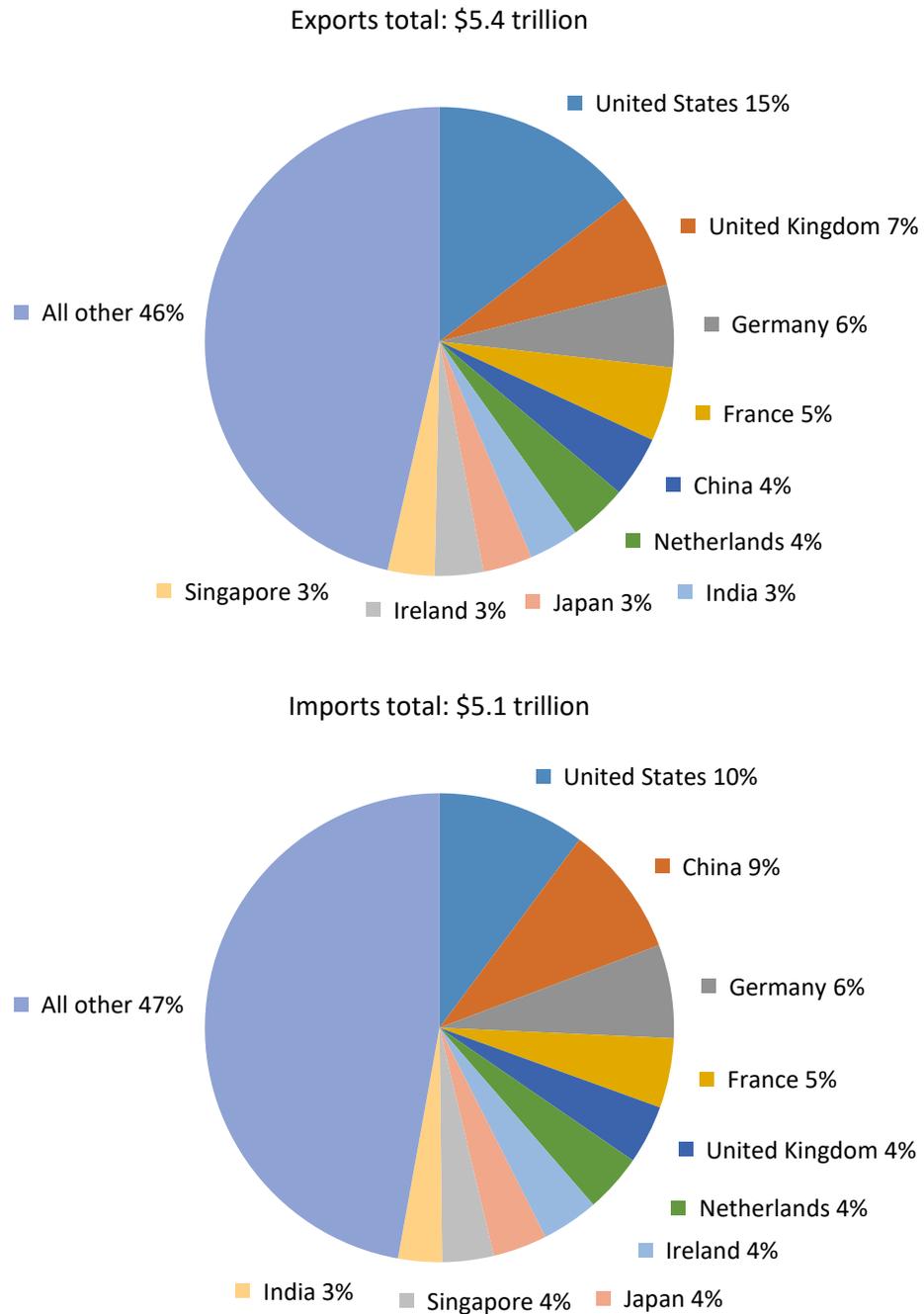
Source: USDOC, BEA, “Real Value Added by Industry,” November 1, 2018.  
 Note: Underlying data for this figure can be found in [appendix table B.1](#).

## Global Services Trade

The United States was the largest exporter of cross-border commercial services in 2017, supplying 14.5 percent of global exports (\$778.4 billion). It was followed by the United Kingdom (UK) and Germany, which accounted for 6.6 percent (\$353.1 billion) and 5.7 percent (\$303.4 billion) of total exports, respectively.<sup>18</sup> The United States was also the largest importer of global services, representing 10.2 percent of all cross-border service imports (\$520.4 billion) during that year. Other large importing countries include China, which accounted for 9.1 percent of imports (\$464.1 billion), and Germany, which accounted for 6.4 percent of total imports (\$329.2 billion). In all, the United States was a net exporter of cross-border commercial services in 2017, with a trade surplus of \$258.0 billion. Figure 1.2 shows the top 10 exporters and importers of cross-border commercial services by country for 2017.

<sup>18</sup> The term “commercial services,” as used in the WTO services trade data, is roughly equivalent to the term “private services” used in BEA services trade data. Like the BEA cross-border trade data, the WTO cross-border trade data roughly correspond to modes 1, 2, and 4 specified in GATS.

**Figure 1.2** Global services: Cross-border exports and imports of commercial services, 2017



Source: WTO, Statistics Database, Times Series on International Trade, "Trade in Commercial Services, 2005–onward" (accessed July 22, 2019).  
 Notes: Excludes public-sector transactions. Underlying data for this figure can be found in [appendix table B.2](#).

## U.S. Trade in Services

This section provides an overview of U.S. trade in services by broad sector, while chapter 2 focuses on trade in distribution services. As outlined in the data section of this chapter, BEA collects data on both cross-border services trade and foreign affiliate transactions for the United States, by country and by type of service. Using these data, figure 1.3 compares total U.S. cross-border imports and exports of private services to total imports and exports of services through foreign affiliate sales since 2009.<sup>19</sup>

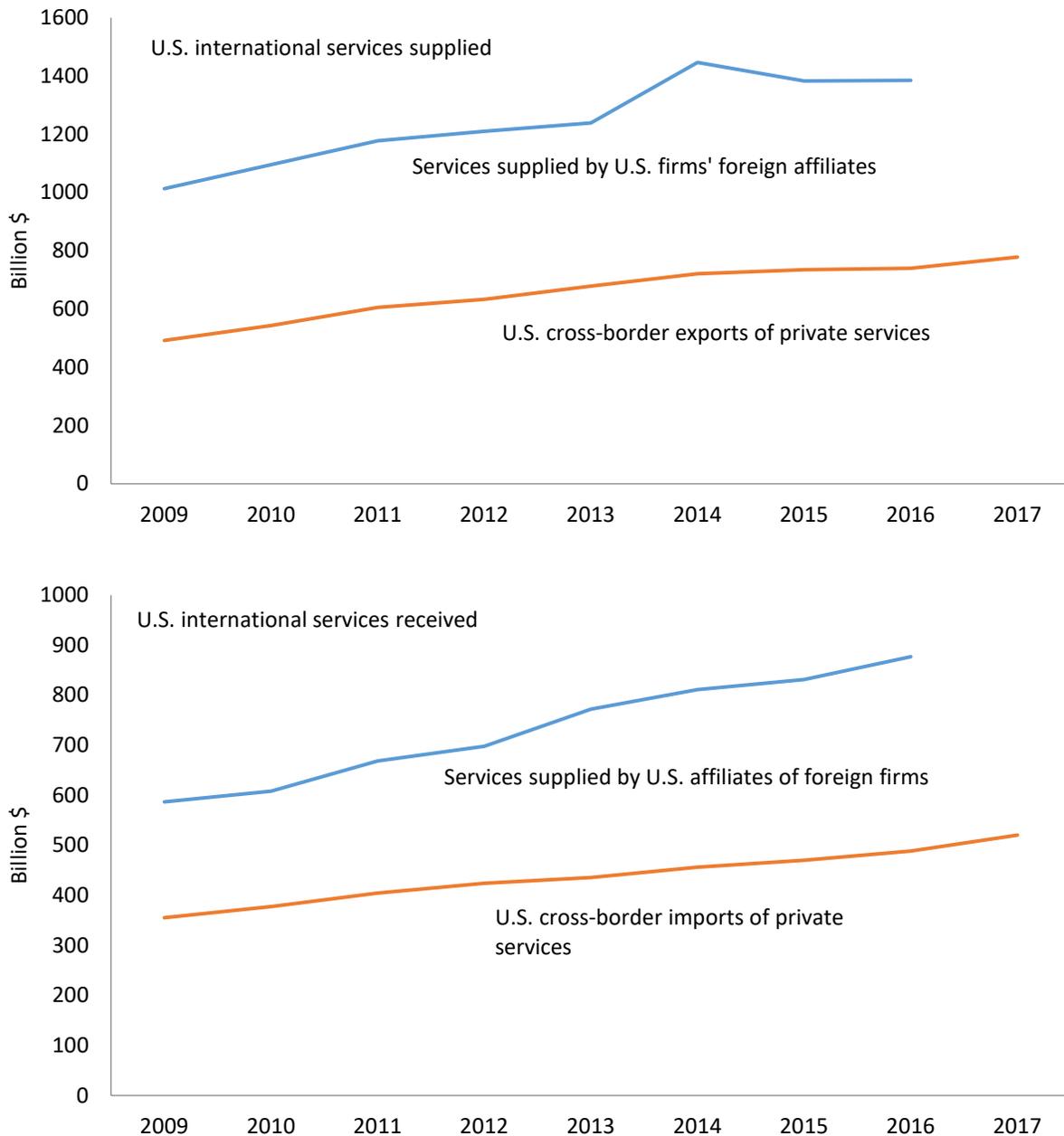
Overall, trade in services through foreign affiliate sales is consistently larger than trade in cross-border private services, and the United States runs a trade surplus in both cross-border trade and foreign affiliate transactions.<sup>20</sup> From 2016 to 2017, U.S. cross-border exports in services grew 5.2 percent, slightly slower than the average annual growth rate of 6.1 percent recorded during 2009–16. U.S. cross-border imports grew more quickly (6.6 percent) than the average annual growth rate (4.7 percent) over 2009–16. For foreign affiliate transactions, the value of services supplied by U.S. foreign affiliates slipped by 0.4 percent during 2015–16 to \$1.4 trillion, though the overall trend of U.S. foreign affiliates was positive. Services supplied by U.S. affiliates of foreign firms grew by 5.5 percent from 2015 to 2016 to \$876.9 billion.

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<sup>19</sup> The BEA data on cross-border trade in services includes trade on both private and public services. Public services principally include operations of the U.S. military and embassies abroad, and are excluded from this analysis unless otherwise noted.

<sup>20</sup> Due to differences in data collection and in the definition of private services vs. commercial services, total trade in cross-border services trade in 2017 varies slightly between the BEA data in this section and the WTO global services trade data presented above.

**Figure 1.3** U.S. services: Cross-border services trade and sales and purchases of services through foreign affiliates, 2009–17

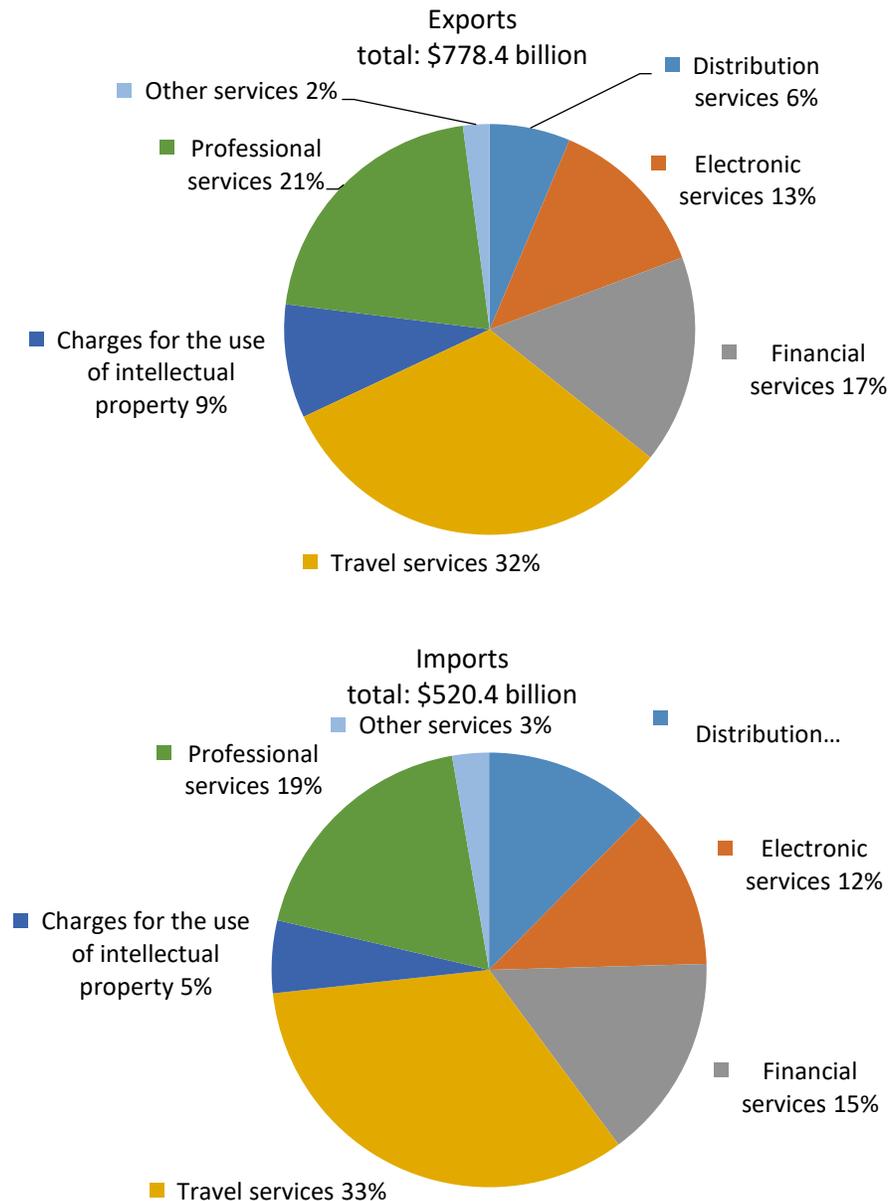


Sources: USDOC, BEA, table 2.1, “U.S. Trade in Services, by Type of Service,” October 19, 2018; table 4.1: “Services Supplied to Foreign Persons by U.S. MNEs through Their MOFAs, by Industry of Affiliate and by Country of Affiliate,” October 19, 2018; table 5.1, “Services Supplied to U.S. Persons by Foreign MNEs through Their MOUSA, by Industry of Affiliate and by Country of UBO,” October 19, 2018. (See appendix table B.3.) MNEs = multinational enterprises; MOFAs = majority-owned foreign affiliates; MOUSA = majority-owned U.S. affiliate; UBO = ultimate beneficial owner.

Note: The BEA 2014 Benchmark Survey of U.S. Direct Investment Abroad reported that the value of services supplied abroad through the affiliates of U.S. MNEs was 14 percent higher in 2014 than in the previous year. This increase is predominantly attributable to outreach efforts by the BEA to improve survey coverage, which increased the number of reporting companies that were ultimately included in the 2014 Benchmark Survey sample. As a result, the figures for 2014 affiliate sales may not be comparable to figures for sales reported in 2013 or earlier. USDOC, BEA, “U.S. International Services: Trade in Services in 2015 and Services Supplied through Affiliates in 2014,” December 2016, 24; Scott, *Activities of U.S. Multinational Enterprises*, December 2016, 12. Underlying data for this figure can be found in [appendix table B.3](#).

## Cross-border Trade

The largest segment of both U.S. cross-border exports and imports in 2017 was travel services, which comprised 32.3 percent of all exports (\$251.4 billion) and 33.4 percent of all imports (\$173.9 billion). Figure 1.4 presents the breakdown of U.S. cross-border exports and imports of private services by category for 2017. Distribution services, the focus of this report, comprises 6.3 percent of cross-border exports (\$49.4 billion), and 12.4 percent of cross-border imports (\$64.6 billion). In most service sectors, the United States ran a surplus in cross-border trade, with the largest surplus in travel services (\$77.4 billion), followed by professional services (\$66.3 billion) and financial services (\$48.1 billion). The only deficit in cross-border trade came from distribution services (\$15.2 billion), which was driven by deficits in sea transport, air transport (port), and trade-related services.

**Figure 1.4** U.S. services: Cross-border trade by services industry, 2017

Source: USDOC, BEA, table 2.1 "U.S. Trade in Services, by Type of Service," October 19, 2018.

Note: Data excludes public-sector service transactions. Underlying data for this figure can be found in [appendix table B.4](#).

The UK was the largest U.S. service trade partner in 2017 in terms of both imports and exports. After the UK, the top destinations for U.S. exports in 2017 were Canada, China, Ireland, and Japan, while the top sources of imports were Germany, Japan, Canada, and India.<sup>21</sup>

Preliminary data for 2018, available in broad sector categories, indicate a 3.4 percent increase in exports and a 4.3 percent increase in imports over 2017. Total private services exports in 2018 were valued at

<sup>21</sup> USDOC, BEA, table 2.2, "U.S. Trade in Services, by Type of Service and by Country or Affiliation," October 19, 2018.

\$805.7 billion, and imports were valued at \$544.3 billion, resulting in a \$261.4 billion trade surplus. Table 1.1 compares these preliminary data to 2017 services trade data by sector. Maintenance and repair services not included elsewhere, and professional and management consulting services, saw the largest export growth between 2017 and 2018 (15.2 percent and 10.0 percent, respectively); only insurance services saw an export decline (3.1 percent) over this period. Professional and management consulting services saw the largest increase in imports at 12.9 percent, while insurance services imports saw the largest decline at 16.0 percent.

**Table 1.1** U.S. private services exports and imports to the world, by category, 2017–18 (preliminary)

Service industry	2017 (billion \$)	2018 (billion \$)	% change 2017–18
<b>Exports</b>			
Travel and passenger fares	251.5	256.1	1.8
Charges for the use of intellectual property n.i.e. <sup>a</sup>	126.5	128.7	1.8
Financial services	109.2	112.0	2.6
Professional and management consulting services	78.9	86.8	10.0
Telecommunications, computer, and information services	42.0	43.2	2.9
Research and development services	42.2	42.6	0.8
Technical, trade-related, and other business services <sup>b</sup>	36.0	36.4	1.2
Maintenance and repair services n.i.e.	26.9	31.0	15.2
Air transport (excludes passenger fares)	24.6	26.7	8.6
Sea transport	18.7	19.5	4.3
Insurance services	18.0	17.5	-3.0
Other services	4.6	5.1	11.3
Total	779.3	805.7	3.4
<b>Imports</b>			
Travel and passenger fares	173.8	186.5	7.3
Charges for the use of intellectual property n.i.e. <sup>a</sup>	53.4	56.1	5.0
Professional and management consulting services	42.2	47.6	12.9
Telecommunications, computer, and information services	39.6	41.2	3.9
Sea transport	37.1	39.0	5.3
Insurance services	50.6	42.5	-16.0
Research and development services	35.2	34.6	-1.7
Financial services	29.0	31.3	8.1
Technical, trade-related, and other business services <sup>b</sup>	26.8	29.6	10.6
Air transport (excludes passenger fares)	21.9	23.3	6.2
Maintenance and repair services n.i.e.	8.4	8.7	3.8
Other services	3.9	3.9	-0.4
Total	521.8	544.3	4.3

Source: USDOC, BEA, International Transactions table 3.1, "U.S. International Trade in Services," June 20, 2019.

Notes: Data for 2018 are preliminary. n.i.e. = not included elsewhere. Data exclude public-sector services transactions.

<sup>a</sup> The category "charges for use of intellectual property, n.i.e." (formally classified as royalties and licenses fees) includes industrial processes, computer software, trademarks, franchise fees, audiovisual and related products, and other intellectual property.

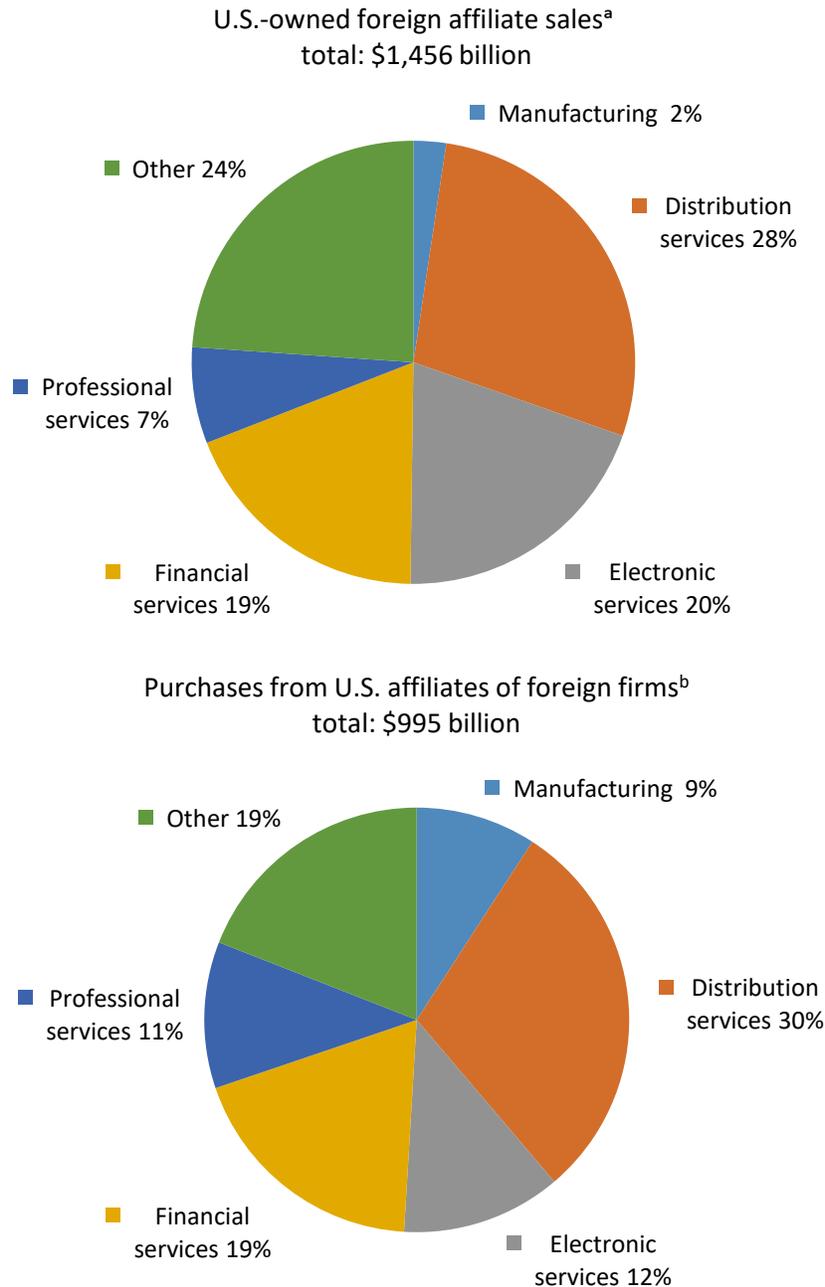
<sup>b</sup> Includes construction, architectural and engineering services, waste treatment, operational leasing, trade-related services, and other business services.

## Affiliate Transactions

Distribution services are the largest source of services supplied through foreign affiliates of U.S. firms, as well as the largest source of services provided by U.S.-based affiliates of foreign firms in 2016 (the last year for which data were available). For U.S. firms operating abroad, distribution services affiliates sold

\$407.9 billion worth of services in 2016, making up 28.6 percent of all foreign affiliate sales. Electronic and financial services also represented substantial shares of total services sales by foreign affiliates, accounting for 20 percent (\$288.7 million) and 19 percent (\$274.7 million) of these sales, respectively, in 2016. Meanwhile, purchases of distribution services from U.S. affiliates of foreign firms totaled \$294.8 billion, accounting for 30 percent of all purchases. Financial services also represented a large share of purchases from the U.S. affiliates of foreign firms, accounting for 20 percent (\$187.5 million) of all such purchases in 2016. Figure 1.5 shows the distribution of affiliate transactions by industry for 2016.

**Figure 1.5** U.S. services: Affiliate sales and affiliate purchases by industry, 2016



Source: USDOC, BEA, table 4.1, “Services Supplied to Foreign Persons by U.S. MNEs through Their MOFAs, by Industry of Affiliate and by Country of Affiliate,” and table 5.1, “Services Supplied to U.S. Persons by Foreign MNEs through Their MOUSAs, by Industry of Affiliate and by Country of UBO,” October 19, 2018.

<sup>a</sup> Includes goods and services supplied by majority-owned foreign affiliates of U.S. parent firms.

<sup>b</sup> Includes goods and services supplied by majority-owned U.S. affiliates of foreign parent firms.

MNEs = multinational enterprises; MOFAs = majority-owned foreign affiliates; MOUSA = majority-owned U.S. affiliate; UBO = ultimate beneficial owner.

Notes: “Manufacturing” includes ancillary services provided by goods manufacturers. “Other” includes ancillary services provided in the mining, agriculture, and other sectors, as well as suppressed data. Beginning in the 2018 *Recent Trends in U.S. Services Trade* report, software publishing was reallocated from “Other Services” to “Electronic Services” to better reflect the industry composition. Therefore, electronic services data in this report and the 2018 report cannot be directly compared with such data in USITC reports published before 2018. Underlying data for this figure can be found in [appendix table B.5](#).

As it was for cross-border services, in 2016 the UK was a leading source of and destination for foreign affiliate transactions. The UK was the largest source of sales by U.S. foreign affiliates, followed by Ireland, Canada, Singapore, and Switzerland.<sup>22</sup> Japanese affiliates represented the largest source of purchases from U.S. affiliates of foreign firms, followed by the UK, Germany, Canada, and France.<sup>23</sup>

## Special Topic: Trade in Services through Franchising

Franchising is a business structure in which a company, or *franchisor*, authorizes independent third parties, *franchisees*, to use the franchisor's goods, services, intellectual property, and/or business model under partnership agreements, with associated fees or royalties.<sup>24</sup> These franchisees establish independent businesses and are not affiliates of the franchisor.<sup>25</sup> When franchisors expand operations to other countries, they likely export intellectual property, business models, and training services through a combination of mode 1 trade (fees for the use of intellectual property) and mode 4 trade (sending individuals from the franchisor company to train franchisees). This business model, which defines a company as a franchise, is distinct from the industries that use it, which can range widely, from retail outlets and quick-service restaurants to beverage bottling and business services. Therefore, trade statistics on franchise service exports refer only to the transfer of payments for the use of this format, not overall revenues.<sup>26</sup>

Franchising services are made up of two main segments: product distribution franchising and business format franchising. Business format franchising is when the franchisor provides the franchise with the operating model for the system in addition to its trade name, products and services, while product distribution franchising is defined by supplier-dealer relationships where the franchisee sells the franchisor's products.<sup>27</sup> Typical product distribution services are beverage bottling, automotive and truck dealerships, and gasoline service stations without associated convenience stores.<sup>28</sup> Business format franchising is the more common franchising segment, encompassing restaurants, retail outlets, business services, lodging, personal services, and real estate/residential services.<sup>29</sup> In 2016, business format franchises accounted for 91.5 percent of U.S. franchise establishments, and they contributed 77.7 percent of total output by all franchises.<sup>30</sup>

<sup>22</sup> USDOC, BEA, table 4.1, "Services Supplied to Foreign Persons by U.S. MNEs through Their MOFAs, by Industry of Affiliate and by Country of Affiliate," October 19, 2018.

<sup>23</sup> USDOC, BEA, table 5.1, "Services Supplied to U.S. Persons by Foreign MNEs through Their MOUSAs, by Industry of Affiliate and by Country of UBO," October 19, 2018.

<sup>24</sup> USDOC, BEA, "Quarterly Survey of Transactions in Selected Services and Intellectual Property with Foreign Persons," October 2018, 21; industry representatives, interview by USITC staff, Washington, DC, April 30, 2019.

<sup>25</sup> USDOC, ITA, "2016 Top Markets Report: Franchising," May 2016, 3.

<sup>26</sup> BEA formally defines these fees as "fees received and paid by the U.S. Reporter under business format franchising agreements with foreign persons," which may include "a marketing strategy and plan, operating manuals and standards, quality control, and continuing two-way communications." USDOC, BEA, "Quarterly Survey of Transactions in Selected Services and Intellectual Property with Foreign Persons," October 2018, 21.

<sup>27</sup> PwC, "The Economic Impact of Franchised Businesses," September 15, 2016, E-1.

<sup>28</sup> PwC, "The Economic Impact of Franchised Businesses," September 15, 2016, I-5.

<sup>29</sup> PwC, "The Economic Impact of Franchised Businesses," September 15, 2016, I-5.

<sup>30</sup> PwC, "The Economic Impact of Franchised Businesses," September 15, 2016, I-7, I-16.

Globally, the United States is the largest franchising market; other large markets include Canada, the UK, Japan, Australia, and Brazil. In 2017, the domestic U.S. franchising market had a total value of \$713.2 billion in output (\$425.5 billion in value added).<sup>31</sup> Overall, the market grew in terms of output by 5.6 percent during 2017, slightly slower than the 5.9 percent compound annual growth rate (CAGR) recorded during 2014–16.<sup>32</sup> One explanation for the output growth in franchising during 2014–17 is the growth in U.S. consumer spending over the same period.<sup>33</sup>

In the United States, the majority of output by franchises are in quick-service restaurants such as fast-food restaurants, beverage bars, and cafeterias, contributing 33.4 percent of output by business format franchises in 2017, followed by business services (13.6 percent), lodging (10.0 percent) and table/full service restaurants (9.5 percent).<sup>34</sup> Though often associated with large multinational enterprise (MNE) franchisors, most franchisees' operations are small and medium-sized businesses (SMEs), usually single establishments employing less than 30 individuals.<sup>35</sup> Due to this structure, in 2016, franchise businesses directly accounted for 5.6 percent of all private nonfarm U.S. jobs, while indirectly accounting for 10.1 percent, via the purchase of goods and services by franchisees.<sup>36</sup>

In 2017, U.S. cross-border exports of franchising fees for business format franchises totaled \$5.3 billion, while imports of such fees totaled \$43 million, resulting in a trade surplus of \$5.2 billion. This large surplus reflects U.S. comparative advantage in the modern franchising business model, which was created in the United States.<sup>37</sup> From 2013 through 2017, exports of franchise fees fell on average by 2.1 percent each year, likely reflecting the global economic slowdown and reductions in global consumer spending over this same time (figure 1.6).<sup>38</sup> More pronounced was the decline for U.S. imports of franchising services from \$189 million in 2013 to \$43 million in 2017, decreasing on average 20.1 percent each year. Industry representatives suggest that insufficient reporting by franchising firms may contribute to the apparent decline.<sup>39</sup> For product distribution franchises, U.S. cross-border fees are not separately reported.<sup>40</sup>

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<sup>31</sup> IHS Markit Economics, "Franchise Business Economic Outlook for 2018," January 2018, 11, 2.

<sup>32</sup> IHS Markit Economics, "Franchise Business Economic Outlook for 2018," January 2018, 11, 2.

<sup>33</sup> U.S. consumer spending increased by 12.1 percent from 2014 to 2018. USDOC, BEA, "Table 2.3.3. Real Personal Consumption Expenditures by Major Type of Product, Quantity Indexes" (accessed April 8, 2019).

<sup>34</sup> IHS Markit Economics, "Franchise Business Economic Outlook for 2018," January 2018, 11, 20.

<sup>35</sup> USDOC, ITA, "2016 Top Markets Report: Franchising," May 2016, 5.

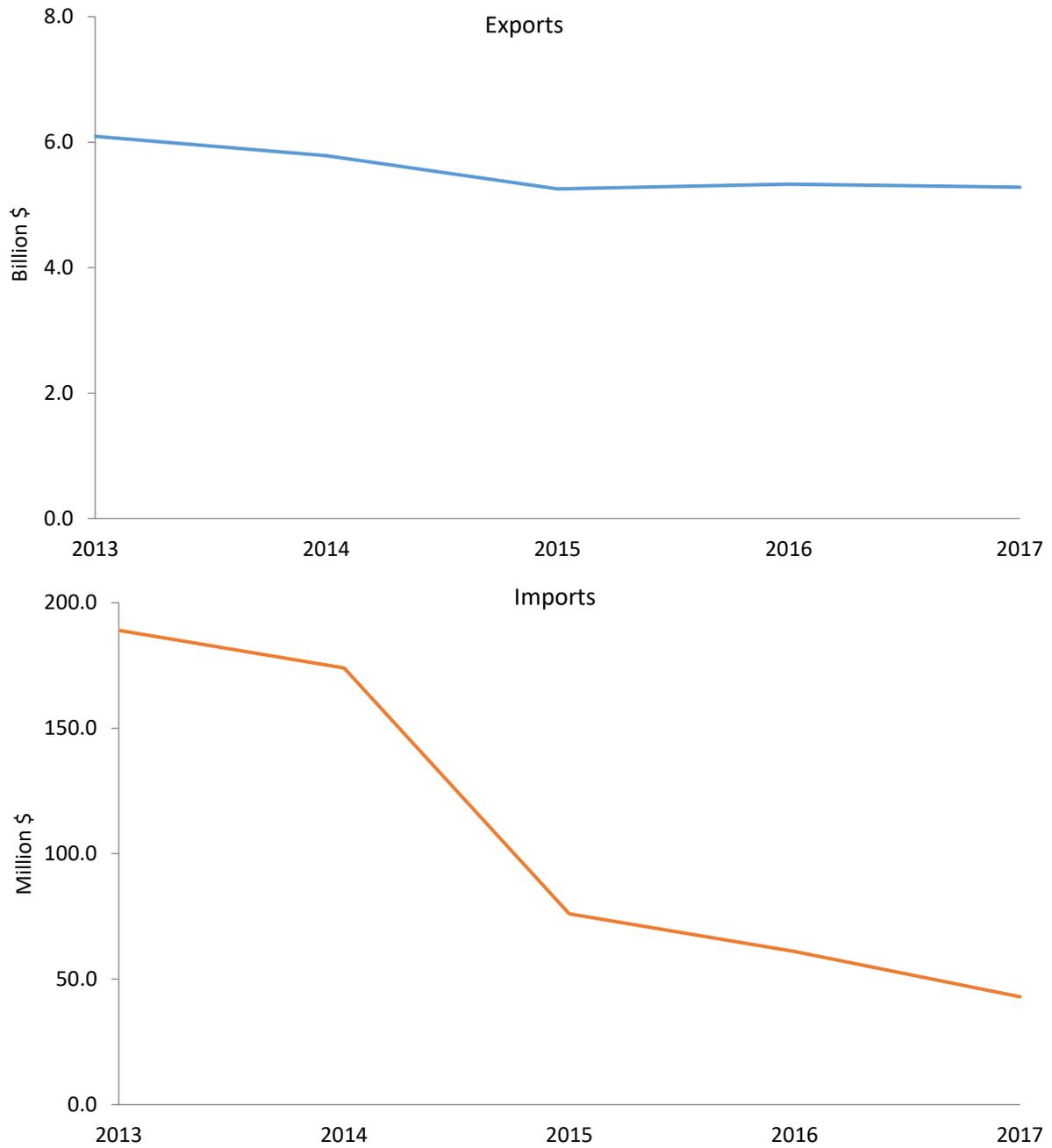
<sup>36</sup> PwC, "The Economic Impact of Franchised Businesses," September 15, 2016, I-6, I-7.

<sup>37</sup> Industry representatives, interview by USITC staff, Washington, DC, April 30, 2019. The International Trade Administration also notes the enforcement of brand standards and strong training and support systems as reasons for the United States' global leadership in franchising services. USDOC, ITA, "2016 Top Markets Report: Franchising," May 2016, 8.

<sup>38</sup> Note that in figure 1.6, the export graph shows billions of dollars, while the import graph is in millions of dollars.

<sup>39</sup> Industry representatives, interview by USITC staff, Washington, DC, April 30, 2019.

<sup>40</sup> USDOC, BEA, "Quarterly Survey of Transactions in Selected Services and Intellectual Property with Foreign Persons," October 2018, 20.

**Figure 1.6** Franchising fees: U.S. cross-border trade 2013–17

Source: USDOC, BEA, table 2.1, “U.S. Trade in Services, by Type of Service” (accessed March 19, 2019).

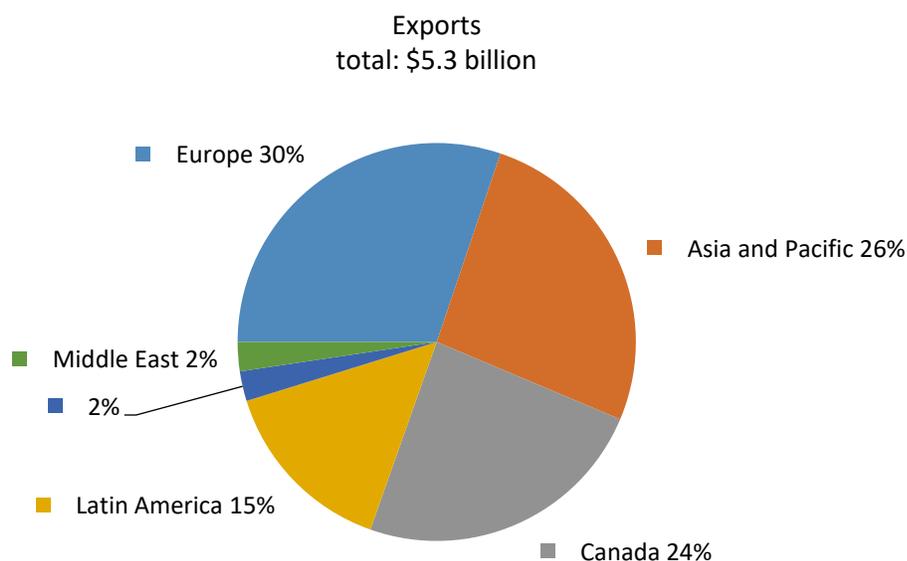
Note: Due to the large trade in balance between U.S. exports and imports of franchising fees, the figures use different scales. Franchising fees only include fees from business format franchising. Industry representatives suggest that insufficient reporting by franchising firms may contribute to the apparent decline. Underlying data for this figure can be found in [appendix table B.6](#).

Top regions in 2017 for U.S. exports of franchising services were Europe (\$1.6 billion), Asia and Pacific (\$1.4 billion), and Canada (\$1.3 billion) as shown in figure 1.7.<sup>41</sup> U.S. exports of franchising services to

<sup>41</sup> USDOC, BEA, “Table 2.2. U.S. Trade in Services, by Type of Service and by Country or Affiliation” (accessed March 19, 2019).

Europe and to Asia and Pacific declined during 2013–17 by 20.5 percent and 16.9 percent, respectively, while such exports to Latin America increased by 16.0 percent, from \$674 million in 2013 to \$782 million in 2017. Recall, however, that BEA suppresses most country-specific and regional import data to avoid disclosing individual company data.

**Figure 1.7** Franchising fees: U.S. exports by region, 2017



Source: USDOC, BEA, table 2.1, “U.S. Trade in Services, by Type of Service” (accessed March 19, 2019).

Note: Underlying data for this figure can be found in [appendix table B.7](#).

Franchising fees collected from foreign affiliates of U.S. franchising operations totaled \$3.3 billion in 2017, a 26.0 percent decrease from \$4.5 billion in 2013. These fees made up 62.4 percent of the total value of all U.S. exports of franchising fees in 2017 and far exceeded purchases from U.S. affiliates of foreign franchise operations (\$43.0 million).

However, trade statistics on franchise services may not capture the full value of U.S. exports via franchise agreements. The sales of goods and services associated with the franchising agreement (such as equipment and production inputs) are typically classified by the industry of the product sold and therefore are not captured by official trade data as being related to franchises. Due to these limitations, industry representatives suggest that a decline in franchise fees may not necessarily imply a reduction in U.S. trade by franchises for all exports of goods and services associated with franchising operations.<sup>42</sup> Indeed, franchise activities “often act as a significant export multiplier” due to related exports from the franchisors’ home country to their international franchise locations.<sup>43</sup> For instance, a U.S. coffee chain franchise may decrease the royalty paid by a foreign franchisee, and instead require the purchase of coffee beans and/or café equipment through its own distribution channels.

<sup>42</sup> Industry representatives, interview by USITC staff, Washington, DC, April 30, 2019.

<sup>43</sup> USDOC, ITA, “2016 Top Markets Report: Franchising,” May 2016, 9–10.

Because trade statistics on franchise operations are limited, another way to understand U.S. franchise exports is to consider the international reach of U.S.-based franchisors. In 2017, 42 of the top 50 international franchisor firms were U.S.-owned firms, with a combined \$357.5 billion in sales in their global franchise systems, making U.S. franchises among the largest franchising firms worldwide.<sup>44</sup> The top U.S. franchisor firms by total 2017 revenues were McDonald's (\$85.0 billion), followed by KFC (\$23.2 billion) and Subway (\$17.0 billion), all of which are quick-service restaurants (table 1).<sup>45</sup>

Many franchises in international markets are of local origin and provide little opportunity for foreign concepts due to consumer preferences for native concepts.<sup>46</sup> Despite this, the top 10 U.S. franchising firms increased the number of their international establishments on average by 36.3 percent between 2012 and 2017.<sup>47</sup> For many of the top U.S. franchising firms in 2017, the majority of their establishments were international establishments. Notably, 79.8 percent of KFC's establishments were outside of the United States (table 1.2).

**Table 1.2** Top 10 U.S. franchises by system revenues, 2017

Rank	Company	Industry	System sales (million \$)	U.S. locations	Total locations	International share (%)	Franchised share (%)
1	McDonald's	Quick-service food	\$85,002	14,153	36,899	61.6	85
2	KFC	Quick-service food	\$23,193	4,167	20,604	79.8	93
3	Subway	Quick-service food	\$17,000	26,741	45,936	41.8	100
4	Ace Hardware	Retail merchandise	\$15,016	4,461	5,092	12.4	98
5	Pizza Hut	Quick-service food	\$12,019	7,667	16,411	53.3	97
6	RE/MAX	Real estate	\$11,515	3,679	7,459	50.7	100
7	Domino's Pizza	Quick-service food	\$10,900	5,371	13,811	61.1	97
8	Marriott Hotels & Resorts	Hotels	\$10,750	370	626	40.9	43
9	Wendy's	Quick-service food	\$9,930	5,739	6,537	12.2	95
10	Taco Bell	Quick-service food	\$9,656	6,278	6,604	4.9	87

Source: Franchise Times, "Franchise Times Top 200+, 2017", October 2017.

According to industry representatives, two factors currently limit opportunities for further domestic expansion. One is the maturity of the U.S. franchise market; the other is the present tightness of the U.S. labor market, given that many franchises rely on low-wage labor as a major input of production. As a result, U.S. franchising firms are focusing on opportunities to expand their franchises' presence abroad. U.S. franchises have a competitive advantage in international expansion due to brand recognition and extensive domestic experience in franchise development. Yet those firms still face obstacles to international expansion, such as trade and regulatory restrictions and limited host country-based investors.<sup>48</sup>

<sup>44</sup> *Franchise Times*, "Franchise Times Top 200+, 2017", October 2017.

<sup>45</sup> *Franchise Times*, "Franchise Times Top 200+, 2017", October 2017.

<sup>46</sup> USDOC, ITA, USCS, "Franchising Industry: A Reference for U.S. Exporters," 2018, 6, 10, 20, 70.

<sup>47</sup> *Franchise Times*, "Franchise Times Top 200+, 2012", October 2012; *Franchise Times*, "Franchise Times Top 200+, 2017", October 2017.

<sup>48</sup> Industry representatives, interview by USITC staff, Washington, DC, April 30, 2019; USDOC, ITA, USCS, "Franchising Industry: A Reference for U.S. Exporters," 2018.

Two of the main factors that increase costs to franchising firms are (1) trade restrictions on relevant merchandise for franchises and (2) inadequate governmental protections for franchising and intellectual property. For instance, high tariffs on food products or local sourcing requirements may increase costs for international quick-service restaurants. The franchising format is highly reliant on protection of intellectual property and the reliability of the regulatory environment, so countries that limit protections in these areas increase risks to franchisors considering expansion. Furthermore, many countries lack specific laws or government entities that regulate franchise operations or contracts.<sup>49</sup> In some markets, firms face these franchising-specific challenges in addition to the more general barriers faced by all foreign firms.<sup>50</sup>

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<sup>49</sup> USDOC, ITA, USCS, “Franchising Industry: A Reference for U.S. Exporters,” 2018, 8, 18, 25, 27, 48, 52, 70, 92, 97, 108, 111.

<sup>50</sup> Industry representatives, interview by USITC staff, Washington, DC, April 30, 2019; USDOC, ITA, USCS, “Franchising Industry: A Reference for U.S. Exporters,” 2018; USDOC, ITA, “2016 Top Markets Report: Franchising,” May 2016, 9–10.

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# Chapter 2

## Distribution Services

### Overview

Distribution services refer to the wide range of activities that facilitate the movement of goods through the supply chain—from producer to end consumer. While wholesale and retail services firms form the core of the distribution services industry, logistics and transportation services companies provide the vital connections between manufacturer, wholesaler, retailer, and final customer. The distribution services industry also includes several types of firms that ease the conveyance of intermediate and final goods through complex, and increasingly global, distribution networks. These intermediaries include, for instance, freight forwarders (which typically consolidate cargo for delivery by air or ocean freight) and third-party logistics providers (which coordinate and manage the movement of goods through each link of the supply chain).<sup>51</sup>

An efficient distribution services sector enables the global trading system and improves overall economic welfare. By contrast, inefficient distribution services can lead to misallocation of resources and an increase in costs.<sup>52</sup> Generally, lower distribution services costs are associated with the integration of domestic markets within an economy, and with the integration of those domestic markets with the rest of the world. These linkages support economic development and contribute to income growth. Efficient distribution firms also enable consumers around the world to benefit more fully from the liberalization of trade restrictions, offering them access to a diverse array of products at lower prices.<sup>53</sup>

### Common Themes in Distribution Services

Ultimately, trade in distribution services is driven by spending on consumer goods. However, the sector is also evolving rapidly in response to competitive conditions within the various market segments. Throughout the chapters that follow, three common themes emerge: ongoing merger and acquisition (M&A) activity, services innovation, and digitization.

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<sup>51</sup> WTO, “Distribution Services: Background Note by the Secretariat,” October 29, 2010, 3; SelectUSA, “The Logistics and Transportation Industry,” n.d. (accessed March 20, 2019).

<sup>52</sup> For example, if distribution services are unreliable and infrequent, or if a country lacks third-party logistics providers who efficiently handle the shipment of goods, firms are likely to maintain higher inventory holdings at every stage of the supply chain. The costs of financing large inventories can be significant, especially in countries with high real interest rates. Mattoo, *A Handbook of International Trade in Services*, 2007, 356–59; WTO, “Services: Sector by Sector, Distribution Services,” n.d. (accessed March 2019).

<sup>53</sup> Since the costs associated with distribution make up a significant portion of the retail price of most goods—typically between 10 and 50 percent—the distribution sector plays a major role in price formation, with more efficient systems helping to lower prices. Pilat, “Regulation and Performance,” 1997, 3.

Several industries in the distribution services sector have experienced consolidation through mergers and acquisitions over the past several years. In the maritime freight transportation sector, industry overcapacity and declining freight rates—both lagging effects of the 2008–09 global financial crisis—led to a wave of M&A activity during 2016–18.<sup>54</sup> In the logistics sector, by contrast, increased M&A activity over the past few years has resulted from small and medium-sized firms seeking to expand service offerings and extend their geographic reach to serve multinational clients.<sup>55</sup> In retail services, M&A activity has been driven by traditional retailers purchasing smaller online companies in an attempt to boost their e-commerce capabilities. More broadly, industry consolidation in the retail sector has also resulted from stiff competition from e-commerce rivals—including not only Amazon but also niche direct-to-consumer (D2C) retailers—which has led a number of well-known traditional retailers to either close store locations or file for bankruptcy.<sup>56</sup>

The emergence of e-commerce over the last 10–15 years has also resulted in significant innovation in the delivery of distribution services. Perhaps most notable is Amazon’s almost continuous testing of new delivery systems and delivery methods for goods ordered on its website. Recent examples include the creation of its own airfreight service (Amazon Air) and the ongoing construction of last-mile fulfillment centers, both activities that help it systematically reduce delivery times to 1–2 days and, increasingly, to offer same-day delivery. Similarly, Amazon recently launched a pilot program called Amazon Flex in Seattle, which hires car-owning individuals to deliver packages within one hour of order placement for its new Prime Now service. Another innovation designed to facilitate rapid and/or same-day delivery is Amazon Key, a service that allows delivery drivers to deposit packages through customers’ front doors (or into car trunks) with the aid of a remotely controlled lock.

The digitization of distribution services has been an ongoing process dating back more than 20 years. The retail segment, for example, took an early lead, with companies launching websites and offering e-commerce sales in the late 1990s. In addition, back-office functions like inventory management were also digitized and integrated with consumer websites. Over the past 10–15 years, a growing number of e-commerce companies—most notably Amazon—have developed and perfected efficient, large-scale e-commerce operations, a competitive advantage in the growing e-commerce segment that has pressured traditional retailers to follow suit. For example, a growing number of retailers, ranging from Ralph Lauren to Walmart, are developing increasingly sophisticated digital marketing, branding, and e-commerce capabilities, including both websites and smartphone apps that allow customers to browse and purchase products online.<sup>57</sup>

Further, a growing number of traditional retailers are developing the capability to analyze the data produced by customers’ interactions with their websites and apps, including data on browsing habits and purchasing activity. The digitization of distribution services has also facilitated the emergence of omnichannel marketing—that is, seamless and coordinated marketing to customers across multiple

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<sup>54</sup> UNCTAD, “Market Consolidation in Container Shipping,” September 2018, 1–2.

<sup>55</sup> Cook, *Third-Party Logistics in the US*, March 2019, 8.

<sup>56</sup> Thompson, “What in the World Is Causing the Retail Meltdown of 2017?” April 10, 2017; Marks, “More Retailers Than Ever Are Going Bankrupt,” April 16, 2018.

<sup>57</sup> Swan, “Why Walmart’s Ecommerce Strategy Makes Them a Contender,” January 21, 2019; Forbes, “Why Ralph Lauren Is Worth \$134,” October 10, 2018.

sales channels, including company websites, mobile apps, Facebook pages, Twitter accounts, and even retail store locations.<sup>58</sup>

In the maritime freight segment, important digitization efforts revolve around blockchain technology. In 2018, a wide variety of blockchain pilot projects were introduced around the world, with applications ranging from transaction processing to document-flow management to ship and/or container tracking.<sup>59</sup> Firms in the logistics segment are also embracing digitization. Over the past several years, for example, heightened competition among third-party logistics (3PL) firms have spurred a growing number of companies to introduce software that, for the first time, enables clients to track and monitor their shipments. Using sensor and Global Positioning System (GPS) technologies, such software allows clients not only to track individual shipping containers in real time but also to monitor climatic conditions within containers. In the trucking industry, important digitization efforts have taken the form of fleet management software. Using sensor devices, radio frequency identification (RFID) tags, and GPS technologies, this software collects and processes a wide variety of data on vehicles (typically trucks) within a commercial fleet, including vehicle speed, location, mileage, fuel consumption, and driver hours.<sup>60</sup>

## U.S. Trade in Distribution Services

Distribution services represented a small but material share of U.S. services trade in 2017, accounting for approximately 6 percent of total U.S. cross-border services exports and 12 percent of U.S. cross-border services imports.<sup>61</sup> In 2017, U.S. cross-border exports of distribution services totaled \$49.4 billion, whereas imports totaled \$64.6 billion, resulting in a cross-border trade deficit of \$15.2 billion.<sup>62</sup> In that year, exports of distribution services grew by 5.8 percent, significantly faster than the average annual growth rate of 0.4 percent recorded during 2012–16. Overall, in 2017, the top three markets for U.S. exports of distribution services were the United Kingdom (9 percent), Japan (8 percent), and Germany (7 percent), while the leading import markets were Japan (12 percent), Canada (7 percent), and Germany (7 percent).<sup>63</sup>

<sup>58</sup> See chapter 5 for more information.

<sup>59</sup> Marine Insight, “7 Major Blockchain Developments in Maritime Industry,” December 31, 2018. Blockchain is an online, shared digital ledger technology that enables users to input and view transaction data in real time (see chapter 4 for more information).

<sup>60</sup> USITC, *Global Digital Trade 1*, August 2017, 204.

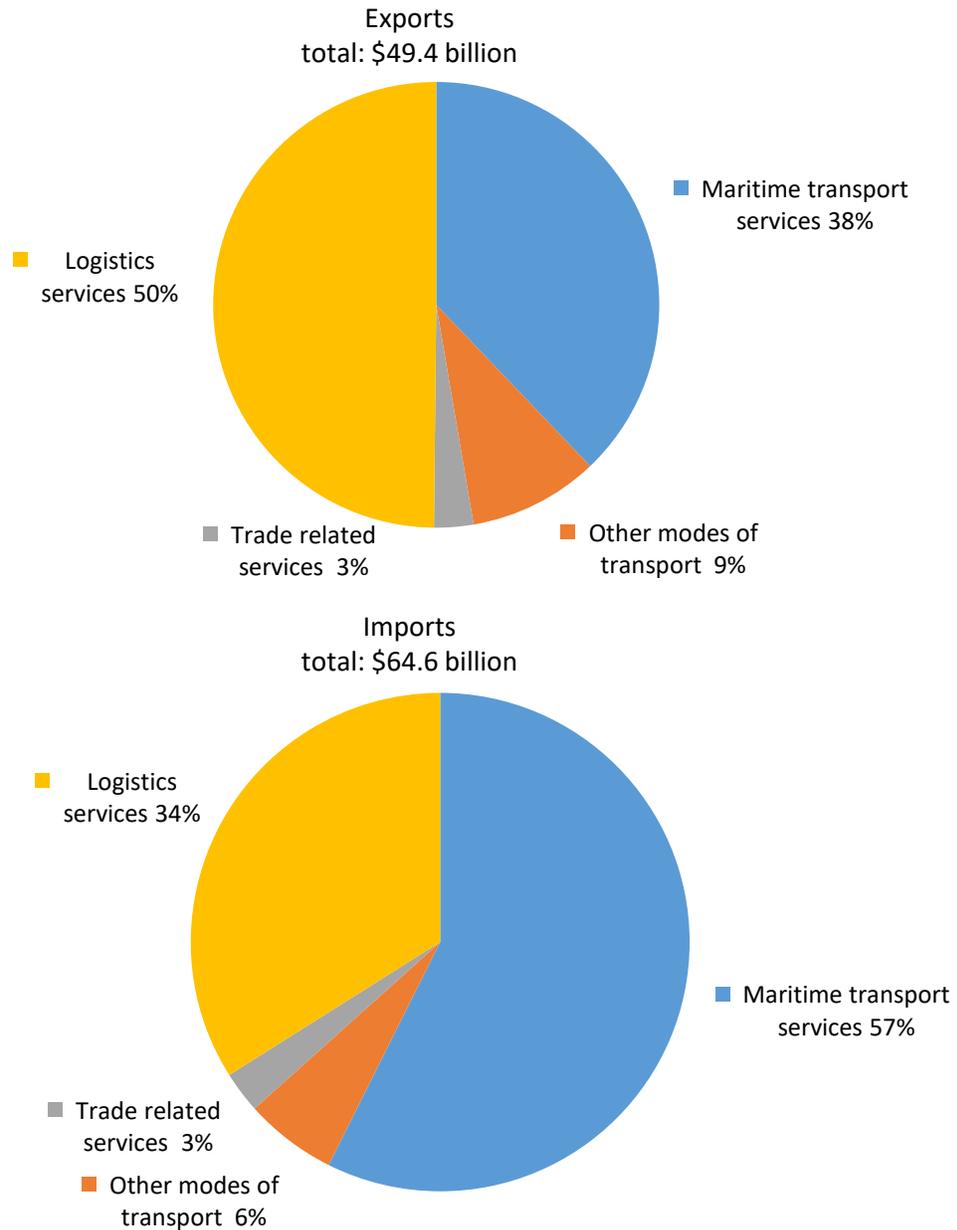
<sup>61</sup> USDOC, BEA, table 2.1, “U.S. Trade in Services, by Type of Service,” October 19, 2018. For the purposes of the cross-border trade discussion, data on distribution services encompass air transport services (e.g., airfreight and airport services); maritime transport services (e.g., marine freight and port services); other modes of transport (e.g., road and rail transport); and trade-related services (e.g., auction services, business-to-business transaction fees, internet-based commercial exchanges, and commissions paid to independent sales agents). BEA does not collect cross-border data on retail services. Instead, activity associated with retail trade is included, but not separately identifiable, in the value of trade in goods, which is reported by the U.S. Census Bureau. USDOC, BEA, “Definition of International Services,” March 12, 2019. See box 5.2 in chapter 5 for more information.

<sup>62</sup> USDOC, BEA, table 2.1, “U.S. Trade in Services, by Type of Service,” October 19, 2018.

<sup>63</sup> USDOC, BEA, table 2.3, “U.S. Trade in Services, by Country or Affiliation and by Type of Service,” October 19, 2018.

Logistics services, which includes airfreight and airport services, accounted for 50 percent (\$24.6 billion) of total U.S. distribution services exports in 2017, followed by maritime services (38 percent) (figure 2.1). By contrast, maritime services represented the majority (57 percent) of total distribution services imports (\$37.1 billion), followed by logistics services (34 percent).<sup>64</sup>

**Figure 2.1** U.S. distribution services: Exports and imports, by industry, 2017

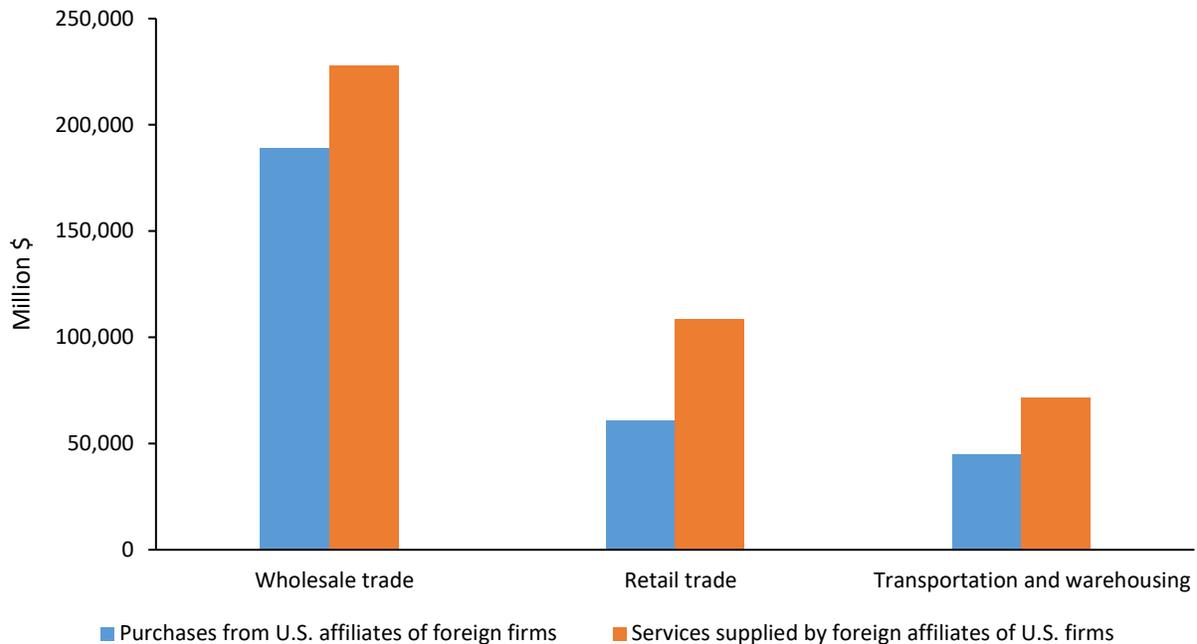


Source: USDOC, BEA, table 2.1, “U.S. Trade in Services, by Type of Service,” October 19, 2018.  
 Note: Underlying data for this figure can be found in [appendix table B.8](#).

<sup>64</sup> USDOC, BEA, table 2.1, “U.S. Trade in Services, by Type of Service,” October 19, 2018.

Affiliate transactions accounted for the majority of U.S. trade in distribution services in 2016.<sup>65</sup> During that year, U.S.-owned foreign affiliates (i.e., the foreign subsidiaries of U.S. companies) supplied \$407.9 billion of such services, accounting for the largest category of services (29 percent) sold by U.S. foreign affiliates.<sup>66</sup> Figure 2.2 shows affiliate transactions in major distribution service categories in 2016. Wholesale trade accounted for the majority of distribution services supplied by U.S. companies' foreign subsidiaries (56 percent), followed by retail trade (27 percent) and transportation and warehousing (18 percent).<sup>67</sup>

**Figure 2.2** U.S. distribution services: Affiliate sales and affiliate purchases, by industry, 2016



Source: USDOC, BEA, table 4.1, "Services Supplied to Foreign Persons by MNEs through Their MOFAs, by Industry of Affiliates and by Country of Affiliate," and table 5.1, "Services Supplied to U.S. Persons by Foreign MNEs through Their MOUSAs, by Industry off Affiliate and by Country of UBO," October 19, 2018.

Note: Underlying data for this figure can be found in [appendix table B.9](#).

The value of distribution services purchased from the affiliates of foreign firms located in the United States totaled \$294.8 billion in 2016. The wholesale trade segment accounted for 64 percent of such purchases, followed by retail trade (21 percent) and transportation and warehousing (15 percent).<sup>68</sup>

<sup>65</sup> For the purposes of the affiliate transactions discussion, data on distribution services encompass wholesale and retail trade, air, water, rail, and truck transportation, and support activities associated with transportation.

<sup>66</sup> USDOC, BEA, table 4.1, "Services Supplied to Foreign Persons by MNEs through Their MOFAs, by Industry of Affiliates and by Country of Affiliate," October 19, 2018.

<sup>67</sup> Purchases from foreign-owned U.S. affiliates are underreported due to the BEA's suppression of data in the air and rail transportation categories to avoid disclosing confidential and/or company-specific information.

<sup>68</sup> USDOC, BEA, table 5.1, "Services Supplied to U.S. Persons by Foreign MNEs through Their MOUSAs, by Industry off Affiliate and by Country of UBO," October 19, 2018.

## GDP, Employment, Labor Productivity, and Salaries in Distribution Services

In 2017, U.S. private sector distribution services totaled \$2.7 trillion, accounting for 17.2 percent of total U.S. private sector GDP (including both goods and services) (table 2.1). Wholesale and retail trade respectively accounted for 41 percent and 39 percent of distribution services' contribution to U.S. private sector GDP in 2017, whereas transportation and warehousing together represented 20 percent (table 2.2). In that year, distribution services grew by 3.2 percent, faster than the 2.1 percent growth rate experienced by private sector GDP as a whole. Among the distribution services industries, GDP in wholesale trade grew by roughly 2 percent, while retail trade and the transportation and warehousing subsector each grew by 4 percent.<sup>69</sup>

The distribution services sector was a leading contributor to U.S. private sector employment in 2017. Overall, the sector employed approximately 24.5 million full-time equivalent (FTE) employees in that year, or 21.1 percent of the total U.S. private sector workforce, a share that has remained stable since 2012.<sup>70</sup> In 2017, there were 14 million people employed in retail services, or 57 percent of the distribution services sector, followed by wholesale trade (23 percent) and transportation and warehousing (20 percent). Between 2012 and 2017, the number of FTEs in distribution services grew modestly, from 22.5 million to 24.5 million, representing an average annual growth rate of 1.7 percent.

Workers in the distribution services sector earned, on average, \$51,133 annually in 2017, lower than the private sector average of \$61,311 and significantly trailing average wages in the electronic services (\$110,697), financial services (\$105,235), and professional services (\$67,786) sectors. Within the sector, average annual wages ranged from \$36,891 in retail trade to \$79,665 in wholesale trade. During 2012–16, wages in the distribution services sector grew at an annual rate of 1.9 percent—in line with growth in professional services (1.8 percent), but slower than in electronic services (2.5 percent) and financial services (2.5 percent). In 2017, wage growth in distribution services increased by 2.8 percent, slightly above growth in professional services (2.1 percent), and below growth in financial services (4.4 percent) and electronic services (4.4 percent).<sup>71</sup>

During 2012–16, labor productivity in the distribution services sector as a whole grew at a negligible average annual rate of 0.6 percent. However, from 2016 to 2017, labor productivity in distribution services grew by 2 percent. In 2017, average annual output per worker in the distribution services sector was \$110,456, substantially lower than in electronic services (\$317,831) and financial services (\$209,899), but surpassing labor productivity in professional services (\$98,881). By contrast, output per worker in the manufacturing sector was \$167,514 in 2017. Within the distribution services sector, output per worker varied widely by industry, ranging from \$76,590 in labor-intensive retail trade to \$194,030 in wholesale trade.

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<sup>69</sup> USDOC, BEA, “Real Value Added by Industry,” October 2018.

<sup>70</sup> USDOC, BEA, table 6.5D, “Full-Time Equivalent Employees by Industry,” July 31, 2018.

<sup>71</sup> USDOC, BEA, table 6.6D, “Wages and Salaries per Full-time Equivalent Employee by Industry,” July 31, 2018.

**Table 2.1** United States: Gross domestic product (GDP), full-time equivalent employees (FTEs), wage and salary accruals, and labor productivity, by goods and services industry, 2012–17

	2012	2016	2017	CAGR 2012–16	% change 2016–17
<b>GDP<sup>a</sup> (billion \$)</b>					
Private sector	14,038	15,388	15,718	2.3	2.1
Goods	3,019	3,269	3,318	2.0	1.5
Manufacturing	1,927	1,993	2,042	0.8	2.4
Nonmanufacturing	1,092	1,276	1,276	4.0	0.0
Services	11,019	12,118	12,400	2.4	2.3
Distribution services	2,378	2,622	2,707	2.5	3.2
Electronic services	810	1,117	1,201	8.4	7.5
Financial services	1,336	1,410	1,395	1.4	-1.0
Professional services	2,689	2,935	3,004	2.2	2.4
Other services	3,807	4,035	4,093	1.5	1.4
<b>FTEs (1,000)</b>					
Private sector	104,465	114,154	116,153	2.2	1.8
Goods	19,074	20,499	20,892	1.8	1.9
Manufacturing	11,652	12,039	12,190	0.8	1.3
Nonmanufacturing	7,422	8,460	8,702	3.3	2.9
Services	85,391	93,655	95,261	2.3	1.7
Distribution services	22,511	24,204	24,503	1.8	1.2
Electronic services	3,290	3,724	3,780	3.1	1.5
Financial services	6,158	6,501	6,647	1.4	2.2
Professional services	26,945	29,696	30,383	2.5	2.3
Other services	26,487	29,530	29,948	2.8	1.4
<b>Wages and salary accruals (\$ per FTE)</b>					
Private sector	54,926	59,443	61,311	2.0	3.1
Goods	60,486	64,799	66,549	1.7	2.7
Manufacturing	62,947	67,610	69,436	1.8	2.7
Nonmanufacturing	56,623	60,799	62,506	1.8	2.8
Services	53,684	58,271	60,163	2.1	3.2
Distribution services	46,177	49,733	51,133	1.9	2.8
Electronic services	95,993	106,012	110,697	2.5	4.4
Financial services	91,422	100,764	105,235	2.5	4.4
Professional services	61,793	66,387	67,786	1.8	2.1
Other services	37,785	41,731	43,434	2.5	4.1
<b>Labor productivity (\$ per FTE)<sup>b</sup></b>					
Private sector	134,375	134,796	135,323	0.1	0.4
Goods	158,273	159,486	158,812	0.2	-0.4
Manufacturing	165,379	165,545	167,514	0.0	1.2
Nonmanufacturing	147,103	150,851	146,644	0.6	-2.8
Services	129,037	129,392	130,172	0.1	0.6
Distribution services	105,628	108,317	110,456	0.6	2.0
Electronic services	246,170	300,000	317,831	5.1	5.9
Financial services	216,872	216,859	209,899	0.0	-3.2
Professional services	99,781	98,828	98,881	-0.2	0.1
Other services	143,723	136,631	136,667	-1.3	0.0

Source: USDOC, BEA, "Real Value Added by Industry," October 19, 2018; USDOC, BEA, table 6.5D, "Full-Time Equivalent Employees by Industry," October 19, 2018; USDOC, BEA, table 6.6D, "Wage and Salary Accruals per Full-Time Equivalent Employee by Industry," October 19, 2018.

Note: CAGR = compound annual growth rate.

<sup>a</sup> Real value added by industry using 2012 chained dollars. "Chaining" is a method of adjusting real dollar amounts for inflation over time, to facilitate comparisons of values from different years.

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<sup>b</sup> Wages and salary accruals per FTE, calculated by USITC staff, are total wages and salaries by industry divided by the number of FTEs.

**Table 2.2** United States: Gross domestic product (GDP), full-time equivalent employees (FTEs), wage and salary accruals, and labor productivity, by distribution services industry, 2012–17

	2012	2016	2017	CAGR 2012–16	% change 2016–17
Wholesale trade	997	1,091	1,114	2.3	2.1
Retail trade	908	1,020	1,061	2.9	4.0
Transportation and warehousing	472	510	531	2.0	4.0
<b>FTEs (thousands)</b>					
Wholesale trade	5,466	5,682	5,745	1.0	1.1
Retail trade	12,857	13,798	13,853	1.8	0.4
Transportation and warehousing	4,188	4,724	4,905	3.1	3.8
<b>Wages and salary accruals (\$ per FTE)</b>					
Wholesale trade	71,980	77,714	79,665	1.9	2.5
Retail trade	33,173	35,878	36,891	2.0	2.8
Transportation and warehousing	52,421	56,545	57,936	1.9	2.5
<b>Labor productivity (\$ per FTE)</b>					
Wholesale trade	182,474	192,063	194,030	1.3	1.0
Retail trade	70,654	73,938	76,590	1.1	3.6
Transportation and warehousing	112,703	108,002	108,216	-1.1	0.2

Source: USDOC, BEA, "Real Value Added by Industry," October 19, 2018; USDOC, BEA, table 6.5D, "Full-Time Equivalent Employees by Industry," October 19, 2018; USDOC, BEA, table 6.6D, "Wage and Salary Accruals per Full-Time Equivalent Employee by Industry," October 19, 2018.

Note: CAGR = compound annual growth rate.

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# Chapter 3

## Logistics Services

### Summary

Within the distribution services sector, logistics services facilitate the transport and distribution of goods from producers through supply chains to consumers. In 2017, global third-party logistics (3PL)<sup>72</sup> revenues were \$869.0 billion, and more than one fifth (\$184.3 billion) of those revenues were in the United States.

Several factors have affected the logistics industry in recent years. Logistics firms have pursued major mergers and acquisitions in order to access new customers, enter new industry segments, obtain assets and technologies, and reduce costs. However, the industry remains fragmented overall. Another factor affecting the industry is Amazon's development of new logistics capabilities. This has been increasing competitive pressure on the industry as Amazon leverages its technologies to offer innovative services. Additionally, the U.S. long-haul trucking market is experiencing rising wages and high driver turnover, which increases shipping costs and motivates investment in new technologies.

U.S. cross-border exports of logistics services totaled \$24.6 billion in 2017 (an 8.1 percent increase from 2016), while imports of these services totaled \$21.9 billion (a 6.1 percent increase from 2016). The United Kingdom (UK) was the largest destination for exports and the largest source of imports. Sales by the foreign affiliates of U.S. logistics services firms totaled \$64.6 billion in 2016 (a 7.0 percent decrease from 2015), and purchases from the U.S. affiliates of foreign logistics services firms totaled \$40.8 billion (an 11.1 percent decrease from 2015). In the coming years, the industry will be affected by new technologies and economic growth in emerging markets.

### Introduction

Logistics firms provide services that help companies manage their supply chains and move products from producers to end users. Logistics services include freight forwarding, multimodal transport,<sup>73</sup> warehousing and storage, tracking, and customs brokerage. The industry also provides value-added services like order fulfillment, product repair, inventory management, returns processing, consulting services, and information technology (IT) services. Logistics services providers have expanded internationally to support global supply chains, and are increasingly incorporating innovative technologies like blockchains, real-time vehicle tracking, and systems that monitor the location,

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<sup>72</sup> Third-party logistics providers offer international coverage and provide customized value-added services along with goods transport. In contrast, first-party logistics firms, like port operators and depot companies, offer single services in specific geographical areas, while second-party providers like couriers and ocean carriers offer standardized services in larger geographical areas. There are also fourth-party and fifth-party logistics providers that optimize supply chains without owning fleets or warehouses.

<sup>73</sup> Multimodal transport is the use of multiple transportation methods (e.g., air, ship, truck, or rail) to move freight.

temperature, and humidity of shipping containers.<sup>74</sup> Many logistics services are interchangeable, which keeps competition strong and prices low.<sup>75</sup>

This chapter focuses on firms that provide air transport, trucking, express delivery, and 3PL services. However, two other chapters of this report also offer discussions relevant to logistics services. Many logistics firms provide maritime transport services, which are discussed in chapter 4. Further, demand for logistics services is broadly driven by retail sales of merchandise to final consumers, which is discussed in chapter 5.

## Market Conditions

By one industry estimate, total global revenues for 3PL firms were \$869.0 billion in 2017, up 8.1 percent over the previous year and roughly 10 percent of total global spending on logistics services (table 3.1).<sup>76</sup> The United States accounted for 21.2 percent of global 3PL revenues, while China accounted for 20.7 percent. The third- and fourth-largest markets, Japan and Germany, accounted for only 5.1 percent and 4.0 percent, respectively. In small, less economically developed markets, spending on logistics services appears relatively low because fewer goods are transported. However, it costs more to transport a good in places with inadequate road and highway infrastructure, outdated or poorly maintained transport vehicle fleets, and significant bureaucratic delays at border crossings, so logistics spending tends to represent a larger share of GDP in less developed countries.<sup>77</sup> By one estimate, it costs up to five times more to transport goods in some sub-Saharan African countries than in the United States.<sup>78</sup>

**Table 3.1** Logistics services: Third-party logistics revenues by country, 2017

Country	Revenue (billion \$)	Global share (%)
United States	184.3	21.2
China	180.3	20.7
Japan	43.9	5.1
Germany	34.4	4.0
France	26.0	3.0
United Kingdom	24.4	2.8
India	24.1	2.8
Brazil	21.7	2.5
Italy	20.1	2.3
Russia	19.2	2.2
All other	290.6	33.4
Total	869.0	100

Source: Armstrong and Associates, "Bulls Lead: Third-Party Logistics Market Results and Trends for 2018," June 2018, 15.

The 3PL industry in the United States earned revenues of \$184.3 billion in 2017. Most of this revenue was in three segments: domestic transportation management (38.9 percent), international

<sup>74</sup> Starcom Systems, "Tetis" (accessed May 17, 2019).

<sup>75</sup> Burnson, "2017 Top 50 3PLs," August 22, 2017.

<sup>76</sup> Armstrong and Associates, "Bulls Lead," June 2018, 14.

<sup>77</sup> Armstrong and Associates, "Global and Regional Infrastructure," October 2017, 5.

<sup>78</sup> Donaldson and Atkin, "How High Intra-national Trade Costs Limit," September 2017.

transportation management (29.1 percent), and warehousing and distribution (21.8 percent).<sup>79</sup> The contract carriage and contract software segments accounted for another 8.5 percent and 1.8 percent, respectively.<sup>80</sup> Overall, industry revenue grew by 10.5 percent in 2017, much faster than the 3.2 percent average annual growth rate recorded from 2013 to 2016.<sup>81</sup> In 2018, there were roughly 19,000 3PL firms in the United States, employing 390,000 people.<sup>82</sup>

In 2017, the top global 3PL firms by gross revenue were DHL (a division of Deutsche Post DHL, headquartered in Germany), Kuehne + Nagel (Switzerland), DB Schenker (a division of Deutsche Bahne AG railway company, headquartered in Germany), Nippon Express (Japan), and C.H. Robinson (United States) (table 3.2).<sup>83</sup> C.H. Robinson was the largest U.S.-based 3PL provider, followed by XPO Logistics and UPS Supply Chain Solutions.<sup>84</sup>

**Table 3.2** Logistics services: Top 10 global third-party logistics firms by revenue, 2017

Company	Gross revenue (billion \$)	Headquarters	Global market share (%)
DHL Supply Chain & Global Forwarding	27.6	Germany	3.2
Kuehne + Nagel	22.6	Switzerland	2.6
DB Schenker	18.6	Germany	2.1
Nippon Express	16.7	Tokyo	1.9
C.H. Robinson	14.9	United States	1.7
DSV	11.4	Denmark	1.3
Sinotrans	9.5	China	1.1
XPO Logistics	9.5	United States	1.1
UPS Supply Chain Solutions	8.0	United States	0.9
CEVA Logistics	7.0	Switzerland	0.8

Source: Armstrong and Associates, "Bulls Lead: Third-party Logistics Market Results," June 2018, 16.

<sup>79</sup> Armstrong and Associates, "U.S. 3PL Market Size Estimates" (accessed March 13, 2019). 3PLs normally provide long-term contract warehousing and distribution center operations as well as a host of value-added services.

<sup>80</sup> Dedicated contract carriage refers to 3PLs supplying vehicles, drivers, and management services by contract for up to seven years. Contract software refers to 3PLs providing transportation-focused software services.

<sup>81</sup> Armstrong and Associates, "Bulls Lead," June 2018.

<sup>82</sup> Soshkin, "Third-Party Logistics in the U.S.," April 2018, 28.

<sup>83</sup> Armstrong and Associates, "Top 50 Global Third-Party Logistics Providers" (accessed March 13, 2019). DHL provides international courier, parcel, and express mail services along with 3PL services.

<sup>84</sup> Armstrong and Associates, "Largest U.S.-based 3PLs Ranked by 2017 Logistics Gross Revenue/Turnover" (accessed March 13, 2019). By this measure, FedEx was the 30th-largest global 3PL provider in 2017, with \$3.0 billion in gross revenue.

### **Box 3.1** Drivers of Third-party Logistics Firms' Profit Margins

By helping firms ship their goods and deliver them to customers, third-party logistics service providers (3PLs) serve an important function within global supply chains. The 3PL industry, though, is highly competitive, with small profit margins. According to one industry source, pretax profit margins in this industry will account for 7.4 percent of total 2019 revenue.<sup>a</sup> Several factors contribute to reduced profit margins in the 3PL sector: the large number of firms competing for customers; firms clustering in high-volume geographic areas; upward pressure on shipping costs; and the overall cost of operations. In response to squeezed profits, 3PL firms have sought economies of scale by expanding their range of services and lowering costs using new digital technologies.

As just noted, the large number of firms and their tendency to cluster geographically tends to drive 3PL prices low and keep them low. With approximately 14,550 3PL firms in the United States,<sup>b</sup> competition to win client business is often fierce. Moreover, clients are price sensitive and have the market power to drive down prices, due to both the relatively undifferentiated nature of 3PL services and clients' ability to replace 3PL services by developing their own in-house logistics capabilities, such as transport, warehousing, or order fulfillment services. One prominent example of this trend is Amazon's move towards using their own transportation fleets to deliver packages to consumers. From 2013 to 2019, the share of Amazon shipments handled by Amazon's in-house shipping services expanded from 0 to 26 percent, while UPS's share of Amazon shipments shrank from 49 percent to 22 percent over the same period.<sup>c</sup>

Competition in the 3PL industry has intensified the natural tendency of firms to cluster around centers of commercial activity, close to manufacturing sites and transit points. California, for example, with three of the largest container ports in the country (Los Angeles, Long Beach, and Oakland), is home to about 14 percent of all 3PL firms in the United States. Texas, Florida, and New York have the next-largest concentrations of 3PL firms, due to the density of commercial activities in these states.<sup>d</sup> This clustering around major hubs increases competition in the industry and pushes prices down further.

3PL providers also face pressures on the cost side. For example, purchases of transportation services from freight carriers are a significant cost for 3PL firms, estimated by one industry source to absorb 50 percent of the 3PL industry's revenue.<sup>e</sup> Firms that have bought transportation services in the past few years have faced rising prices from the freight carriers.<sup>f</sup> On the other hand, if 3PL firms choose to buy their own transportation equipment and ship the freight themselves, in addition to the fixed costs associated with purchasing vehicles, the added maintenance and repair costs could also squeeze profits. For example, in the United States, the average marginal cost of maintaining a single truck was about \$1,691 per mile in 2017, including costs such as fuel, insurance, and drivers' salaries.<sup>g</sup> Based on these costs per mile, a firm that operates a fleet of 10 trucks, with each traveling approximately 10,000 miles a month, might face a monthly average cost of \$169,100 for that fleet.<sup>h</sup>

<sup>a</sup> IBISWorld, *Third-Party Logistics in the US*, March 2019, 18.

<sup>b</sup> IBISWorld, *Third-Party Logistics in the US*, March 2019, 4.

<sup>c</sup> Bowles, "Taking a Look at Why Amazon Is Bringing Logistics In-House," June 13, 2019.

<sup>d</sup> IBISWorld, *Third-Party Logistics in the US*, March 2019, 16.

<sup>e</sup> Cedillo-Campos, "Supply Chain Clustering," October 2014.

<sup>f</sup> IBISWorld, *Third-Party Logistics in the US*, March 2019, 18.

<sup>g</sup> Hooper and Murray, "Analysis of the Operational Costs of Trucking," June 2019, 18.

<sup>h</sup> These figures represent an average marginal cost regardless of fleet size. Fuel costs per mile tend to decrease as fleet size increases. Hooper and Murray, "Analysis of the Operational Costs of Trucking," June 2019, 27.

## Supply and Demand Factors

Several factors are driving changes in the global logistics industry: technological innovation, limited trucking capacity in some markets (box 3.2), and economic growth in many developing countries. The following sections focus on two additional trends. First, the logistics industry has experienced several large mergers and acquisitions over the past several years, though it remains fragmented overall. Second, the rapid growth of e-commerce has affected the structure and operations of logistics firms.

## Consolidation of Firms in the Logistics Sector

Many logistics firms have acquired or merged with other firms in recent years. Consolidation, whether by merger, acquisition, or joint venture alliance, lets firms access new customers, enter new segments (like healthcare logistics or e-commerce),<sup>85</sup> obtain assets and technologies, and take advantage of economies of scale.<sup>86</sup> Mergers or acquisitions can offer a more efficient way to expand geographically than establishing a business in a new market or segment; for example, some logistics firms have acquired small local companies in emerging markets. In addition, firms may consolidate to improve efficiency. An example is UPS's 2015 acquisition of freight broker Coyote Logistics (at \$1.8 billion), which helped improve the efficiency of UPS trucking operations on backhaul routes (i.e., the return route after goods are delivered).<sup>87</sup>

By one estimate, in 2015 the number of global 3PL acquisitions valued at over \$100 million each reached an all-time high of 18.<sup>88</sup> In addition to the UPS-Coyote acquisition, major acquisitions in 2015 included Japan Post's purchase of Toll Holdings (logistics, \$4.9 billion) and XPO Logistics' 2015 purchases of both Con-way (trucking, \$3.0 billion) and Norbert Dentressangle (logistics, \$3.5 billion). A year earlier, Norbert Dentressangle had acquired Jacobson, a warehousing firm, for \$750 million.<sup>89</sup> In 2016, HNA Group purchased Ingram Micro (electronics distributor, \$6.0 billion), and FedEx purchased TNT Express (courier, \$4.8 billion). In 2017, the trend towards consolidation in the industry slowed, and the number of 3PL acquisitions valued at more than \$100 million dropped to 9.<sup>90</sup> The number of acquisitions in the North American trucking segment also declined in 2017, which some industry observers attributed to uncertainty about the renegotiation of the North American Free Trade Agreement (NAFTA).<sup>91</sup>

Merging two companies can be complicated and expensive. Generally, firms will pursue a merger or an acquisition only when the market opportunity outweighs the anticipated cost of the transaction. In deciding whether to acquire courier TNT, for example, FedEx needed to consider integration and restructuring costs that were estimated to run as high as \$800 million.<sup>92</sup> Merging information technology (IT) systems and adopting common data collection methods can be particularly challenging.

<sup>85</sup> Supply Chain 24/7, "Yusen Logistics UK Acquires Ecommerce Specialist ILG," August 3, 2018.

<sup>86</sup> Lieb, "Consolidation in the 3PL Industry," 2015.

<sup>87</sup> Page, "How Coyote Logistics Went from Startup," July 31, 2016.

<sup>88</sup> Armstrong and Associates, "Bulls Lead," June 2018, 8.

<sup>89</sup> Armstrong and Associates, "Global and Regional Infrastructure," October 2017, 14.

<sup>90</sup> Armstrong and Associates, "Bulls Lead," June 2018, 8.

<sup>91</sup> Duff and Phelps, "Freight and Logistics: M&A Landscape," June 2017.

<sup>92</sup> Johnson, "FedEx Raises TNT Integration Costs by \$75 Million," September 20, 2017.

Indeed, after an acquisition, logistics firms often continue to operate separate IT systems for a number of years to avoid upfront integration costs and business disruptions.<sup>93</sup>

Nevertheless, long-run IT savings are often a motivating factor behind moves to acquire other firms in the industry. For example, the stated reason behind XPO Logistics' acquisition of the freight and logistics company Con-way was its ability to insource Con-way's IT operations at a lower cost.<sup>94</sup> Mergers or acquisitions may also create large data collection and analytics opportunities, potentially increasing firms' abilities to streamline warehouse operations, anticipate supply shortages, monitor traffic and weather patterns, and track accidents and losses. Such savings can, however, have negative consequences for employees. For instance, DSV, a Danish transport and logistics company, acquired UTI Worldwide, a U.S. supply chain services and logistics company, in 2016. DSV afterwards laid off many of the IT employees who managed UTI's systems.<sup>95</sup>

As in many industries, logistics services mergers and acquisitions have a mixed record. One study of transaction announcements in the logistics industry during 1996–2015 found that the short- and long-term benefits of these deals varied widely by company type. Railway and 3PL companies experienced both short-term and long-term economic gains, whereas trucking and air cargo companies gained only short-term benefits. Mergers and acquisitions in the express delivery sector not only failed to yield short-term gains, but were followed by economic losses over the longer term.<sup>96</sup> A 2008 study found that cross-border logistics mergers tended to outperform mergers within the same geographic market, and that large-volume mergers tended to be more successful than small ones.<sup>97</sup>

Broad economic trends can also affect the outcome of specific mergers. For example, in 2017 Japan Post—offering post, logistics, and courier services—took a \$3.6 billion write-down on its purchase of Toll Holdings, an Australian firm that offered express freight transport, logistics, and distribution services. In part, this loss was due to slowdowns in Australia's mining, steel, and manufacturing sectors.<sup>98</sup>

Despite recent consolidation, the logistics industry is still fragmented. The top 50 global companies account for less than half the global logistics market, and the largest U.S. 3PL firm (C. H. Robinson) represented only 6.6 percent of the total U.S. market in 2018.<sup>99</sup> Going forward, further merger and acquisition activity is likely. For example, some industry observers expect firms in the Asia-Pacific region to start making significant acquisitions in the United States and Europe.<sup>100</sup> Although industry consolidation may raise barriers to entry in the logistics market, it could also create sales opportunities for niche companies that focus on small, specialized customers.<sup>101</sup>

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<sup>93</sup> Lieb, "Consolidation in the 3PL Industry," 2015.

<sup>94</sup> American Shipper, "XPO Goes Long in LTL," September 20, 2015.

<sup>95</sup> Meyer, "DSV Begins UTI Worldwide Layoffs," February 5, 2016.

<sup>96</sup> Kiesel, "The Impact of Mergers and Acquisitions," April 2016.

<sup>97</sup> Darkow, "Determinants of Mergers and Acquisition Success," October 2008.

<sup>98</sup> Wilson, "Taking a Toll," May 2, 2017.

<sup>99</sup> Soshkin, "Third-Party Logistics in the U.S.," April 2018.

<sup>100</sup> Burnson, "2017 Top 50 3PLs," August 22, 2017.

<sup>101</sup> Lieb, "Mergers, Acquisitions, and Consolidation," March 27, 2017.

## The Impact of E-commerce and Amazon

The rapid increase in e-commerce sales is driving changes in the logistics industry. By one estimate, in 2017 spending on e-commerce logistics in the United States was \$117.2 billion, accounting for 6.9 percent of total U.S. logistics costs (up from 5.2 percent in 2016).<sup>102</sup> This growth in e-commerce has resulted in a higher volume of low-value shipments. In response, retailers are increasingly decentralizing their distribution centers and establishing so-called “last-mile” fulfillment centers to keep inventory closer to consumers. Due to the growing efficiency of last-mile transportation, online orders are increasingly being delivered on a same-day basis. One study found that small fulfillment centers accounted for 73 percent of the industrial warehouse market in 2017, compared to 58 percent in 2016.<sup>103</sup> E-commerce is also increasing the demand for “reverse logistics” because e-commerce merchandise is returned to the seller more often than products bought in retail stores. By one estimate, consumers return 5 to 10 percent of in-store purchases, but 15 to 40 percent of online purchases.<sup>104</sup>

Over the past few years, Amazon has been developing its own logistics capabilities. In 2015, it launched the “Amazon Flex” package delivery service in a few American cities, which employs delivery drivers as independent contractors. In the same year, Amazon also started its own freight airline, Amazon Air, based in Hebron, Kentucky. As of 2019, Amazon Air maintains a fleet of 40 Boeing 767 planes.<sup>105</sup> In 2016, Amazon started calling itself a “transportation service provider,” reflecting its role in managing inventory and arranging transportation for third-party sellers. In its 2018 10-K report on the year’s financial performance, Amazon added “transportation and logistics services” for the first time to its list of competitor industries.<sup>106</sup>

The firm has multiple “fulfillment by Amazon” centers in North America, Europe, and Asia that provide warehousing and transportation services. Currently it is testing an invitation-only program, “Fulfillment by Amazon” or “FBA Onsite,” that offers shipping, storage, and software services to other companies.<sup>107</sup> Other innovative fulfillment-related Amazon services include contracting Sears Auto Centers to install tires purchased on Amazon, as well as the “Amazon Key” service, which delivers packages directly into customers’ homes with the aid of a smart front-door lock and an internet-connected camera.<sup>108</sup> Additionally, in 2017, Amazon purchased Whole Foods (a U.S.-based grocery store chain). This large-scale acquisition of brick-and-mortar locations has given Amazon a new platform to increase the efficiency of last-mile deliveries.<sup>109</sup> Whole Foods also offers Amazon a large amount of data on pricing and customer behavior.<sup>110</sup>

<sup>102</sup> Armstrong and Associates, “E-commerce Logistics in the United States,” April 2018, 5.

<sup>103</sup> ATRI, “E-commerce Impacts on the Trucking Industry,” February 2019, 12.

<sup>104</sup> Reagan, “That Sweater You Don’t Like,” January 12, 2019.

<sup>105</sup> Armstrong and Associates, “Amazon Logistics,” January 2019, 26.

<sup>106</sup> Amazon.com, Inc., Form 10K, 2018, 6.

<sup>107</sup> Kim, “Amazon Has a New Invite-only Program,” January 29, 2018.

<sup>108</sup> Couriers arrive at the customer’s house and scan a code on the home camera, which sends a request to Amazon’s cloud. If Amazon approves the request, the door unlocks, the courier delivers the package and relocks the door. The customer receives notification and a short video of the delivery.

<sup>109</sup> Project 44, “Amazon and Whole Foods,” July 12, 2017.

<sup>110</sup> Simon, “Whole Foods Is Becoming,” September 12, 2017.

Amazon's move into logistics services has increased competitive pressures within the industry. For example, its formidable command of cloud computing (and other digital technologies) has compelled legacy logistics firms to make IT investments and hire personnel to digitize traditionally manual processes.<sup>111</sup> Amazon has been driving down costs, testing new delivery systems (for example, electric delivery drones with a range of 15 miles<sup>112</sup>), and whetting customers' appetites for advanced services like real-time shipping status updates.<sup>113</sup> By one report, Amazon's adoption of warehouse robots has reduced the time of human labor required to stack a package on a delivery truck to one minute.<sup>114</sup> Some of these technologies lower costs by reducing employees: a 2019 report estimated that newly installed machines that box customer orders could eventually replace 1,300 employees at 55 U.S. fulfillment centers. Although such boxing machines cost roughly \$1 million each, the payback period is estimated to be less than two years.<sup>115</sup>

Amazon's broad logistics efforts are beginning to impact traditional logistics companies. In 2019, for example, XPO Logistics lowered its projected revenue estimates, citing reduced demand for high-volume package deliveries to the post office from its largest customer, which industry observers believed to be Amazon.<sup>116</sup> Also in 2019, FedEx decided not to renew its contract to provide express shipping services to Amazon in the United States, and to focus on its relationship with rival retailer Walmart instead, which reflects Amazon's shift from FedEx customer to FedEx competitor.<sup>117</sup>

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<sup>111</sup> Singh, "How Logistics Firms Can Compete," September 17, 2018.

<sup>112</sup> Bond, "Amazon to Begin Delivering Packages by Drone," June 5, 2019.

<sup>113</sup> Singh, "How Logistics Firms Can Compete," September 17, 2018.

<sup>114</sup> Page, "Today's Logistics Report," October 17, 2018.

<sup>115</sup> Dastin, "Exclusive," May 13, 2019.

<sup>116</sup> Bowman, "Amazon Strikes a Blow," February 18, 2019.

<sup>117</sup> Corkery, "FedEx Says It's Ending Express Shipping Service for Amazon," June 7, 2019.

**Box 3.2** Transportation Services: The Trucking Industry

Trucks are responsible for much of the movement of goods, as signaled by the old trucking industry adage, “If you bought it, a truck brought it.”<sup>a</sup> In 2017, trucks shipped \$10.5 trillion worth of goods within the United States, amounting to more than 70 percent of all goods transported both in value terms and by weight of freight.<sup>b</sup> Generating \$700.1 billion in annual revenue in 2017, the U.S. trucking industry employs an estimated 3.1 million drivers and related workers, of which 1.8 million are drivers of heavy and tractor-trailer trucks.<sup>c</sup> (These are trucks, including tractor-trailer combinations, with a capacity of at least 26,000 gross vehicle weight.) The industry is segmented by distance (local or long-distance trucking), load quantity (full truckload, less-than-truckload, or parcel), and freight type (general or specialized). In 2017, full truckload shipments generated an estimated 85 percent of annual revenue, compared to 9 percent for parcel shipments and 6 percent for less-than-truckload shipments.<sup>d</sup>

In the United States, the top trucking firms included FedEx Freight, XPO Logistics, and Swift Transportation in 2017 (table 1). Taken together, the revenues of the top 10 U.S. trucking firms increased 7.2 percent in that year, likely reflecting growth in manufacturing, construction, and overall consumer spending. The “Amazon effect,” which refers to the impact of e-commerce on the demand for doorstep (“door-to-door”) or direct-to-business delivery, has also led to the expansion of the trucking industry.<sup>e</sup>

**Table 3.3** Top 10 U.S. trucking firms by revenue, 2017

Rank	Company	Primary carrier type	Revenues (billion \$)
1	FedEx Freight	Less-than-truckload	\$6.3
2	XPO Logistics	Less-than-truckload	\$3.6
3	Swift Transportation	Truckload	\$3.3
4	Old Dominion Freight Line	Less-than-truckload	\$3.3
5	YRC Freight	Less-than-truckload	\$3.0
6	UPS Freight	Less-than-truckload	\$2.6
7	Estes Express Lines	Less-than-truckload	\$2.5
8	Schneider National	Truckload	\$2.5
9	J.B. Hunt Transport Services	Truckload	\$2.1
10	ABF Freight System	Less-than-truckload	\$1.9

Source: Logistics Management, “Top 25 Trucking and Less Than Truckload Companies in 2017” (accessed April 12, 2019).

Note: For the purposes of this table, firms are categorized as truckload or less-than-truckload according to their primary business segment.

Strong demand for trucking services has increased U.S. trucking firms’ demand for drivers, apparently in excess of available labor supply. The American Trucking Association (ATA) reported that trucking firms have experienced a shortage of drivers since 2005, particular among long-haul drivers.<sup>f</sup> The ATA estimated that the U.S. trucking industry had a shortage of 60,800 drivers in 2018, a number that is expected to increase to over 100,000 by 2023. Higher wages and high turnover have increased costs for trucking firms.<sup>g</sup>

Tightness in the market for long-haul truck drivers has resulted in strong wages and robust employment relative to similar occupations.<sup>h</sup> In the United States, heavy and tractor-trailer truck drivers earned a mean annual wage of \$45,570 in 2018, an increase of 11.3 percent from \$40,940 in 2013.<sup>i</sup> Similarly, light truck or delivery services drivers earned a mean annual wage of \$36,920 in 2018, up from \$33,490 (10.2 percent) in 2013.<sup>j</sup> Companies like J.B. Hunt Transport Services reported raising their truck driver pay significantly in 2018.<sup>k</sup> Walmart added 1,400 more truck drivers in 2018 and expects to add hundreds more in 2019 due to changes in hiring practices, including a significant driver pay increase.<sup>l</sup>

Industry sources point to challenges in finding drivers who have safe driving records, can meet age and licensing requirements, and can pass drug and alcohol tests.<sup>m</sup> Additionally, truckload carriers face high employee turnover; estimates by the ATA indicate that the average annual turnover rate at large and small truckload carriers were 94.0 percent and 79.0 percent, respectively, from 1995 to 2017. According to industry sources, these high turnover rates reflect strong demand for truck drivers within the industry, as some of this turnover represents drivers switching between trucking carriers, who offer incentives like signing bonuses, newer trucks, and better routes in order to attract drivers from their competitors,<sup>n</sup> in addition to higher wages.

Higher wages and higher driver turnover in the trucking industry are leading to increased shipping costs for businesses employing such services. Between 2012 and 2018, shipping costs associated with all truck transportation services rose by 11.1 percent, whereas costs in the long-distance trucking segment rose by 14.7 percent.<sup>o</sup> In some instances, increased shipping costs have led to higher prices for goods: Amazon, General Mills, and Tyson Foods, for example, have stated that they intend to pass on higher freight costs to their customers.<sup>p</sup>

In response to new federal safety rules and to reduce labor, fuel, and vehicle downtime costs, the trucking industry is adopting new technologies such as advanced fleet management systems and automated driving tools.<sup>q</sup> Using sensor devices, radio frequency identification tags, and GPS technologies, these systems gather a wide range of data on trucks in a commercial fleet. Collecting data ranging from vehicle speed and location to the number of hours drivers spend in their trucks, trucking companies perform analyses to improve efficiency and reduce costs.<sup>r</sup> The number of actively used fleet management system units in North America increased from 5.8 million units in 2015 to 8.0 million units in 2017, similar to trends in Europe, Latin America, China, Russia, Australia, and South Africa.<sup>s</sup> According to one industry source, fleet management services are expected to expand in all such markets, with penetration rates in North America estimated to nearly double from 26.6 percent in 2017 to 49.7 percent in 2022.<sup>t</sup>

Current technologies related to automated trucking range from automated emergency braking and semi-autonomous truck platooning<sup>u</sup> to self-driving vehicles. Several such methods are currently in use (or being tested) by several trucking and transport technology companies, including Daimler Trucks and Waymo.<sup>v</sup> Such technologies will likely be used to reduce the amount of manual driving performed, although drivers will continue to operate vehicles.<sup>w</sup> Although these technologies have the potential to make trucking more efficient, experts warn they cannot fully address the issues in the trucking industry due to challenges in implementation and acceptance among regulators, fleet owners, and service providers such as insurers.<sup>x</sup>

Since the end of 2018, there has some indication that the trucking industry is entering a slowdown, as some firms have reported declining revenue, have revised annual outlooks downward, and, in some cases, have declared bankruptcy.<sup>y</sup> In the past year freight rates have dropped—especially spot rates, which fell 62.6 percent in May 2019 year over year.<sup>z</sup> Industry sources cite declines in factory activity, increased operating costs, excess capacity, and global trade issues as the main contributors to the downturn and suggest that the industry will remain weak through the remainder of 2019.<sup>aa</sup>

<sup>a</sup> Barradas, “If You Bought It,” 2014; Truck News, “Lafarge Forges Ahead,” March 22, 2019.

<sup>b</sup> Freight shipped by truck comprise approximately 75 percent of “all U.S. freight movements, excluding imports, shipments from farms, crude oil production, and a few smaller categories.” USDOT, BTS, Commodity Flow Survey 2017, December 10, 2018.

<sup>c</sup> Employment statistics from the Bureau of Labor Statistics (BLS) and are for 2018, the latest year available. American Trucking Association, “New Report Finds Trucking Industry Revenues,” August 20, 2018; USDOL, BLS, “May 2018 National Occupational Employment,” April 2, 2019.

<sup>d</sup> Bokher, “Segments of the Trucking Industry,” March 10, 2018.

<sup>e</sup> Stevens, “For UPS, E-Commerce Brings Big Business,” September 11, 2014; Shorr Packaging Corp, “The Amazon Effect,” June 2016; Kalyani, “Couriers and Local Delivery Services,” December 2018.

<sup>f</sup> Costello, “Truck Driver Shortage Analysis 2017,” October 2019.

<sup>g</sup> Burks and Monaco, “Is the U.S. Labor Market for Truck Drivers Broken?” September 2018, 5.

<sup>h</sup> Costello, “Truck Driver Shortage Analysis 2019,” July 2019, 4.

<sup>i</sup> USDOL, BLS, “May 2018 National Occupational Employment,” April 2, 2019.

<sup>j</sup> USDOL, BLS, “May 2018 National Occupational Employment,” April 2, 2019.

<sup>k</sup> Page, “Today’s Logistics Report: Shipping Consolidation Losses,” October 17, 2018.

<sup>l</sup> Walmart, “Reinvented Truck Driver Orientation Helps Add New Hires to Walmart’s Fleet,” January 23, 2019.

<sup>m</sup> American Trucking Association, “ATA Statement on Flaws,” March 20, 2019.

<sup>n</sup> Costello, “Truck Driver Shortage Analysis 2017,” October 2017, 3. Burks and Monaco note that this high turnover rate could also reflect the relative unattractiveness of truck driving to potential employees. Burks and Monaco, “Is the U.S. Labor Market for Truck Drivers Broken?” September 2018, 27–28.

<sup>o</sup> Using December indexes of PPI industry subsector data for trucking. USDOL, BLS, “PPI Industry Sub-sector Data for Truck Transportation, Not Seasonally Adjusted” (accessed July 25, 2019).

<sup>p</sup> Baertlein, “U.S. Trucking Industry Volumes,” September 6, 2018; Johnson, “Corporate America’s New Dilemma,” February 26, 2018; Premack, “The Truck Driver Shortage Helped Jack Up the Prices,” February 11, 2019; Schulz, “Carrier Executives Grapple with Driver Shortage,” August 21, 2019.

<sup>q</sup> As of April 2018, all commercial trucks are required to have electronic log devices. Miller, “Is U.S. Trucking Reaching the Tipping Point?” September 10, 2018. In addition to exploring autonomous vehicles, trucking companies use technologies such as rear- and side-view cameras, logistics mobile applications, and improvements in logistics that require fewer long-distance carriers. USDOL, BLS, “Heavy and Tractor-Trailer Truck Drivers,” April 12, 2019; Commendatore, “For Truck Platooning to Work,” June 1, 2018; Loten, “Life on the Road Gets a Little Easier,” June 5, 2019.

<sup>r</sup> USITC, *Global Digital Trade 1*, August 2017, 204.

<sup>s</sup> Berg Insight, “Fleet Management in the Americas,” April 2019, 2; USITC, *Global Digital Trade 1*, August 2017, 204.

<sup>t</sup> Berg Insight, “Fleet Management in the Americas,” April 2019, 2.

<sup>u</sup> Semi-autonomous truck platooning is the practice of one or more connected trucks mimicking a lead truck in close proximity by employing automated driving and vehicle-linking technologies. Support differs across the trucking industry; for example, in an interview the head of the world’s largest truck manufacturer, Daimler Trucks, indicated that the savings generated would not justify the cost of the extra technology needed. Adler, “Real-World Value of Truck Platooning Questioned as Support Wanes,” February 26, 2019.

<sup>v</sup> European Automobile Manufacturers Association, “First Cross-border Truck Platooning Trial,” April 6, 2016; ATBS, “Self-driving Trucks,” September 2018.

<sup>w</sup> ATBS, “Self-driving Trucks,” September 2018.

<sup>x</sup> Miller, “Is U.S. Trucking Reaching the Tipping Point?” September 10, 2018; Loten, “Life on the Road Gets a Little Easier,” June 5, 2019.

<sup>y</sup> Cassidy, “Trucker Bankruptcies Reveal Perils for Carriers, Shippers,” May 14, 2019; Premack, “Truckers Warn of a ‘Bloodbath,’” June 19, 2019; Fuller, “Trucking Apocalypse Continues,” July 14, 2019; Smith, “Truckers Cut Payroll as Freight Demand Softens,” April 5, 2019.

<sup>z</sup> Premack, “Truckers Warn of a ‘Bloodbath,’” June 19, 2019. See also Root, “The Trucking Industry Is in a Recession,” August 15, 2019; Terrazas, “Freight Industry Recessions and the Business Cycle,” August 15, 2019.

<sup>aa</sup> Cassidy, “Trucker Bankruptcies Reveal Perils for Carriers, Shippers,” May 14, 2019; Premack, “Truckers Warn of a ‘Bloodbath,’” June 19, 2019; Hampstead, “Freight Brokers: Capacity Loosening,” July 19, 2019; Smith, “Freight Market Shifts into Lower Gear,” May 24, 2019; Berman, “Echo Global Logistics CEO Waggoner,” September 12, 2019.

## Trade Trends

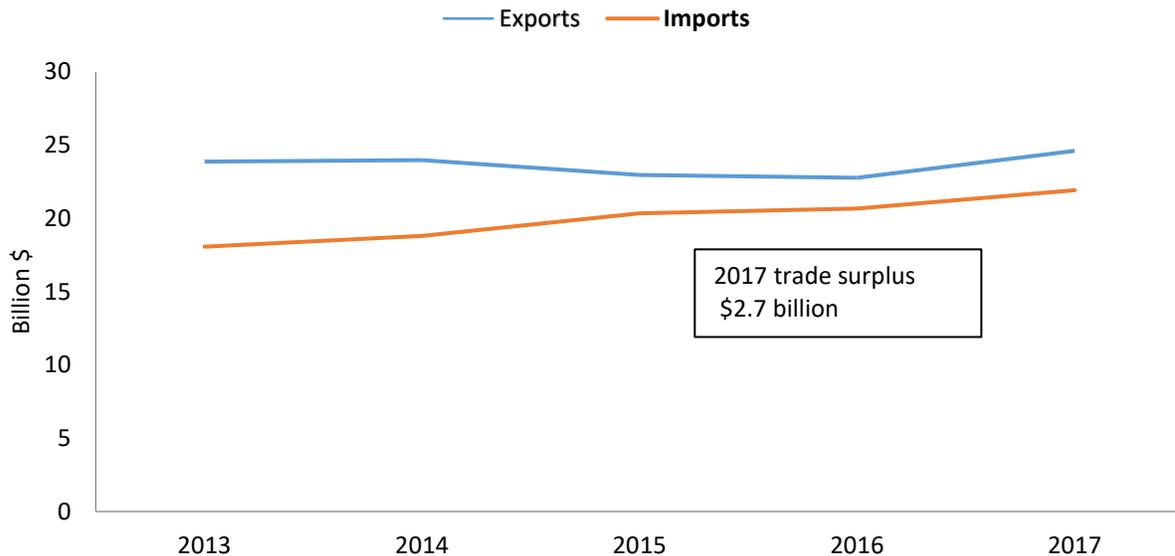
### Cross-border Trade in Logistics Services

U.S. cross-border exports of logistics services grew 8.1 percent to \$24.6 billion in 2017 (figure 3.1), a significant rebound from the 1.2 percent annual decline registered from 2013 to 2016, due in large part to strong demand for air freight services.<sup>118</sup> During the same year, U.S. cross-border imports of logistics grew by 6.1 percent to \$21.9 billion, also much faster than the 3.4 percent average annual growth rate during 2013–16. Cross-border trade in airfreight and airport services tends to track overall merchandise trade activity, and U.S. goods exports and imports in both segments increased significantly in 2017 (by 6.6 percent and 6.9 percent, respectively), after falling or stagnating between 2013 and 2016.

In 2017, the United States had a surplus of \$5.8 billion in airfreight services and a deficit of \$3.1 billion in airport services. Airfreight services represented a slight majority (55.5 percent) of total U.S. logistics services exports. The surplus in airfreight services indicates the important role of U.S. companies in transporting merchandise to and from the United States by air. On the other hand, airport services were a larger majority (64.1 percent) of total U.S. logistics services imports. The deficit in airport services reflects the significant expenditures by U.S. air carriers at foreign airports on repair, maintenance, storage, cleaning, and handling services. Overall, the U.S. cross-border trade surplus in logistics services increased to \$2.7 billion in 2017, up from \$2.1 billion in 2016.

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<sup>118</sup> International Air Transport Association, “Air Freight Demand Up 9% in 2017,” January 31, 2018.

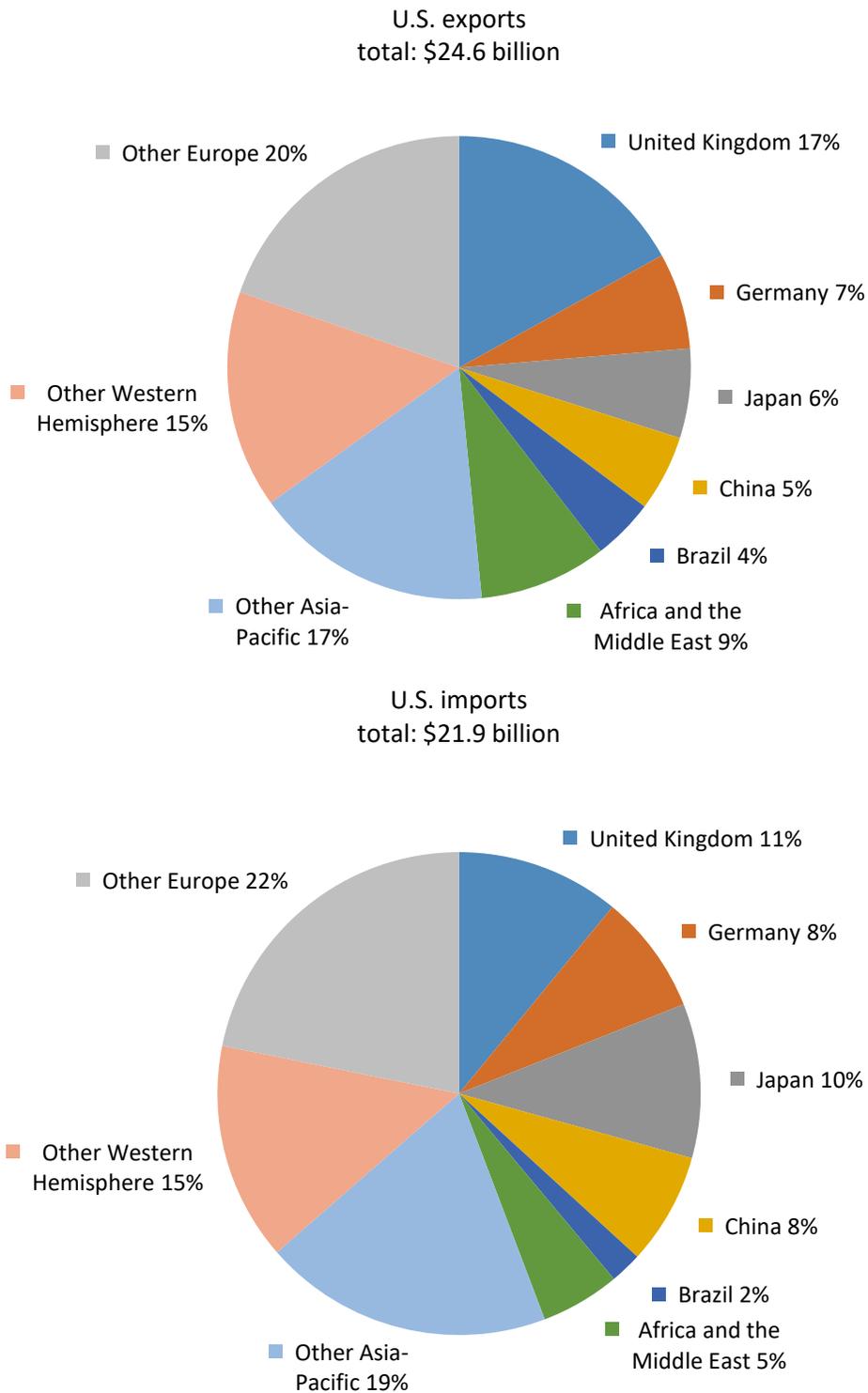
**Figure 3.1** Logistics services: U.S. cross-border trade, 2013–17

Source: USDOC, BEA, table 2.2, “U.S. Trade in Services, by Type of Services and Country or Affiliation,” October 19, 2018.  
 Note: Underlying data for this figure can be found in [appendix table B.10](#).

In 2017, the UK was both the largest destination for U.S. cross-border logistics services exports (\$4.2 billion, or 16.9 percent of total exports) and the largest source of imports (\$2.4 billion, or 10.9 percent) (figures 3.2). These numbers show a recovery in U.S.-UK logistics services trade: both exports and imports had stagnated or fallen in 2015 and 2016, but in 2017, exports grew by 9.7 percent while imports grew by 14.8 percent. Other top markets for U.S. cross-border logistics services trade were Germany (6.7 percent of exports and 8.0 percent of imports), Japan (6.2 percent; 10.3 percent), China (5.3 percent; 7.5 percent), and Brazil (4.3 percent; 2.1 percent). The United States has a bilateral surplus in cross-border logistics services trade with the UK and Brazil, but a deficit with each of its other top trade partners.

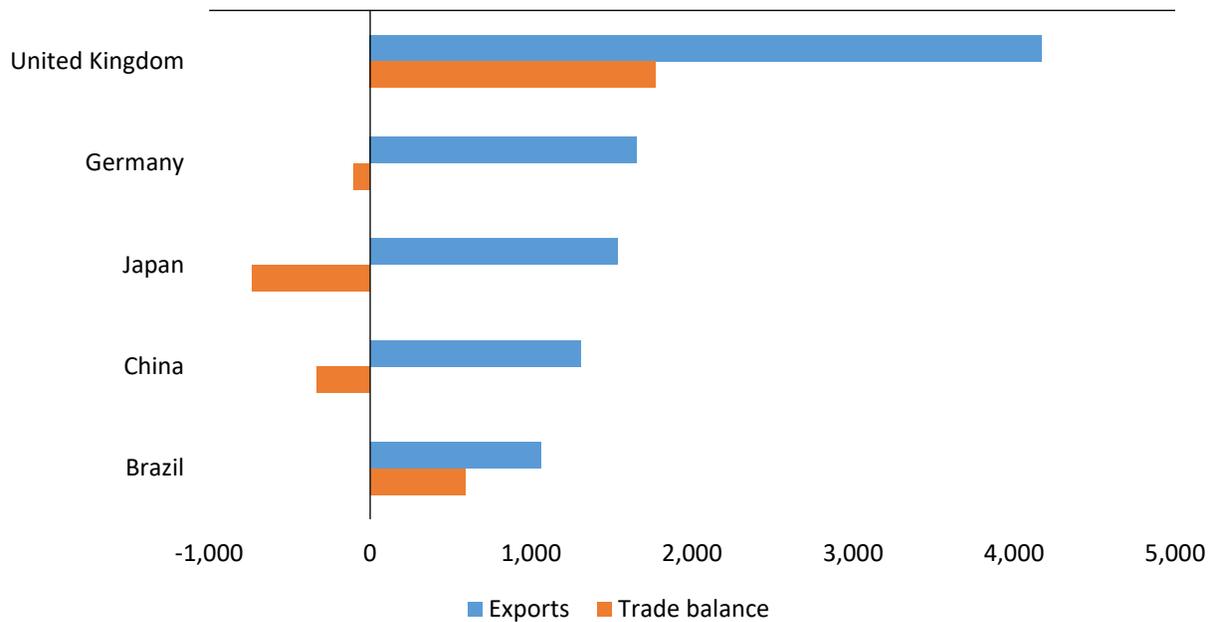
Airport services make up the majority of logistics services exports to and imports from the UK, reflecting the high value of services sold to UK carriers like EasyJet and British Airways, as well as services purchased by U.S. carriers at British airports like London Heathrow. For the other top countries, airfreight services represent the majority of U.S. exports. U.S. logistics services exports to the top countries have been largely stagnant in recent years, with the exception of airport services exports to China and Japan, which have grown significantly. Airport services account for the majority of U.S. logistics services imports from all top countries except China (where sea freight services were the largest logistics import). Nevertheless, U.S. imports of airport services from China as well as Japan have grown rapidly, nearly doubling since 2014

**Figure 3.2** Logistics services: U.S. cross-border trade by country, 2017



Source: USDOC, BEA, table 2.2, "U.S. Trade in Services, by Type of Services and Country or Affiliation," October 19, 2018.  
 Note: Underlying data for this figure can be found in [appendix table B.11](#).

**Figure 3.3** Logistics services: U.S. cross-border exports and trade balance by major partner, 2017 (million dollars)



Source: USDOC, BEA, International Data, International Services, table 2.2, “U.S. Trade in Services, by Type of Services and Country or Affiliation” (accessed February 19, 2019).

Note: Underlying data for this figure can be found in [appendix table B.12](#).

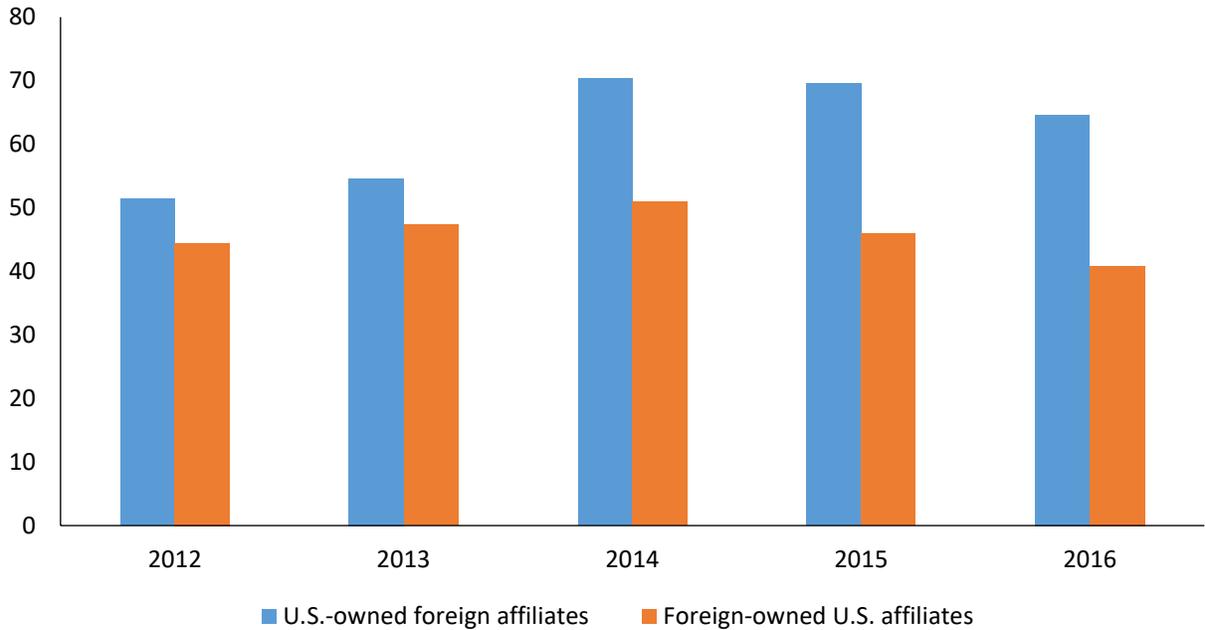
## Affiliate Transactions

Sales by the foreign affiliates of U.S. logistics services firms totaled \$64.6 billion in 2016, a 7.0 percent decrease from 2015 (figure 3.4). All subcategories experienced a decrease, especially support activities for transportation (which fell by \$1.9 billion, or 11.0 percent) and other transportation and warehousing (which fell by \$1.8 billion, or 5.3 percent). Purchases from U.S. affiliates of foreign logistics services firms also fell: they totaled \$40.8 billion, an 11.1 percent decrease from 2015. These recent declines contrast with average annual growth rates of 7.9 percent for sales of the foreign affiliates of U.S. logistics services firm during 2012–15, and of 1.0 percent in purchases from U.S. affiliates of foreign logistics firms.

Those growth rates, however, are affected by the fact that the Bureau of Economic Analysis (BEA) of the U.S. Department of Commerce noted a large increase in the number of reporting enterprises in the logistics sector for its affiliate trade surveys starting in 2014. This increase led to a spike that year in mode 3 exports and imports (see box 3.3), although both affiliate sales and affiliate purchases of logistics services have fallen from that peak.

Much of the country-level data on affiliate sales is suppressed to avoid disclosing the data of individual firms. However, Europe is a significant market for sales by foreign affiliates of U.S. air transport services firms (33.7 percent of total sales), and Canada is a significant source of purchases from U.S. affiliates of foreign trucking firms (35.4 percent of total purchases).

**Figure 3.4** Logistics services: U.S. affiliate sales and affiliate purchases, 2012–16



Source: USDOC, BEA, 4.1, “Services Supplied to Foreign Persons by U.S. MNEs through Their MOFAs, by Industry of Affiliate and by Country of Affiliate,” October 19, 2018; 5.1, “Services Supplied to U.S. Persons by Foreign MNEs through Their MOUSAs, by Industry of Affiliate and by Country of UBO,” October 19, 2018.  
 MNEs = multinational enterprises; MOFAs = majority-owned foreign affiliates; MOUSA = majority-owned U.S. affiliate; UBO = ultimate beneficial owner.  
 Note: Affiliate sales in 2014 may not be directly comparable to sales in 2013 (see box 3.3). Underlying data for this figure can be found in [appendix table B.13](#).

**Box 3.3** Understanding the Bureau of Economic Analysis Data on Cross-border Trade and Affiliate Transactions in Logistics Services

This report defines cross-border trade in logistics services as the sum of two cross-border trade categories defined by the Bureau of Economic Analysis (BEA) of the U.S. Department of Commerce: airfreight transport services and airport services. (Maritime freight and port services are excluded from this definition because they are discussed separately in chapter 4.) These services capture a large portion of trade in logistics services. U.S. cross-border exports of airfreight transport services reflect the value of services provided by U.S. air carriers that move merchandise to foreign destinations (or between foreign ports), while imports refer to the movement of goods to the United States by foreign air carriers. U.S. cross-border exports of airport services, which include both freight and passenger services, reflect the value of goods (except fuel) and services sold to foreign carriers at U.S. airports, while imports reflect the value of goods and services purchased by U.S. carriers at foreign airports.

Affiliate transactions in logistics services are defined as the sum of five BEA affiliate trade categories: air transportation, rail transportation, truck transportation, support activities for transportation (i.e., providing specialized services to other transportation establishments), and other transportation and warehousing. The last category combines transportation services not covered elsewhere, along with the operations of general merchandise, refrigerated freight, and other warehousing and storage facilities. These statistics are based on the affiliate’s primary industry (unlike cross-border statistics that are based on the type of service), so they include all services sold by and purchased from firms in these categories.

The BEA 2014 Benchmark Survey of U.S. Direct Investment Abroad stated that the reported value of services supplied abroad in 2014 through the affiliates of U.S. MNEs was up 14 percent from the previous year. This increase is predominantly attributable to concerted outreach efforts by the BEA to improve survey coverage, which expanded the number of reporting companies that were ultimately included in the 2014 Benchmark Survey sample. As a result, the figures for 2014 affiliate sales in the logistics services sector may not be comparable to those reported in 2013.<sup>a</sup>

<sup>a</sup> USDOC, BEA, “U.S. International Services: Trade in Services in 2015 and Services Supplied through Affiliates in 2014,” December 2016, 24; Scott, “Activities of Multinational Enterprises,” December 2016, 12. Since 2014, the BEA has not changed the way it measures cross-border trade and affiliate sales.

## Outlook

Consumer spending and industrial production drive demand for movement of freight, so the growth in logistics demand will follow overall economic growth in different countries. One significant development is China’s Belt and Road initiative (BRI), which is expanding and modernizing distribution infrastructure linking Asia and Europe.<sup>119</sup> This will likely shorten transport times within the region and shift some demand from maritime transport to truck and rail transport. In one example, goods manufactured in Yiwu, China, currently take up to 45 days to be delivered by sea to London, but new freight trains will be able to reduce this time to an estimated 14 days.<sup>120</sup> Additionally, the UK’s planned departure from the European Union (“Brexit”) may have consequences for U.S. trade in logistics services, since the UK is both the largest destination for U.S. cross-border exports of logistics services and the largest source of such imports.

The industry will also continue to be affected by new technologies. For example, Union Pacific railroad uses a network of visual and acoustic sensors to monitor railroad tracks and predict equipment failures.<sup>121</sup> Peloton Technology’s truck platooning system uses digital communication to connect the braking and acceleration between two trucks, which are controlled by the lead truck to keep the rear truck at an optimal distance from the first; this reduces aerodynamic drag and increases fuel efficiency, cutting fuel costs by 7 percent.<sup>122</sup> Walmart is adopting an IBM-developed blockchain technology, IBM Food Trust, to trace the progression of food through its supply chain by connecting growers, processors, distributors, and retailers.<sup>123</sup> Self-driving truck technologies are being developed by companies including Embark, Tesla, Toyota, Uber, and Volkswagen.

These technological developments may affect the internal structure of many logistics firms. Some invest directly in technology, like XPO Logistics, which spends about \$550 million annually on technology and employs more than 1,700 technology specialists.<sup>124</sup> Others are outsourcing: in one survey, 27 percent of 3PL firms outsourced IT services in 2018, up from 17 percent in the previous year.<sup>125</sup> However, the

<sup>119</sup> For a further discussion of China’s Belt and Road initiative, see chapter 4.

<sup>120</sup> Wheeler, “Commentary: Global Shipping and Logistics Chains Reshaped,” December 2, 2018.

<sup>121</sup> Technavio, “Top 10 Logistics Trends,” March 14, 2019.

<sup>122</sup> Peloton, “Platooning Combines Advanced Technologies” (accessed July 5, 2019). See also box 3.2 on trucking, which describes platooning issues in more detail.

<sup>123</sup> IBM, “Walmart: Linked by Safer Food,” 2018.

<sup>124</sup> XPO Logistics, “Rapid-Fire Innovation” (accessed July 5, 2019).

<sup>125</sup> Infosys, “2018 Third-Party Logistics Study,” 2018.

implementation of new technologies also may create new vulnerabilities, illustrated by the 2017 “NotPetya” cyberattack on FedEx’s European IT systems, which cost the company an estimated \$300 million.<sup>126</sup>

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<sup>126</sup> Solomon, “TNT Express Albatross,” December 19, 2018.

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# Chapter 4

## Maritime Transport Services

### Summary

Several factors have had a major effect on the maritime services industry in recent years, including industry consolidation, a changing political environment for international trade, and the widespread adoption of digital technologies, such as blockchain, by maritime firms. Among these factors, industry consolidation has had the most pronounced impact on competition in the maritime sector. Such consolidation has occurred principally through merger and acquisition (M&A) deals and alliances between large container shipping firms, as well as vertical integration between shipping lines and port services providers.

Overall, both the maritime shipping and the port services industries grew in 2017. This growth stemmed, in part, from a high demand for goods in the United States and abroad, as well as the expansion of port infrastructure. Like container shipping, port services also experienced increasing consolidation, as shipping lines invested in port terminal operations, thereby affecting the competitive dynamics of the market. In the near term, maritime firms will likely benefit from continued, albeit slowing, growth in international trade and from efficiency gains from the use of ever-larger container ships and digital technology. In the longer term, the financial health of the maritime industry may be affected by new environmental requirements placed on shipping firms, and will likely remain vulnerable to global economic conditions.

### Introduction

For the purposes of this chapter, the maritime transport services industry includes both maritime freight transportation and port services.<sup>127</sup> Maritime freight transportation services encompass the transport of cargo on ships between coastal or deep-sea ports, between these ports and the U.S. and Canadian Great Lakes, and within inland lakes and waterways. Maritime port services include, among other things, port and waterway operation services, and cargo handling services.<sup>128</sup> Port and waterway operation services include the operation of marine and passenger terminal facilities and the servicing of locks and canals.<sup>129</sup> Cargo handling services and storage and warehousing services include the loading, unloading, and storage of maritime cargo. Port services are generally provided by a public-sector port operator, using the port's own labor, equipment, and facilities or using the equipment and facilities of concessionaires or private-sector firms.<sup>130</sup>

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<sup>127</sup> This chapter does not discuss maritime passenger transport services.

<sup>128</sup> UN, *Provisional Central Product Classification*, 1991, 213–20.

<sup>129</sup> Other supporting services for water transport include piloting and tugboat assistance services (in which vessels are guided into or out of harbors), navigation aid services, and vessel salvage and refloating services.

<sup>130</sup> UNCTAD, *Review of Maritime Transport 2017*, 2017, 74.

In 2017, the United States posted a trade deficit of \$18.4 billion in maritime transportation services, reflecting its deficit in merchandise trade.<sup>131</sup> The top five U.S. export markets for maritime services in 2017 were Japan, accounting for 14 percent of total U.S. exports, followed by Taiwan (10 percent), Germany (9 percent), South Korea (7 percent) and Switzerland (6 percent).<sup>132</sup> Separately, in 2016, sales by U.S.-owned foreign affiliates in maritime services fell to \$7.0 billion, down from \$9.9 billion in 2015. Available data for 2016 indicate that both Singapore (\$1.2 billion, or 17.6 percent) and the United Kingdom (UK) (\$1.1 billion, or 16.0 percent) accounted for a significant proportion of foreign affiliate sales by U.S. maritime transport services firms in 2016.<sup>133</sup> During that year, the largest decrease in U.S. foreign affiliates' sales of water transportation services occurred in China (46.7 percent), followed by Bermuda (21.7 percent), the UK (19.2 percent), and Singapore (15.0 percent).<sup>134</sup>

## Market Conditions

### Global and Industry Revenue

In 2017, the top five global container shipping fleets—measured by capacity—were headquartered in Germany, Denmark, China, Greece, and Hong Kong (China) (table 4.1).<sup>135</sup> Collectively, the top 10 economies in the industry accounted for more than 70 percent of global container capacity, down from 78 percent in 2016, with the top 5 economies representing nearly 60 percent of total capacity.<sup>136</sup> Notable changes in rank from 2016 among the top 10 economies include Singapore, which dropped from 6th to 11th place in 2017, and France, which was elevated from 12th to 8th place. The change in rankings for these two countries is in large part explained by the acquisition of a Singapore-based

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<sup>131</sup> USDOC, BEA, table 2.2, “U.S. Trade in Services, by Type of Service and Country of Affiliation,” October 19, 2018. Trade in maritime services stems from merchandise trade. In general, exports of maritime freight transport services occur when U.S. ocean carriers transport U.S. merchandise exports to foreign countries, and imports of freight transport services occur when foreign ocean carriers transport merchandise imports to the United States. For more information on the relationship between maritime and merchandise trade volumes, see box 4.3.

<sup>132</sup> USDOC, BEA, table 1, “U.S. Trade in Goods and Services: Exports, Imports, and Balances,” February 6, 2019. In most cases, country-level data on affiliate transactions in maritime transport services have been suppressed by BEA to avoid disclosing the operations of individual firms. However, available data for 2016 indicate that both Singapore (\$1.2 billion, or 17.6 percent) and the United Kingdom (\$1.1 billion, or 16.0 percent) accounted for a significant proportion of foreign affiliate sales by U.S. maritime transport services firms during that year.

<sup>133</sup> USDOC, BEA, table 4.1, “Services Supplied to Foreign Persons by U.S. MNEs through Their MOFAs, by Industry of Affiliate and by Country of Affiliate,” and table 5.1, “Services Supplied to U.S. Persons by Foreign MNEs through Their MOUSAs, by Industry of Affiliate and by Country of UBO,” October 19, 2018. In most cases, BEA has suppressed country-level data on affiliate transactions in maritime transport services to avoid disclosing the operations of individual firms. Therefore, country-level data are discussed for those markets about which BEA has disclosed information.

<sup>134</sup> USDOC, BEA, table 4.1, “Services Supplied to Foreign Persons by U.S. MNEs through Their MOFAs, by Industry of Affiliate and by Country of Affiliate,” October 19, 2018.

<sup>135</sup> Container ships carry packaged cargo in containerized units. A standard container measures 20 feet by 8 feet, and is known as a 20-foot equivalent unit (TEU). Containers can be transferred from ships to rail cars or tractor-trailers for inland transport. For more information on container ships, see *Shipping News*, “What Are Container Ships?” July 21, 2016.

<sup>136</sup> UNCTAD, *Review of Maritime Transport 2018*, 2018, 31.

container shipping firm, Neptune Orient Lines (NOL),<sup>137</sup> by CMA CGM (France) in mid-2016.<sup>138</sup> Three emerging economies—Indonesia, Israel, and Turkey—ranked 16th, 17th, and 18th by size of container ship fleet, ahead of the Netherlands and the United Arab Emirates (UAE). Both the Netherlands and UAE are developed economies with a considerable presence in the maritime freight and port services industries.<sup>139</sup>

**Table 4.1** Top 10 economies with the largest container shipping fleets, as of January 1, 2018

Rank in 2017	Rank in 2016	Country	Capacity <sup>a</sup>	Number of vessels	Market share (percent) <sup>b</sup>
1	1	Germany	4,207,388	1,131	20.2
2	4	Denmark	2,220,911	317	10.7
3	2	China	2,150,700	485	10.3
4	3	Greece	1,891,234	418	9.1
5	5	Hong Kong (China)	1,583,036	258	7.6
6	7	Japan	1,455,580	278	7.0
7	8	Switzerland	1,260,807	207	6.1
8	12	France	1,038,824	135	5.0
9	9	Taiwan	985,495	255	4.7
10	10	United Kingdom	870,632	199	4.2
		Subtotal	17,664,607	3,683	84.9
		Rest of the world	3,139,864	1,461	15.1
		World total	20,804,471	5,144	100.0

Source: UNCTAD, *Review of Maritime Transport 2018*, 2018, 31, and *Review of Maritime Transport 2017*, 2018, 30.

<sup>a</sup> Number of containerized 20-foot equivalent units (TEUs).

<sup>b</sup> Based on number of TEUs.

In 2017, revenues in the global maritime transport services industry grew by 6.1 percent to \$207.7 billion. In 2018, revenue for that year was forecast to reach \$215.2 billion,<sup>140</sup> largely due to strong economic growth worldwide, increased demand for maritime freight services, and a moderate rise in container ship capacity (compared to the previous year).<sup>141</sup>

The revenues of the top 10 container shipping firms totaled about \$135.8 billion, or 65.4 percent of global industry revenues, in 2017 (table 4.2). Among this group, MSC (Switzerland), Maersk (Denmark), CMA CGM Group (France), and China Ocean Shipping Group (China) were the largest, measured by their share of global container ship capacity. Overall, the revenues of the top 10 container shipping lines increased at an average annual rate of 3.0 percent between 2013 and 2017, slightly higher than the 2.7 percent growth rate recorded across the entire global industry during the same period.<sup>142</sup>

<sup>137</sup> NOL acquired U.S.-based shipping firm APL (formerly American President Lines) in 1997.

<sup>138</sup> In 1996, French state-owned Compagnie Générale Maritime (CGM) was privatized and purchased by the privately held Compagnie Maritime d’Affrètement (CMA) to form the CMA CGM Group. Morley, “CMA CGM Confirms Mega-Ship Order,” September 15, 2017; Dupin, “CMA CGM Thrives in 2017,” March 16, 2018.

<sup>139</sup> Rank is based on the number of TEUs represented by a country’s container ship fleet. UNCTAD, *Review of Maritime Transport 2018*, 2018, 31, table 2.4, “Global Top 20 Owners of Container-carrying World Fleet, 2018.”

<sup>140</sup> MarketLine, “Global Marine Freight,” April 2018, 12. Revenue numbers for 2018 were forecasted.

<sup>141</sup> Maritime Equipment Association, *2018 Market Forecast Report*, 2018.

<sup>142</sup> Revenue data are available for 2013 and 2017 only. Calculations based on revenue figures from USITC, *Recent Trends in U.S. Services Trade: 2015 Annual Report*, 81–82 (2013 revenues), and MarketLine, “Global Marine Freight,” April 2018, 9, table 1, “Global Marine Freight Industry Value (\$ billion), 2013–17.”

**Table 4.2** Top 10 global container shipping firms, 2017

Rank <sup>a</sup>	Company	Headquarter location	Share of global container ship capacity (% of TEUs) <sup>b</sup>	Revenue (billion \$) <sup>c</sup>
1	Maersk Line	Denmark	15.3	28.2 <sup>d</sup>
2	MSC	Switzerland	12.3	30.9
3	CMA CGM Group	France	10.1	21.1
4	China Ocean Shipping (COSCO) Group	China	7.8	14.4
5	Hapag-Lloyd Group	Germany	6.1	11.3
6	Ocean Network Express (ONE)	Singapore	6.1	11.0 <sup>e</sup>
7	Evergreen	Taiwan	4.4	4.6 <sup>f</sup>
8	Orient Overseas Container Line (OOCL)	China	2.7	6.1
9	Yang Ming	Taiwan	2.4	4.2
10	Pacific International Lines	Singapore	1.6	4.0
Total			68.8	135.8

Source: UNCTAD, *Review of Maritime Transport 2018*, June 1, 2018, 30; MoverDB.com, "Top 10 International Container Shipping Companies," March 2016; Maersk, "2017 Annual Report," 2018, 10; MarketWatch, "Hapag-Lloyd Swings to 2017 Profit," March 28, 2018; COSCO Shipping, "2016 Annual Report," 2016, 10; Morley, "ONE Regains Trans-Pacific Share," October 16, 2018; OOCL, "Orient Overseas (International) Ltd Announces 2017 Full Year Results," March 12, 2018; *World Maritime News*, "Yang Ming Delivers Profit," March 27, 2018, and "COSCO Shipping Earnings Improve," March 30, 2018; Pacific International Lines, "Consolidated Income Statements," April 16, 2018; CMA CGM, "Consolidated Financial Statements," December 31, 2018, 3.

<sup>a</sup> Rank is based on share of global container ship capacity as measured in 20-foot equivalent units (TEUs), or the size of one standard shipping container.

<sup>b</sup> As of June 2018.

<sup>c</sup> Revenue figures include those for the parent firm of the container shipping line and its subsidiaries, including its container shipping business.

<sup>d</sup> For 2015 (latest data available).

<sup>e</sup> For 2018.

<sup>f</sup> For 2016 (latest data available).

In 2016–17, the maritime industry experienced a wave of M&A activity. Among the most noteworthy transactions were the aforementioned purchase of NOL by CMA CGM in July 2016, Maersk's acquisition of container shipping line Hamburg Süd (Germany) in March 2017, and the purchase by Hapag-Lloyd (Germany) of United Arab Shipping Company (Dubai, UAE) in May 2017.<sup>143</sup> CMA CGM's purchase of NOL enabled it to expand its operations in Southeast Asia using Singapore as a strategic hub,<sup>144</sup> while Maersk's acquisition of Hamburg Süd allowed it to offer new services from South America to both Asia and Europe.<sup>145</sup> Similarly, with its purchase of United Arab Shipping Company, Hapag-Lloyd extended its routes to the Middle East.<sup>146</sup>

In addition, in July 2017, three large Japanese shipping firms—K Line, MOL, and NYK—merged to form One Network Express (ONE), becoming the sixth-largest container ship firm in the world. ONE operates a vast network of maritime routes, serving 100 countries and connecting 200 global ports.<sup>147</sup> Industry

<sup>143</sup> Maersk acquired Hamburg Süd for \$4 billion. Seatrade Maritime News, "Maersk Line Closes Acquisition of Hamburg Süd," December 1, 2017.

<sup>144</sup> CMA CGM, "CMA CGM to Acquire NOL, Reinforcing Its Position," December 6, 2015.

<sup>145</sup> Dupin, "Maersk Line Agrees to Buy Hamburg Süd," December 1, 2016. Hamburg Süd provides service in South America through its Brazil-based subsidiary, Aliança. Hamburg Süd Group website, <https://www.hamburgsud.com/group/en/corporatehome/index.html> (accessed February 26, 2019).

<sup>146</sup> World Maritime News, "Hapag-Lloyd Merges with United Arab Shipping Company," May 24, 2017.

<sup>147</sup> gCaptain, "Japan's 'ONE' Network Starts Business," April 2, 2018.

consolidation was further accelerated by the bankruptcy of Hanjin (Korea), the 10th-largest global shipping firm, in 2016.<sup>148</sup>

In 2017, the top 10 global container ports processed about 517 million TEUs<sup>149</sup> of cargo volume (nearly 70 percent of worldwide volume),<sup>150</sup> up 9.4 percent from the top 10's cargo volume of 473 million TEUs in 2016 (table 4.3).<sup>151</sup> Overall, global container volumes increased 6.2 percent from 702.1 million TEUs in 2016 to 745.5 million TEUs in 2017.<sup>152</sup> The increase in global container volumes in 2017 was likely due to a rise in the global demand for goods as well as the expansion of port infrastructure.<sup>153</sup>

**Table 4.3** Top 10 global port operators, 2017

Rank	Company	Country	Volume (million TEUs)	Share (% of total TEUs)
1	China Cosco Shipping	China	91.3	12.2
2	Hutchison Ports	China	82.3	11.0
3	APM Terminals	Netherlands	76.3	10.2
4	PSA International	Singapore	73.9	9.9
5	DP World	UAE	68.7	9.2
6	Terminal Investment Limited (TIL)	Netherlands	44.0	5.9
7	China Merchants Ports	China	31.0	4.2
8	CMA CGM <sup>a</sup>	France	24.8	3.3
9	Eurogate	EU	13.8	1.9
10	SSA Marine <sup>b</sup>	United States	11.3	1.5
		Total	517.3	69.4
		Grand total (all global port operators)	745.5	100.0

Source: Asia/Middle East Maritime Focus, "APL's Acquisition by CMA CGM a 'Happy Coincidence,'" November 21, 2016; Drewry, *Global Container Terminal Operators Annual Review and Forecast*, 2017, 3, 104; Drewry representative, email message to USITC staff, September 20, 2018.

<sup>a</sup> In 2016, CMA CGM (France) acquired maritime firm NOL/APL (Singapore), which owns container shipping and terminal operations.

<sup>b</sup> SSA Marine replaced Hanjin (South Korea) as the 10th-largest global terminal operator after the latter filed for bankruptcy on August 31, 2016.

Vertical integration, in which container shipping lines also own and operate port terminals,<sup>154</sup> is a growing feature of the ports sector. Of the top 20 container ports (by volume) in 2016, one-half were managed by large shipping firms such as China Cosco Shipping, APM Terminals (Maersk), CMA CGM, and

<sup>148</sup> *Journal of Commerce*, "Hanjin Shipping Bankruptcy," 2016.

<sup>149</sup> TEU is an acronym for twenty-foot equivalent unit; the dimensions of a standard shipping container (20 feet by 8 feet) equals one TEU.

<sup>150</sup> Drewry representative, email message to USITC staff, September 20, 2018.

<sup>151</sup> Drewry representative, email message to USITC staff, September 20, 2018.

<sup>152</sup> Calculations based on data provided by Drewry representative, email message to USITC staff, September 20, 2018.

<sup>153</sup> UNCTAD, *Review of Maritime Transport 2018*, 2018, xi.

<sup>154</sup> A port often has several terminals where cargo is loaded and unloaded from ships, stored in warehouses, and transferred to truck or rail for inland transport. Shipping lines may have equity stakes in terminal operations, in which they share ownership with both public and other private-sector entities. For more information, see Drewry, *Global Container Terminal Operators Annual Review*, 2017, 19.

SSA Marine (table 4.3).<sup>155</sup> Overall, in 2017, shipping lines accounted for 38 percent of global container terminal capacity through their port services affiliates, up from 18 percent in 2001.<sup>156</sup>

The increase in the number of container port terminals owned by shipping lines could reduce competition in the ports sector, as shipping lines use their own “dedicated” terminals for cargo-handling activity, bypassing other private- or public-sector terminals that would normally compete for such business.<sup>157</sup> This, in turn, could lead to a concentration of market power among liner-affiliated terminals, to the detriment of general, or multi-user, terminals.<sup>158</sup> Nonetheless, the OECD anticipates, for example, that given the liners’ focus on maximizing the efficiency of their shipping networks and their desire to control information flows in an increasingly digitalized environment, the trend toward dedicated terminals will likely continue in the foreseeable future.<sup>159</sup>

## Supply and Demand Factors

A number of supply and demand factors are influencing the growth and trajectory of the maritime services industry. On the demand side, the most prominent factor is the changing landscape of international trade, driven both by changes in trade policy and shifts in global supply chains. On the supply side, the most significant factors are the formation of container shipping alliances and the growing adoption of blockchain technology by maritime firms.

## Uncertainties in the Global Trade Environment

Current and impending developments in trade policy, together with changes in the geographic makeup of supply chains, are likely to affect the maritime industry. Among these developments are the potential departure of the UK from the European Union (EU) (Brexit) and the outcome of U.S. trade discussions with China.<sup>160</sup> First, an economic slowdown in the UK resulting from Brexit could lead to a decline in UK-based trade, affecting the revenues of shipping lines and other maritime services firms that supply the

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<sup>155</sup> Drewry, *Global Container Terminal Operators Annual Review, 2017*, 20.

<sup>156</sup> OECD, *The Impact of Alliances on Container Shipping*, November 2, 2018, 45.

<sup>157</sup> UNCTAD, *Review of Maritime Transport 2018*, 2018, xi, 74.

<sup>158</sup> OECD, *The Impact of Alliances on Container Shipping*, November 2, 2018, 45. Liner shipping is the transport of goods in large-capacity ocean liners (principally container ships and roll on/roll off vessels) that travel on regular schedules along fixed routes. See World Shipping Council, “About the Industry: How Liner Shipping Works,” 2019.

<sup>159</sup> Drewry, *Global Container Terminal Operators Annual Review and Forecast, 2017*, 20; and OECD, *The Impact of Alliances on Container Shipping*, November 2, 2018, 47.

<sup>160</sup> The entry into force of the proposed U.S.-Mexico-Canada Trade Agreement (USMCA) may also affect the U.S. maritime industry, although historically the vast majority of goods traded by USMCA countries are transported by truck and rail (as measured by the value of goods conveyed). Trends may be changing, though. In 2018, there was a 58 percent increase in the volume of goods transported from Mexico to the United States by short sea shipping in order to avoid delays at customs checkpoints along the U.S.-Mexico border. NATS, “Table 6-1c: U.S. Merchandise Trade with Canada and Mexico by Mode of Transportation” (accessed March 18, 2019); *Journal of Commerce*, “US-Mexico Trade: A New Era,” May 30, 2019. For more information on the effects of USMCA on maritime transport services, see USITC, *U.S.-Mexico-Canada Trade Agreement*, April 2019, 162–66.

UK market.<sup>161</sup> In addition, shipping firms that transport UK exports and imports from EU countries would likely encounter increased transit times and delays at UK ports of entry because of new customs requirements.<sup>162</sup> Currently, the Calais-Dover Corridor between France and England is the shortest maritime route between the UK and the European mainland. However, any new UK customs clearance procedures for EU imports would likely increase congestion at the Port of Dover, causing shipping firms to use alternative routes with potentially longer transit times.<sup>163</sup> All these changes would likely increase the costs of doing business in the UK for both maritime firms and their customers.<sup>164</sup> Second, U.S. tariffs on certain Chinese products have lowered the volume of containerized traffic between the United States and China,<sup>165</sup> causing maritime firms to decrease their capacity on major maritime routes between North America and Asia.<sup>166</sup> In the short term, these factors have led to a rerouting of U.S.-bound Chinese exports to Europe, increasing maritime freight rates between the United States and China and decreasing those between Europe and China.<sup>167</sup>

Other shifts in global trade patterns may also affect the maritime industry. These shifts would stem, in part, from the geographic extension of supply chains from both China and Africa. For example, under its Belt and Road Initiative, China plans to develop new maritime routes connecting Asia to both Africa and Europe.<sup>168</sup> As part of this initiative, China has expanded its investment in large container ports in Europe, including in Belgium, Greece, Italy, and Spain,<sup>169</sup> with further plans to link these ports to other ports in Southeast Asia, India, and northern Africa.<sup>170</sup> Some observers have noted that China's maritime "silk road," should it materialize, could alter typical trade routes between Africa, Asia, and Europe as well as generate new demand for maritime freight transport among countries involved in China's initiative.<sup>171</sup>

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<sup>161</sup> Kirby, "Brexit Will Hurt the UK's Economy," November 28, 2018; Waters, "UK Ports Welcome Improving Brexit Preparations," February 27, 2019.

<sup>162</sup> Lloyd's Loading List, "Brexit: A Freight Forwarding Perspective," January 28, 2019.

<sup>163</sup> Knowler, "UK Ports Prep for Post-Brexit Cargo Shift," January 9, 2019.

<sup>164</sup> Waters, "UK Ports Welcome Improving Brexit Preparations," February 27, 2019.

<sup>165</sup> LaRocca, "China Tariff Effects Started Showing Up," October 29, 2018. For more information on U.S. tariffs on steel and aluminum from China and other countries under section 232 of the Trade Expansion Act of 1962 (19 U.S.C. 1862), see Proclamation No. 9074, 83 Fed. Reg. 11619 (March 15, 2018), and Proclamation No. 9075, 83 Fed. Reg. 20863 (March 18, 2018). For more information on U.S. tariffs placed on Chinese goods under section 301(b) of the Trade Act of 1974 (Pub. L. 93-618, 19 U.S.C. § 2411), see "Notice of Modification of Section 301 Action: China's Acts, Policies, and Practices Related to Technology Transfer, Intellectual Property, and Innovation," 83 Fed. Reg. 47974 (September 21, 2018); 83 Fed. Reg. 28710 (June 20, 2018); 83 Fed. Reg. 40823 (August 16, 2018); 83 Fed. Reg. 47974 (September 21, 2018); 83 Fed. Reg. 49753 (September 28, 2018); 84 Fed. Reg. 20496 (May 9, 2019); 84 Fed. Reg. 22564 (May 17, 2019); and 84 Fed. Reg. 26930 (June 10, 2019).

<sup>166</sup> Kuo, "US-China Trade Tariffs: Impact on Shipping Industry," October 3, 2018.

<sup>167</sup> Angell, "Port Report: U.S.-China Trade War," February 11, 2019. For more on the potential impact of tariffs on U.S.-China merchandise trade, see also UNCTAD, *Key Statistics and Trends in Trade Policy 2018, 2019*, 1-6.

<sup>168</sup> The "belt" in China's Belt and Road Initiative refers to overland transport by truck or rail; the "road," to maritime shipping routes. For more information, see World Bank, "Belt and Road Initiative," March 29, 2018.

<sup>169</sup> UNCTAD, *Review of Maritime Transport 2018*, 2018, 72.

<sup>170</sup> World Bank, "Belt and Road Initiative," March 29, 2018.

<sup>171</sup> There may also be trade diversion associated with the "belt" section of China's Belt and Road Initiative. For more information see the "Outlook" section in chapter 3 of this report and *Opensea.pro*, "Maritime Silk Road of the 21st Century" (accessed March 14, 2019).

Separately, the recent ratification of the African Continental Free Trade Area (AfCFTA)<sup>172</sup> could help member countries integrate their manufacturing activity and thereby increase the region's containerized exports. Such a development, in turn, could enhance business for African ports and for shipping firms that serve the African continent.<sup>173</sup> Overall, merchandise trade between Africa and Asia (including China) has grown significantly in recent years, outpacing trade growth between Africa and Europe, as well as between Africa and the United States.<sup>174</sup> Global maritime firms that now have a substantial presence in Africa include Hapag-Lloyd (Germany); Maersk (Denmark) and its subsidiary, Safmarine; and APM Terminals (Denmark).<sup>175</sup>

## Alliances, Industry Consolidation, and Megaships

Global shipping lines have expanded their market power by forming alliances<sup>176</sup> and by deploying increasingly large container ships, also known as megaships.<sup>177</sup> Alliances enable liner firms to achieve economies of scale by sharing the costs of operating ships and port terminals, but without either pooling revenues or sharing profits among alliance members.<sup>178</sup> In 2017, the three largest alliances—the 2M alliance, the THE alliance, and the Ocean Alliance—accounted for 80 percent of global container ship capacity,<sup>179</sup> up from less than 30 percent in 2011.<sup>180</sup> These alliances include 9 of the top 10 global container shipping lines, serving more than 4,000 port-to-port connections.<sup>181</sup>

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<sup>172</sup> The African Union (AU), a group that includes 55 African countries, established AfCFTA. Ratified on April 2, 2019, AfCFTA will remove tariffs on 90 percent of goods traded between signatory countries (including, but not limited to, countries in sub-Saharan Africa) and liberalize the supply of services. Desamoreaux, "Africa Has Massive Potential," March 10, 2019; African Union, "CFTA-Continental Free Trade Area" (accessed March 15, 2019); International Trade Today, *Export Compliance Daily*, April 12, 2019, 7.

<sup>173</sup> Maritime Executive, "Fulfilling Africa's Maritime Trade Potential," October 6, 2018.

<sup>174</sup> Desamoreaux, "Africa Has Massive Potential," March 10, 2019.

<sup>175</sup> Desamoreaux, "Africa Has Massive Potential," March 10, 2019. Safmarine, established in South Africa in the 1940s, was acquired by Maersk in 1999. Safmarine, "Our History," <https://www.safmarine.com/about-us/our-history> (accessed March 15, 2019).

<sup>176</sup> OECD, *The Impact of Alliances on Container Shipping*, November 2, 2018, 33. According to the OECD, "Around 95% of the East-West trade lanes are covered by carriers in alliances. On many trade lanes, market power of carriers is even larger. With rapidly evolving industry consolidation, the market power of carriers impacting on costs of trade will increasingly have an effect on consumers and the costs of their imported goods."

<sup>177</sup> OECD, *The Impact of Alliances on Container Shipping*, November 2, 2018, 7. In 2017, megaships had a capacity of 21,100 TEUs. By contrast, in 1990, the largest container ship could transport about 4,800 TEUs. OECD, *The Impact of Mega-Ships*, April 30, 2015, 18.

<sup>178</sup> OECD, *The Impact of Alliances on Container Shipping*, 2018, 10.

<sup>179</sup> The 2M alliance includes Maersk and MSC; the Ocean Alliance consists of CMA CGM (including NOL, acquired in 2017), COSCO Group (including OOCL, purchased in 2018), and Evergreen; and the THE Alliance includes Hapag-Lloyd (including United Arab Shipping, purchased in 2017) and ONE. The largest alliance is 2M, which as of December 2017 accounted for 34 percent of capacity in the global container shipping market. Barrios, "Update: Global Container Shipping Alliances," December 7, 2017; Shipping and Freight Resource, "Ocean Alliance Extends Agreement till 2027," January 18, 2019.

<sup>180</sup> OECD, *The Impact of Alliances on Container Shipping*, 2018, 7.

<sup>181</sup> Barrios, "Update: Global Container Shipping Alliances," December 7, 2017.

Alliance members have purchased megaships as a way to consolidate market share on shipping routes and spread the costs of these investments (box 4.1).<sup>182</sup> To illustrate, in January 2019, OOCL (acquired by COSCO in 2018) ordered six megaships, each with a capacity of 23,000 TEUs (compared to a maximum industry capacity of 21,000 TEUs in 2017).<sup>183</sup> This followed CMA CGM's purchase of 10 container ships of 15,000 TEUs earlier that month.<sup>184</sup> OOCL and CMA CGM will likely deploy the megaships on major maritime trade routes, including those between Asia and North America, and Asia and Europe.<sup>185</sup> Observers see the trend toward alliances as having potentially mixed results. On the one hand, they indicate that alliances may enable their members to provide more cost-effective services.<sup>186</sup> On the other hand, they state that the alliances may also reduce competition in the market through industry consolidation, thereby limiting the number and types of services that shipping firms offer to their customers.<sup>187</sup>

#### **Box 4.1** Ports Face Increasing Challenges as Consolidation in the Shipping Industry Deepens

In recent years, consolidation in the maritime industry has taken place in three ways: merger and acquisition (M&A) activity, combined with strategic alliances between shipping firms; vertical integration between shipping lines and port terminals; and the increasing deployment of megaships.<sup>a</sup> Taken together, these developments have had a discernible impact on the operation of ports, primarily by decreasing the number of competitors in the ports sector and by requiring port and terminal operators to invest in costly upgrades to accommodate increasingly large container ships (megaships).<sup>b</sup>

First, M&A activity and alliance formation has enabled container shipping firms to acquire substantial market power vis-à-vis individual ports. Major container ports now compete to serve a smaller number of global container shipping lines. In some cases, a port may rely on the traffic generated by a single alliance for the majority of its revenues.<sup>c</sup> Moreover, nearly all of the major container lines have equity stakes in one or more port terminals, making them “dedicated terminals.” Shipping firms’ use of dedicated terminals intensifies competition among independent terminal operators for those shipping companies that do not have their own terminals.<sup>d</sup> The resulting imbalance in market power benefits shipping firms in the form of lower port and cargo-handling fees, a factor which may reduce the revenues of port operators.<sup>e</sup>

In addition, shipping firms often bypass smaller ports on secondary trade lanes in favor of larger ports that have the infrastructure to accommodate megaships.<sup>f</sup> This leads to the development of hub-and-spoke networks, where large ports serve as primary transshipment points for maritime traffic, gaining the majority of maritime traffic and accompanying revenues, while smaller ports serve as less lucrative feeder ports.<sup>g</sup> To illustrate, in 2018, 55 percent of the share of containerized cargo between Asia and Europe, the second-largest maritime route by container volume,<sup>h</sup> flowed through just four hub ports: Singapore, Ningbo (China), Shanghai (China), and Shenzhen (China).<sup>i</sup>

<sup>182</sup> In 2018, for example, CMA CGM, COSCO, Evergreen, Maersk, and MSC had each ordered several container ships with a capacity of 18,000 TEUs or greater, with 57 such vessels on order through 2021. Knowler, “Mega-ship Delivery Keeps Asia Europe Capacity on the Rise,” January 26, 2018.

<sup>183</sup> *Shipping Watch*, “Media: OOCL About to Order New Megaships,” January 18, 2019.

<sup>184</sup> Kristiansen, “Shipbroker: CMA CGM Has Ordered Ten Large Container Vessels,” January 22, 2019.

<sup>185</sup> Knowler, “Mega-ship Delivery Keeps Asia-Europe Capacity on the Rise,” January 26, 2018.

<sup>186</sup> Overcapacity in container shipping, driven in part by the use of megaships, has also contributed to lower maritime freight rates. OECD, *The Impact of Alliances on Container Shipping*, November 2, 2018, 31–32.

<sup>187</sup> OECD, *The Impact of Alliances on Container Shipping*, November 2, 2018, 12, 23.

Significant infrastructure investment in ports worldwide is needed to accommodate megaships. For instance, ports are required to have enough depth to allow large containerships to access harbors, as well as enough landside cranes to load and unload cargo from these vessels.<sup>l</sup> Moreover, ports must have the logistics infrastructure to process high volumes of containers, including storage and warehousing facilities, as well as truck and rail connections for inland transport.<sup>k</sup>

Public sector funds may cover some of these infrastructure costs, but many projects also require private investment. For example, in 2016, APM Terminals invested in a new container berth at the Port of New York and New Jersey, and purchased additional ship-to-shore cranes to accommodate megaships.<sup>l</sup> During the same year, DP World (UAE) invested in deepening the harbor of India's second-largest container port, Jawaharlal Nehru, to facilitate an increase in traffic from large container ships.<sup>m</sup> Ultimately, private investment in port infrastructure, as well as the potential for mergers among public sector ports, may enhance the market power and financial resources of the ports sector.<sup>n</sup>

<sup>a</sup> These trends and their effects are discussed in more detail in OECD, *The Impact of Alliances on Container Shipping*, November 2, 2015, and OECD, *The Impact of Mega-Ships*, April 30, 2015.

<sup>b</sup> OECD, *The Impact of Alliances on Container Shipping*, April 30, 2015, 3.

<sup>c</sup> In 2018, nine European ports, including Aarhus (Denmark), Gothenburg (Sweden), Naples (Italy), and Zeebrugge (Belgium), were dependent on the traffic generated by a single shipping alliance serving traffic between Asia and Europe. OECD, "The Impact of Alliances on Container Shipping," November 2, 2018, 44.

<sup>d</sup> OECD, *The Impact of Alliances on Container Shipping*, November 2, 2018, 46.

<sup>e</sup> OECD, *The Impact of Alliances on Container Shipping*, November 2, 2018, 62.

<sup>f</sup> OECD, *The Impact of Mega-Ships*, April 30, 2015, 34.

<sup>g</sup> *Journal of Commerce*, "2019 Container Shipping Outlook," February 21, 2019. A counterbalance to this trend is the increasing regionalization of trade (i.e., among countries within Asia and Europe, for example). Such a development could lead to the use of small to mid-range ships, thereby also increasing maritime traffic to smaller ports. Drewry, "Container Ports Briefing: Is Supersizing Ports the Answer?" June 11, 2019.

<sup>h</sup> World Shipping Council, "Trade Routes," 2019.

<sup>i</sup> This share pertains to cargo that originated from or was destined for ports in Asia. OECD, "The Impact of Mega-Ships," April 30, 2015, 37.

<sup>j</sup> OECD, *The Impact of Mega-Ships*, April 30, 2015, 40–42.

<sup>k</sup> OECD, *The Impact of Mega-Ships*, April 30, 2015, 58–59.

<sup>l</sup> Schuler, "APM Terminals: \$200 Million Investment," February 22, 2017.

<sup>m</sup> *Journal of Commerce*, "India's Top Port Prepares for Bigger Megaships," March 24, 2016; World Shipping Council, "Top 50 World Container Ports," 2019; Drewry, *Global Container Terminal Operators Annual Review*, 2017, 76.

<sup>n</sup> OECD, *The Impact of Mega-Ships*, April 30, 2015, 12.

## Blockchain and the Digitalization of Maritime Supply Chain Services

Shipping lines are increasingly using blockchain technology to share information with port operators and other third-party firms.<sup>188</sup> Blockchain is a type of online distributed ledger technology (DLT) that enables users to input and view transaction data in real time.<sup>189</sup> Because it replaces (primarily) paper-based

<sup>188</sup> OECD, *The Impact of Alliances on Container Shipping*, November 2, 2018, 49. Freight forwarders arrange the transport of cargo by air, land, and sea, but do not provide physical transport.

<sup>189</sup> OECD, *Information Sharing for Efficient Maritime Logistics*, September 26, 2018, 14. Blockchain is one form of distributed ledger technology; it permits users to record transactions autonomously without requiring third-party verification. For shipping firms, blockchain enables users to create digital bills of lading and submit customs paperwork, among other things. Lehmacher, "Why Blockchain Should Be Global Trade's Next," May 23, 2017.

systems for tracking cargo,<sup>190</sup> blockchain can more efficiently collect data related to goods transport.<sup>191</sup> Through blockchain technology, shipping firms can follow the digital footprint of a container along each node of the supply chain—from port of origin to final destination—and, in turn, provide timely information to their customers on the location and delivery of cargo (see box 4.2). Together with maritime firms' emerging investment in logistics capabilities,<sup>192</sup> blockchain enables shipping lines to function as global integrators, capable of overseeing the end-to-end transport of goods.<sup>193</sup>

Several shipping lines have collaborated with technology firms to establish blockchain systems. For example, in August 2018, Maersk entered a joint venture with IBM to establish TradeLens, a digital platform that connects shipping firms, port authorities, customs administrations, and freight forwarders.<sup>194</sup> Originally developed to link Maersk and its subsidiary Hamburg Süd to ports, customs authorities, and other business partners, TradeLens now operates as a public entity and has more than 100 clients.<sup>195</sup> Similarly, in November 2018, four liner firms (CMA CGM, COSCO, Evergreen, and Yang Ming), along with port operators Hutchison Port Holdings and PSA, joined Oracle Cloud Blockchain Service to launch the Global Shipping Business Network (GSBN). GSBN enables supply chain participants to exchange information on the movement of cargo using a single digital platform.<sup>196</sup>

Looking ahead, as blockchain becomes more widely used in the maritime industry, firms will likely need to focus more systematically on digital technology issues, such as data standardization and cybersecurity.<sup>197</sup> Indeed, in April 2019, container-shipping firms Hapag-Lloyd and Maersk, along with members of the ONE alliance, established the Digital Container Shipping Association (DCSA) to develop global standards for the digital exchange of information among shipping firms.<sup>198</sup>

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<sup>190</sup> Some firms in the maritime industry use electronic data interchange (EDI) systems to share business information. However, these systems require manual data entry and may not be compatible across different IT platforms. More recently, maritime firms have begun to use cloud computing services, such as software-as-a-service (SaaS) and infrastructure-as-a-service (IaaS), as another digital approach to data management. OECD, *Information Sharing for Efficient Maritime Logistics*, September 26, 2018, 13, 19.

<sup>191</sup> OECD, *Information Sharing for Efficient Maritime Logistics*, September 26, 2018, 13.

<sup>192</sup> Waters, "CMA CGM Acquires 89% Stake in CEVA Logistics," March 15, 2019. For instance, in March 2019, shipping firm CMA CGM (France) acquired an 89 percent stake in Netherlands-based CEVA Logistics, a third-party logistics (3PL) provider. Also in early 2019, Maersk announced that it would further integrate the operations of its logistics arm, Damco, in an effort to compete with large 3PLs such as FedEx and UPS. Nichols, "After Reorg, Maersk Hopes," February 28, 2019. For more information on logistics services, see chapter 3.

<sup>193</sup> OECD, *The Impact of Alliances on Container Shipping*, November 2, 2018, 48.

<sup>194</sup> IBM News, "Maersk and IBM Introduce TradeLens Blockchain," August 9, 2018.

<sup>195</sup> Cosgrove, "9 Ocean Carriers, Terminal Operators, Join," November 7, 2018; Waters, "Digitalisation Momentum Continues to Build," June 4, 2019.

<sup>196</sup> CargoSmart.ai, "Top Ocean Carriers and Terminal Operators Initiate," November 6, 2018.

<sup>197</sup> OECD, *Information Sharing for Efficient Maritime Logistics*, September 26, 2018, 23; Lehmacher, "Why Blockchain Should Be Global Trade's Next," May 23, 2017. Data standardization includes packaging data in standard formats and using compatible IT systems to facilitate the transfer of data across multiple parties. Although blockchain uses encryption to secure data on its digital platform, the collection and storage of large amounts of data may make the platform vulnerable to cyberattacks.

<sup>198</sup> King, "Digital Initiative Can 'Change Course' of Container Shipping," April 18, 2019.

#### **Box 4.2** Blockchain Technologies for Shipping Bills of Lading

Blockchain technologies offer an opportunity to streamline the tracking, invoicing, and customs clearance of goods shipped in global supply chains by allowing real-time access to original documentation in digital form. Currently, as goods are shipped throughout the world, hard-copy originals of transaction documents such as bills of lading<sup>a</sup> accompany each physical shipment, while copies of such documentation are either emailed or forwarded via courier to companies in the next step in the supply chain. Sending copies ahead allows the receiving agent to prepare for the receipt of goods, although original documents are ultimately required to transfer ownership.<sup>b</sup> This cumbersome process, which can take up to a week, creates the potential for human error as well as document loss or tampering. By contrast, digital tracking systems using blockchain technologies can enable documentation to be securely available to all parties in the supply chain without a time delay.

As noted, blockchain is a digital, “distributive ledger” technology (i.e., a ledger technology involving decentralized processing) that simultaneously records and verifies transactional data in real time.<sup>c</sup> In a blockchain system, each party in the network automatically reviews the inputted data to verify the validity and accuracy of a transaction, after which a “block” is created to store that information, linking it with other “blocks” in a chronological “chain.”<sup>d</sup> Blockchains enable users in the maritime services industry to simultaneously view transactions and share bills of lading and other shipping documents in real time, across the entire supply chain, rather than waiting for documentation to be emailed or delivered by courier.<sup>e</sup>

To give one example, CargoX—a startup company focused on the maritime services industry—has created an alternative to the traditional method of bill of lading management. CargoX has created an online system based on blockchain technology, dubbed “Smart B/L,” that creates, tracks, manages, stores, and transfers bill of lading documentation.<sup>f</sup> In an August 2018 system trial, Smart B/L processed its first bill of lading for a standard container shipped from Hangzhou, China, to Slovenia. The total cost to process this bill of lading was \$15, a fraction of the \$50–\$75 cost typically associated with traditional hard-copy transfers.<sup>h</sup> After this successful trial, CargoX then introduced Smart B/L to the market in November 2018.<sup>i</sup>

In addition to reducing both the time and costs associated with supply chains, the very nature of blockchain technologies, in which all transactions are verified simultaneously by all the nodes in the network, also reduces the potential for fraud. As industry experimentation leads to greater acceptance of blockchain-based supply chain systems, they are likely to be adopted more widely in the maritime services industry.

<sup>a</sup> Callahan, “The Beginner’s Guide to Bill of Ladings,” May 1, 2016.

<sup>b</sup> Callahan, “The Beginner’s Guide to Bill of Ladings,” May 1, 2016.

<sup>c</sup> OpenSea.Pro, “How Can the Shipping Industry Take Advantage?” May 15, 2019.

<sup>d</sup> Schmah, “Resolving the Blockchain Paradox,” January 29, 2019.

<sup>e</sup> OpenSea.Pro, “How Can the Shipping Industry take Advantage?” May 15, 2019

<sup>f</sup> While bills of lading are the current focus of the Smart B/L system, it is designed to be flexible enough to handle other types of shipping documentation as well. CargoX, “Introducing CargoX Smart B/L” (<https://cargox.io/platform/Smart-BL/>) (accessed May 20, 2019).

<sup>h</sup> Author estimates of hard-copy costs based on telephone interviews with industry representatives, May 8, 2019; Marine Insight, “First Blockchain-Based CargoX Smart B/L Successfully Completed,” August 24, 2018.

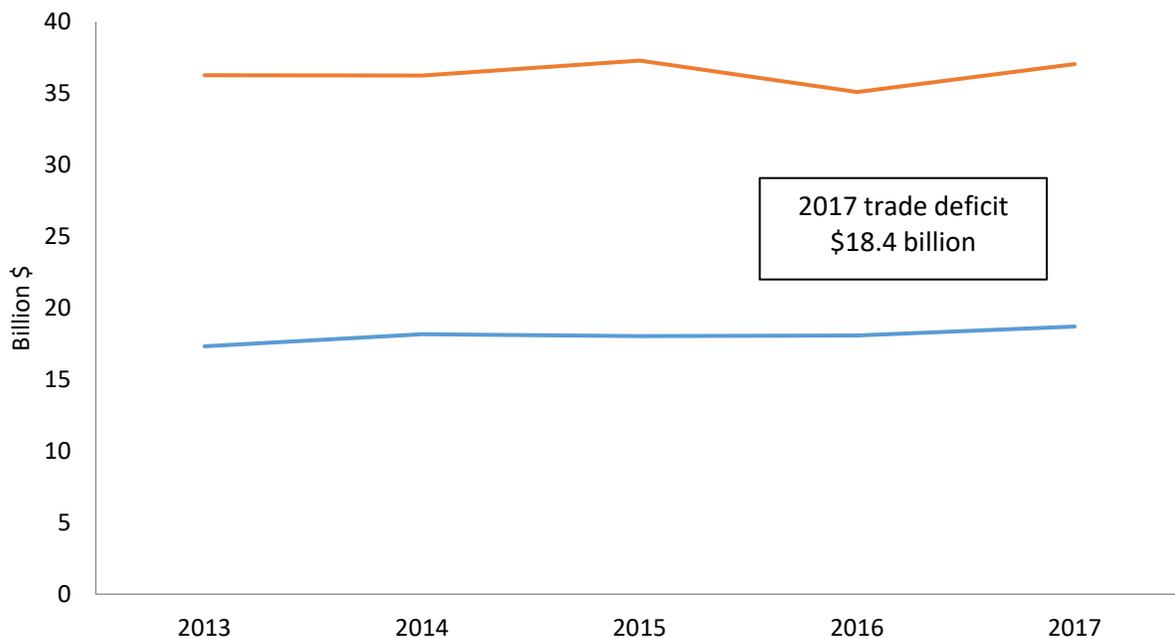
<sup>i</sup> CargoX, “Reshaping the Future of Global Trade” (accessed May 20, 2019).

## Trade Trends

### Cross-border Trade, 2017

In 2017, U.S. imports of maritime transport services (\$37.1 billion) exceeded U.S. exports (\$18.7 billion), resulting in a U.S. trade deficit of \$18.4 billion (figure 4.1), greater than the \$17.0 billion deficit in 2016.<sup>199</sup> At the same time, in 2017, U.S. merchandise imports surpassed U.S. exports by \$805.2 million.<sup>200</sup> In general, the U.S. deficit in maritime services stems from a deficit in U.S. merchandise trade.

**Figure 4.1** Maritime transport services: U.S. cross-border trade, 2013–17



Source: USDOC, BEA, Table 2.2, “U.S. Trade in Services, by Type of Services and Country or Affiliation,” October 19, 2018. Underlying data for this figure can be found in [appendix table B.14](#).

#### **Box 4.3** Understanding BEA Data on Cross-Border Trade and Affiliate Transactions in Maritime Transport Services<sup>a</sup>

BEA data on cross-border trade in maritime transport services include freight transport and port services. Trade in both types of services stems from merchandise trade. For instance, exports of maritime freight transport services occur when U.S. ocean carriers<sup>b</sup> transport U.S. merchandise exports to foreign destinations or when U.S. ocean carriers convey cargo between two foreign ports.<sup>c</sup> Imports of freight transport services occur when foreign ocean carriers transport merchandise imports to the United States.<sup>d</sup> U.S. exports of port services include the value of goods (excluding fuel) and services

<sup>199</sup> USDOC, BEA, table 2.2, “U.S. Trade in Services, by Type of Service and Country of Affiliation,” October 19, 2018. See box 4.2 for further discussion on the relationship between U.S. merchandise trade and trade in U.S. maritime transport services.

<sup>200</sup> USDOC, BEA, table 1.1, “U.S. Trade in Goods and Services: Exports, Imports, and Balances,” June 20, 2019.

procured by foreign ocean carriers while in U.S. sea ports, whereas U.S. imports of port services include the value of goods and services procured by U.S. carriers while in sea ports of foreign countries.

Reflecting general trends in U.S. merchandise trade, U.S. imports of maritime freight services are typically larger than U.S. exports of those services.<sup>e</sup> Higher maritime freight rates for U.S. imports, as compared to U.S. exports, also contribute to an imbalance between U.S. exports and imports of maritime freight services.<sup>f</sup> At the same time, U.S. exports of port services exceed U.S. imports of such services, reflecting the number of foreign vessels unloading U.S. merchandise imports at U.S. ports.

BEA also collects data on affiliate transactions in maritime transport services (referred to as “water transportation services”). The data are collected by BEA through surveys of U.S. direct investment abroad and foreign investment in the United States.<sup>d</sup> BEA classifies these data according to the primary industry of the affiliate (as measured by sales) rather than the type of service. For instance, if an affiliate whose primary industry is water transportation services also sells other services, BEA will record all of the affiliate’s sales under water transportation services. In general, affiliate transactions in water transportation services are classified under North American Industry Classification System (NAICS) code 4839, which includes the supply of water transportation of passengers and cargo (except petroleum and related products) using ships, barges, and boats in deep sea, coastal, or inland waterways.<sup>g</sup>

The BEA’s 2014 Benchmark Survey of U.S. Direct Investment Abroad reported that the value of services supplied abroad through the affiliates of U.S.-headquartered multinational enterprises was 14 percent higher in 2014 than in the previous year. This increase, however, is predominantly attributable to concerted outreach efforts by BEA to improve survey coverage, which increased the number of reporting companies that were ultimately included in the 2014 Benchmark Survey sample. As a result, 2014 affiliate sales in maritime transport services may not be comparable to sales reported prior to 2013.<sup>h</sup>

<sup>a</sup> Since 2014, there have been no changes in the way BEA measures cross-border trade and affiliate transactions in maritime freight and port services. BEA representative, email message to USITC staff, February 26, 2019.

<sup>b</sup> A U.S. ocean carrier is operated by crew members whose country of residence is the United States, but may not necessarily be U.S.-owned or fly the U.S. flag.

<sup>c</sup> Under the balance-of-payments convention, the importer is said to assume ownership of the goods when they cross the border of the exporting country, the importer is consequently responsible for all subsequent transportation costs. Therefore, sales by U.S. carriers for the transport of U.S. imports are excluded from U.S. transportation exports because they represent transactions between U.S. parties. Similarly, payments to foreign carriers for transporting U.S. exports are not included in U.S. imports because they represent foreign residents and foreign airlines, ocean carriers, or trucking firms. USDOC, BEA, *Survey of Current Business*, October 1998, 78. BEA collects data on U.S. cross-border trade in maritime transport services through forms BE-29 (Annual Survey of Foreign Ocean Carriers’ Expenses in the United States) and BE-30 (Quarterly Survey of Ocean Freight Revenues and Foreign Expenses of United States Carriers). For more information, see USDOC, BEA, *A Guide to BEA’s Services Surveys*, April 2018, 10–11.

<sup>d</sup> Transactions involving a U.S. resident contracting with a foreign carrier to transport goods between two foreign ports are not included in calculations of U.S. imports of maritime transport services. BEA representative, email message to USITC staff, November 24, 2014.

<sup>e</sup> Specifically, BEA collects data on transactions by U.S. affiliates of foreign companies using forms BE-12 (Benchmark Survey) and BE-15 (Annual Survey). For transactions of foreign affiliates of U.S. firms, BEA collects data using forms BE-10 (Benchmark Survey) and BE-15 (Annual Survey).

<sup>f</sup> BEA representative, email message to USITC staff, February 26, 2019.

<sup>g</sup> BEA representative, email message to USITC staff, November 24, 2014.

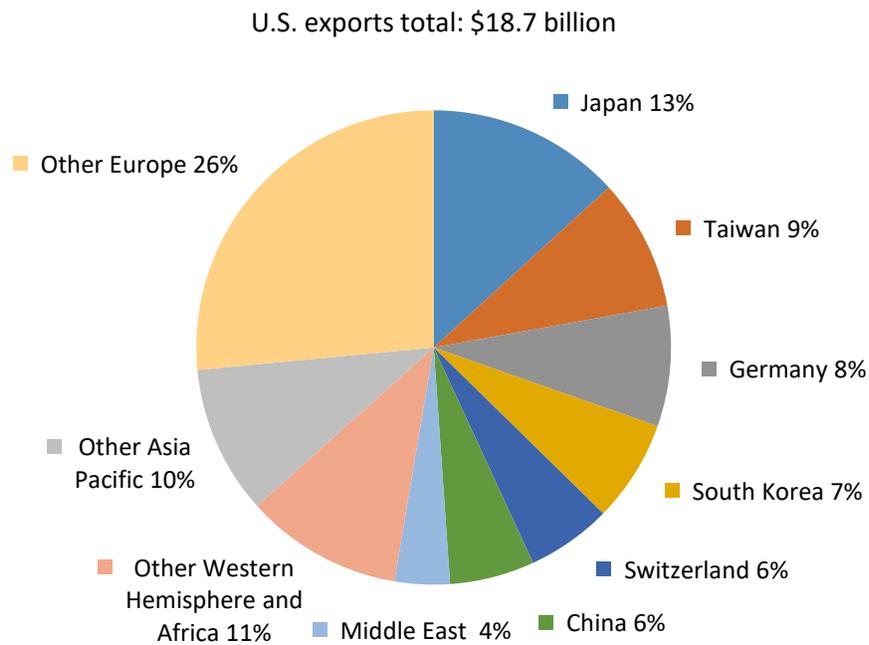
<sup>h</sup> USDOC, BEA, “U.S. International Services: Trade in Services in 2015 and Services Supplied through Affiliates in 2014,” December 2016, 24; Scott, “Activities of U.S. Multinational Enterprises,” December 2016, 12.

U.S. exports of maritime transport services in 2017 grew by nearly 3.5 percent, more than twice the average annual increase of 1.5 percent during 2012–16. Similarly, U.S. imports of maritime transport services increased by 5.6 percent in 2017, faster than the average annual increase of 1.5 percent between 2012 and 2016. The rise in U.S. exports and imports of maritime services in 2017 likely reflects an increase in U.S. merchandise trade during that year, following a decrease in such trade in both 2015

and 2016.<sup>201</sup> In 2017, U.S. exports of maritime transport services comprised 21 percent of total U.S. transportation services exports, whereas U.S. imports of these services accounted for 36 percent of total U.S. transportation services imports, down from a high of 39 percent in 2012.<sup>202</sup>

The top five countries for U.S. exports of maritime services in 2017 were Japan, accounting for 13 percent of total U.S. exports, followed by Taiwan (9 percent), Germany (8 percent), South Korea (7 percent), and Switzerland (6 percent) (figure 4.2).<sup>203</sup> Although China had previously been the fifth-largest market for U.S. maritime services exports, it fell to sixth place in 2017.<sup>204</sup>

**Figure 4.2** Maritime transport services: U.S. cross-border exports by country, 2017



Source: USDOC, BEA, International Data, International Services, table 2.2, "U.S. Trade in Services, by Type of Services and Country or Affiliation," October 19, 2018.

Notes: Data for Africa are suppressed for both imports and exports, therefore, the category "Other Western Hemisphere and Africa" contains all suppressed data. China excludes Hong Kong. Underlying data for this figure can be found in [appendix table B.15](#).

The United States posted trade deficits in maritime freight transport services and trade surpluses in maritime port services with each of its top five maritime services export markets in 2017 (figure 4.3). The largest U.S. bilateral deficit in maritime freight services was with Japan (\$4.8 billion), which also accounted for the highest U.S. surplus in port services (\$2.1 billion).<sup>205</sup> Overall, Japan, South Korea, and Taiwan are among the largest shipbuilding and ship-owning countries in the world, while China has the

<sup>201</sup> USDOC, BEA, table 1, "U.S. Trade in Goods and Services: Exports, Imports, and Balances," February 6, 2019. In 2017, the value of U.S. merchandise exports and imports increased by 6.6 percent and 6.9 percent, respectively.

<sup>202</sup> USDOC, BEA, table 2.1, "U.S. Trade in Services, by Type of Service," October 19, 2018.

<sup>203</sup> USDOC, BEA table 2.2, "U.S. Trade in Services, by Type of Services and Country or Affiliation," October 19, 2018.

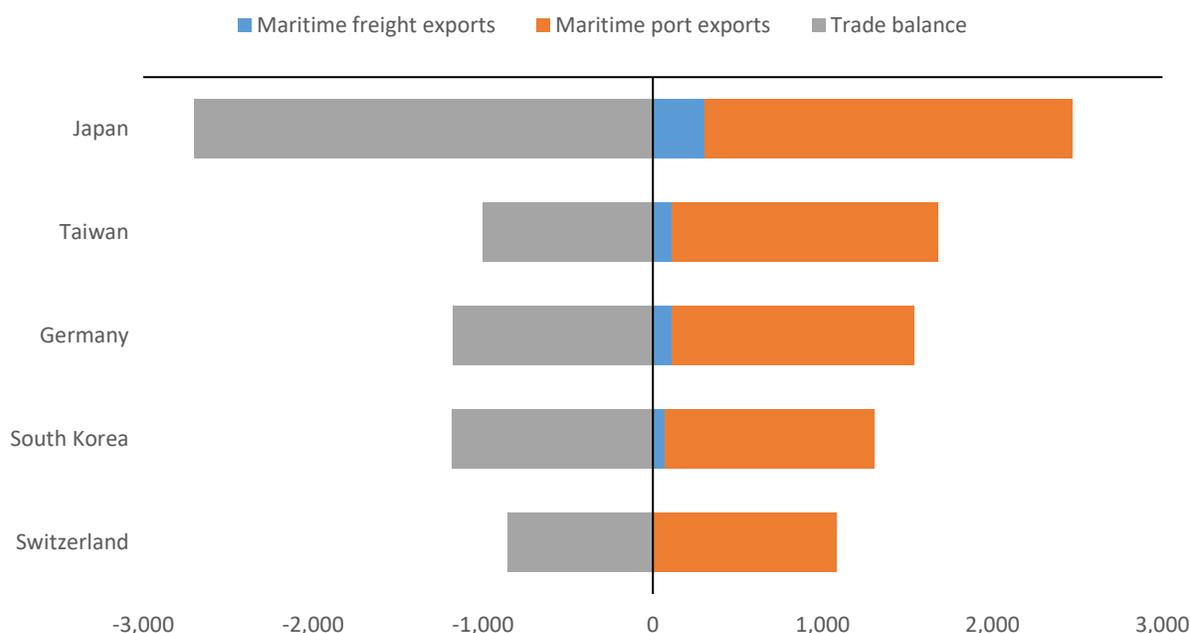
<sup>204</sup> USDOC, BEA, table 1, "U.S. Trade in Goods and Services: Exports, Imports, and Balances," February 6, 2019.

<sup>205</sup> USDOC, BEA, table 1, "U.S. Trade in Goods and Services: Exports, Imports, and Balances," February 6, 2019.

<sup>205</sup> USDOC, BEA, table 1, "U.S. Trade in Goods and Services: Exports, Imports, and Balances," February 6, 2019.

single highest number of maritime vessels. These countries may therefore have a competitive advantage in the global supply of maritime transport services, as compared to the United States, which had the sixth-largest maritime fleet (by number of vessels) in 2017.<sup>206</sup>

**Figure 4.3** Maritime transport services: U.S. maritime exports in freight and port services and total maritime services trade balance, for top five markets, 2017 (million dollars)



Source: USDOC, BEA, table 2.2, “U.S. Trade in Services, by Type of Services and Country or Affiliation,” October 19, 2018.

Note: The trade balance represents the total trade balance for both maritime freight and maritime port exports. Underlying data for this figure can be found in [appendix table B.16](#).

## Affiliate Transactions

In 2016, sales by U.S.-owned foreign affiliates in maritime services totaled \$7.0 billion, compared to \$9.9 billion in 2015. This represented a decrease in U.S. foreign affiliate sales of 29.1 percent in 2016, compared to a cumulative annual increase of 5.2 percent between 2012 and 2015.<sup>207</sup> Available data for 2016 indicate that the largest decrease in U.S. foreign affiliate sales of water transportation services at 46.7 percent occurred in China, followed by Bermuda (21.7 percent), the UK (19.2 percent), and Singapore (15.0 percent).<sup>208</sup>

<sup>206</sup> UNCTAD, “Maritime Transport: Merchant Fleet,” December 5, 2018.

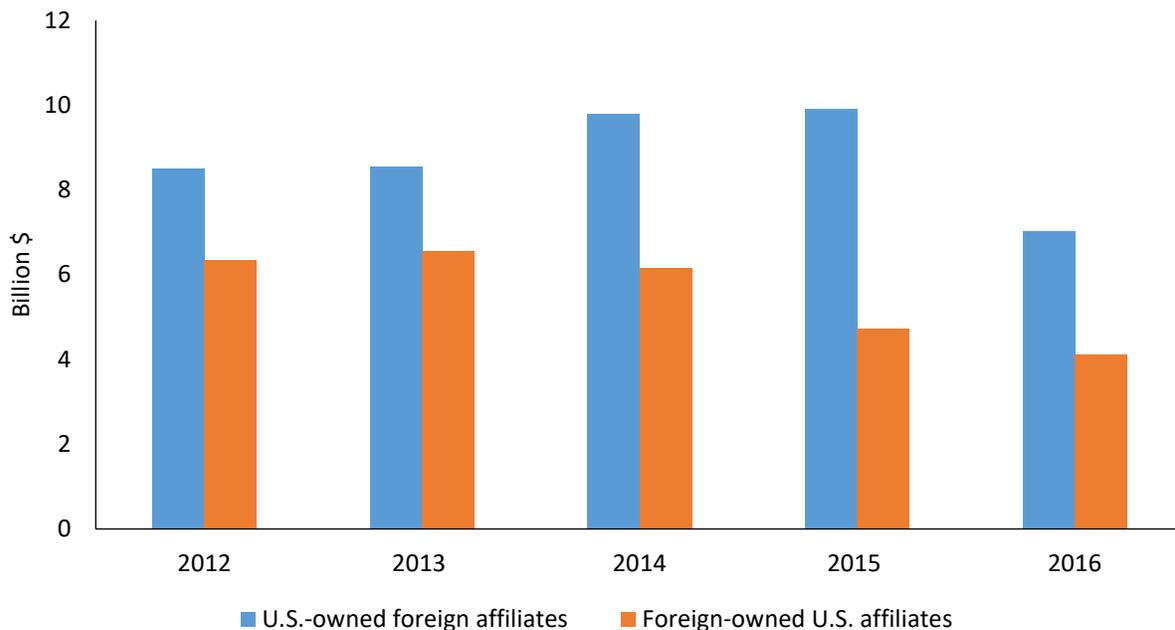
<sup>207</sup> In 2016, U.S. foreign affiliate sales for all categories of transportation services decreased, with water transportation services registering the largest such decline. BEA representative, email message to USITC staff, February 26, 2019.

<sup>208</sup> USDOC, BEA, table 4.1, “Services Supplied to Foreign Persons by U.S. MNEs through Their MOFAs, by Industry of Affiliate and by Country of Affiliate,” October 19, 2018.

By contrast, in 2016, sales by foreign-owned affiliates of maritime services firms in the United States were \$4.1 billion. While this represented a decrease of almost 13 percent from the previous year, it was higher than the 9.3 percent cumulative annual decrease during 2012–15.<sup>209</sup>

In most cases, country-level data on affiliate transactions in maritime transport services have been suppressed by BEA to avoid disclosing the operations of individual firms. However, available data for 2016 indicate that both Singapore (\$1.2 billion, or 17.6 percent) and the UK (\$1.1 billion, or 16.0 percent) accounted for a significant proportion of foreign affiliate sales by U.S. maritime transport services firms during that year.<sup>210</sup>

**Figure 4.4** Maritime transport services: U.S. affiliate sales and affiliate purchases, 2012–16



Source: USDOC, BEA, table 4.1, “Services Supplied to Foreign Persons by U.S. MNEs through Their MOFAs, by Industry of Affiliate and by Country of Affiliate,” and table 5.1, “Services Supplied to U.S. Persons by Foreign MNEs through Their MOUSAs, by Industry of Affiliate and by Country of UBO,” October 19, 2018.

MNEs = multinational enterprises; MOFAs = majority-owned foreign affiliates; MOUSA = majority-owned U.S. affiliate; UBO = ultimate beneficial owner.

Note: Affiliate sales in 2014 may not be directly comparable to sales in 2013 (see box 4.3). Underlying data for this figure can be found in [appendix table B.17](#).

<sup>209</sup> USDOC, BEA, table 4.1, “Services Supplied to Foreign Persons by U.S. MNEs through Their MOFAs, by Industry of Affiliate and by Country of Affiliate,” and table 5.1, “Services Supplied to U.S. Persons by Foreign MNEs through Their MOUSAs, by Industry of Affiliate and by Country of UBO,” October 19, 2018.

<sup>210</sup> USDOC, BEA, table 4.1, “Services Supplied to Foreign Persons by U.S. MNEs through Their MOFAs, by Industry of Affiliate and by Country of Affiliate,” and table 5.1, “Services Supplied to U.S. Persons by Foreign MNEs through Their MOUSAs, by Industry of Affiliate and by Country of UBO,” October 19, 2018.

## Outlook

Although, at present, steady growth in international trade continues to benefit both shipping lines and port services providers, the outlook for the maritime services industry is uncertain.<sup>211</sup> In particular, industry analysts forecast a potential slowdown in international maritime activity during 2019–20 stemming from slower GDP growth in leading economies such as China, Europe, and the United States.<sup>212</sup> According to one estimate, revenue in the maritime freight sector will likely increase by a modest 2.3 percent in 2019 (compared to 3.6 percent in 2018) before rising again to 3.3 percent in 2020.<sup>213</sup> Maritime revenues may also be affected by regulations under the International Convention for the Prevention of Pollution from Ships (MARPOL), issued by the International Maritime Organization (IMO). These new rules require shipping firms to use fuel with a low sulfur content beginning on January 1, 2020.<sup>214</sup> The use of low-sulfur fuel will result in added costs for shipping firms and higher freight rates for their customers.<sup>215</sup> Ultimately, an increase in maritime freight rates may lead to negative short-term effects on consumer spending and economic growth, further depressing demand for maritime transport services.<sup>216</sup>

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<sup>211</sup> In February 2019, the World Trade Organization (WTO) estimated that annual trade would grow 3.7 percent in 2019, down slightly from the 3.9 percent growth recorded in 2018. WTO, “WTO Trade Indicator Points to Slower Trade Growth,” February 19, 2019.

<sup>212</sup> *Journal of Commerce*, “2019 Container Shipping Outlook,” February 21, 2019.

<sup>213</sup> MarketLine, “Global Marine Freight,” April 2018, 12.

<sup>214</sup> Liang, “What You Need to Know: The 2020 IMO Regulation” (accessed March 19, 2019); IMO, “Sulphur Oxides (SOx) and Particulate Matter (PM)” (accessed March 19, 2019). The IMO 2020 mandate will require ships to use fuel with no more than 0.5 percent sulfur content (such as ultra-low-sulfur diesel or liquefied natural gas), or to install exhaust gas cleaning systems (i.e., “scrubbers”) that remove sulfur oxides from a ship’s engines and boilers. Marine vessels generally use bunker fuel (also referred to as heavy fuel oil), which typically has a sulfur content of 3.5 percent (by weight).

<sup>215</sup> Dupin, “IMO 2020 Low-Sulphur Regulation Costs Weighed,” March 5, 2019. Estimates of the additional costs for low-sulfur fuel, which depend on the size of the ship, range from \$50 to \$200 per unit volume of freight (either in tons or TEUs).

<sup>216</sup> Midgley, “IMO 2020 Will Cause Upheaval,” March 6, 2019.

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# Chapter 5

## Retail Services

### Summary

Retail services are a fundamental commercial activity and account for a significant proportion of global output and employment. During 2014–18, global retail sales expanded by less than 1 percent per year on average. This trend reflected the static to negative growth seen in retail services in many large developed countries—including Japan and leading European markets—during the period.<sup>217</sup> However, that trend was roughly balanced by relatively strong growth in retail services in emerging markets, especially China and India.

Digital technology continued to substantially transform the global retail sector in recent years. E-commerce conducted via mobile technology (primarily smartphones) continued to drive growth in retail services globally while increasing its share of retail spending, particularly in emerging markets like China and India. Major e-commerce platforms in the United States and China dominate global e-commerce and are at the forefront of retail sector innovation, applying and investing heavily in cutting-edge digital capabilities. Digital technologies such as big data analytics, artificial intelligence, and machine learning are enabling retailers to better serve retail consumers across multiple channels (physical and digital) to meet consumers' quickly rising expectations for speed and choice. The expansion of e-commerce in nearly all markets has expanded opportunities for cross-border exports and is enabling more retailers (including small and medium-sized enterprises) to reach foreign consumers.

The value of retail services supplied by U.S.-owned foreign affiliates increased only modestly during 2012–16, due to slow economic growth and weak consumer spending in many key foreign retail markets. In contrast, services supplied by foreign-owned retailers in the United States experienced robust growth, reflecting strong U.S. consumer demand and relatively strong U.S. economic growth. U.S. investment in foreign retail operations also grew substantially during the period as U.S. retailers expanded into faster-growing international markets. In the coming years, retail services are forecast to grow most strongly in emerging markets, led by China, which is expected to become the world's largest retail market. Overall, global retail industry growth is expected to be driven by growth in e-commerce as innovations in digital technology and mobile communications continue to transform the industry in the coming years.

### Introduction

Retailers are the critical link between producers and consumers, and are the final stage in the merchandise distribution process. When consumers make a retail purchase, they are paying for both the merchandise and the distribution services associated with it. These services include transportation, warehousing, managing real estate costs, advertising, and other associated activities. Retailers operate

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<sup>217</sup> U.S. growth in retail services was 12 percent from 2014 to 2018.

via physical “brick-and-mortar” stores and/or through multiple nonstore channels, such as business-to-consumer (B2C) e-commerce, catalogs, television, and direct selling.<sup>218</sup> In the past two decades, the traditional retail model has been challenged by the growth of online shopping. Further, consumers increasingly use smartphones to research and/or purchase goods and services, using mobile apps to compare prices and products almost instantly. As a result, many traditional retail providers are transforming their business models to serve customers across multiple physical and digital channels.

Retailing accounts for a substantial share of output and employment in most countries. In the United States, the retail industry employed 15.8 million people in 2018 (12 percent of private sector employment),<sup>219</sup> and its value added (\$1.1 trillion) accounted for 6.9 percent of total U.S. private sector GDP.<sup>220</sup> E-commerce generates a growing share of this industry’s revenue. U.S. e-commerce sales were 9.1 percent of total U.S. retail sales in 2017, up from 8.2 percent in 2016.<sup>221</sup> Total U.S. e-commerce sales (including online sales by brick-and-mortar retailers) were \$461 billion in 2017, of which 72.0 percent was nonstore retail (a category that includes firms that sell almost exclusively online, such as Amazon).<sup>222</sup> Private sector estimates indicate that e-commerce represented 10 percent of total U.S. retail sales in 2018.<sup>223</sup>

## Market Conditions

Total global retail sales revenue was \$20.1 trillion in 2018 (figure 5.1), only 4.3 percent higher than revenue in 2014. The relatively slow recent growth masks divergent trends in developed and emerging markets. In many large developed markets, retail sales remained static or fell during the period, including in Japan (-2 percent), Germany (0 percent), France (-5 percent), and the United Kingdom (UK) (-12 percent). In contrast, total U.S. retail sales grew by 12 percent during 2014–18. Emerging economies such as China and India posted robust retail sales growth during the period, expanding by 29 percent and 27 percent, respectively.<sup>224</sup>

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<sup>218</sup> U.S. Census, “2017 NAICS Definition: Retail Trade, Sector 44–45” (accessed March 15, 2019).

<sup>219</sup> Employment statistics quoted are for December 2018. BLS, “Retail Trade NAICS 44–45” (accessed March 15, 2019). Retail accounted for 14.8 percent of U.S. private sector services employment in December 2018. BLS, table B-1, “Employees on Nonfarm Payrolls by Industry Sector and Selected Industry Detail” (accessed March 15, 2019).

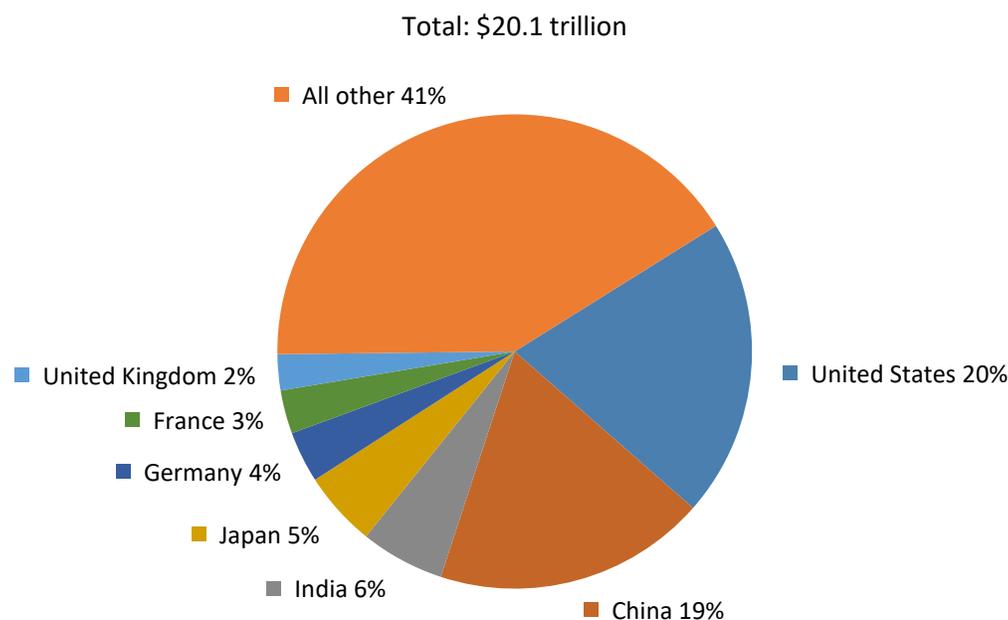
<sup>220</sup> USDOC, BEA, table 5, “Value Added by Industry Group,” February 21, 2019.

<sup>221</sup> U.S. Census, “Estimated Annual U.S. Retail Sales” (accessed July 10, 2018).

<sup>222</sup> Latest official U.S. data for e-commerce sales. U.S. Census, “Estimated Annual U.S. Retail Sales” (accessed July 10, 2018). Nonstore retail is selling products through channels other than physical stores. Examples include e-commerce, catalogs, mail order, television, and door-to-door sales.

<sup>223</sup> Statista, “E-commerce Share of Total Retail Sales,” 2019.

<sup>224</sup> Edge by Ascential data, email message to USITC staff, March 14, 2019.

**Figure 5.1** Leading global retail markets, 2018

Source: Edge by Ascential data, email message to USITC staff, March 14, 2019.

Note: Underlying data for this figure can be found in [appendix table B.18](#).

The United States was home to 7 of the 10 largest global retailers, as measured by revenue, in 2017 (table 5.1). U.S.-based Walmart continued to be the leading global retailer, accounting for more than four times the revenue of Costco, the 2nd-largest retailer. Since the last *Recent Trends in U.S. Services Trade* report on distribution services (2015), Amazon entered the top 10 largest global retailers by revenue, and is the only e-commerce firm represented.<sup>225</sup> The leading U.S. brick-and-mortar retailers—companies like Walmart, Target, Costco, and Home Depot—and online retailers like Amazon are at the forefront of the industry as U.S. consumers increasingly shop at big-box stores and online.

Most global retailers derive the majority of their revenues from their domestic markets. Among the largest global retailers, roughly 23 percent of revenues (on average) were derived from outside their home markets. Of this group, European companies not only derived the largest share of revenues from foreign operations, but also operated in the largest number of countries.<sup>226</sup> In 2017, the largest U.S. retailers also derived a substantial share of revenue from foreign operations, including Walmart (24 percent), Costco (27 percent), and Amazon (37 percent).<sup>227</sup>

<sup>225</sup> Deloitte, *Global Power of Retailing, 2019*, 2019, 13. Although Alibaba Group's online shopping website, Taobao (China), is larger than Amazon in terms of the value of goods sold, its main business is serving as a platform for third-party sellers, causing it to fall below Amazon in Deloitte's rankings. JD.com (China), the next largest e-commerce firm on Deloitte's list, was ranked 20th, with \$49.1 billion in revenue in 2017.

<sup>226</sup> Deloitte, *Global Power of Retailing, 2019*, 2019, 9.

<sup>227</sup> Deloitte, *Global Power of Retailing, 2019*, 2019, 9.

**Table 5.1** Top 10 retailers by value in global sales, 2017

Company	Country headquarters	Global retail sales (billion \$)	Dominant retail format	Number of countries	% of revenue from foreign operations
Walmart	United States	500.3	Superstore/hypermarket <sup>a</sup>	29	24
Costco Wholesale Corporation	United States	129.0	Cash and carry/warehouse discount store/membership club	12	27
Kroger	United States	119.0	Supermarket/grocery store	1	0
Amazon	United States	118.6	Nonstore/e-commerce	14	37
Schwarz Group	Germany	111.8	Discount store	30	59
Home Depot	United States	100.9	Home improvement	4	8
Walgreens Boots Alliance	United States	99.1	Drugstore/pharmacy	10	12
Aldi	Germany	98.3	Discount store (grocery)	18	65
CVS Health	United States	79.4	Drugstore/pharmacy	3	1
Tesco	UK	74.0	Superstore/hypermarket	8	21

Source: Deloitte, *Global Power of Retailing*, 2019.

<sup>a</sup>A hypermarket is a very large retail store that combines a grocery supermarket and a department store. Investopedia, "Hypermarket," May 9, 2018.

As noted above, one of the most important trends in retail services over the last several years has been the rapid growth of e-commerce. In 2017, an estimated one-quarter of the world's population bought goods online, up by 12 percent over the previous year.<sup>228</sup> By contrast with the relatively slow overall retail growth seen in many leading economies, during 2014–18 e-commerce sales increased by 85 percent globally. The strongest growth occurred in China (181 percent) and India (237 percent), while e-commerce sales in the United States during this period grew by 54 percent (figure 5.2).

Globally, e-commerce accounted for 12 percent of total retail sales in 2018.<sup>229</sup> China was the largest e-commerce market in 2018, with total online sales of \$722 billion (figure 5.3),<sup>230</sup> greater than the combined sales of the next three markets—the United States, Japan, and the UK.<sup>231</sup> Three of the world's top five e-commerce firms in 2018, in terms of total value of goods sold on their platforms, were based in China: Taobao (\$515 billion), Tmall (\$432 billion), and JD.com (\$259 billion). The remaining two firms were based in the United States: Amazon (\$344 billion) and eBay (\$96 billion).<sup>232</sup>

<sup>228</sup> UNCTAD, "Global E-commerce Sales Surged," March 29, 2019.

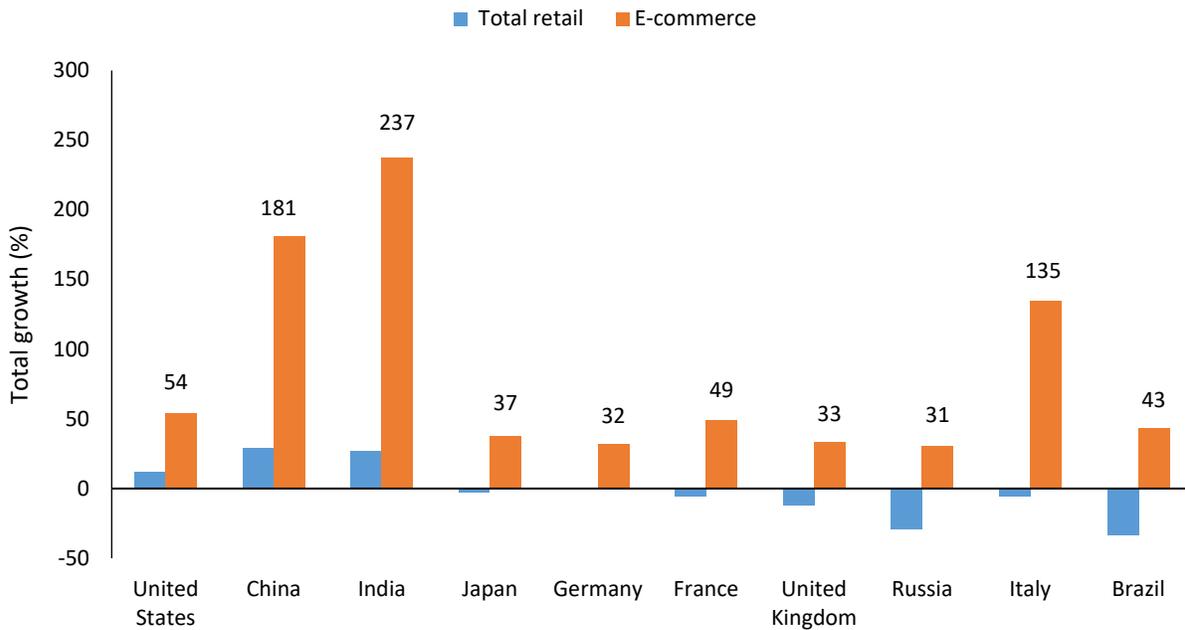
<sup>229</sup> Statista, "E-commerce Worldwide," 2019, 8.

<sup>230</sup> Statistics based on gross market value of goods sold on these platforms. Statista, "Most Popular Online Marketplaces Worldwide in 2018," 2019.

<sup>231</sup> Edge by Ascential data, email message to USITC staff, March 14, 2019.

<sup>232</sup> Statista, "E-commerce Worldwide," 2019, 8, 13.

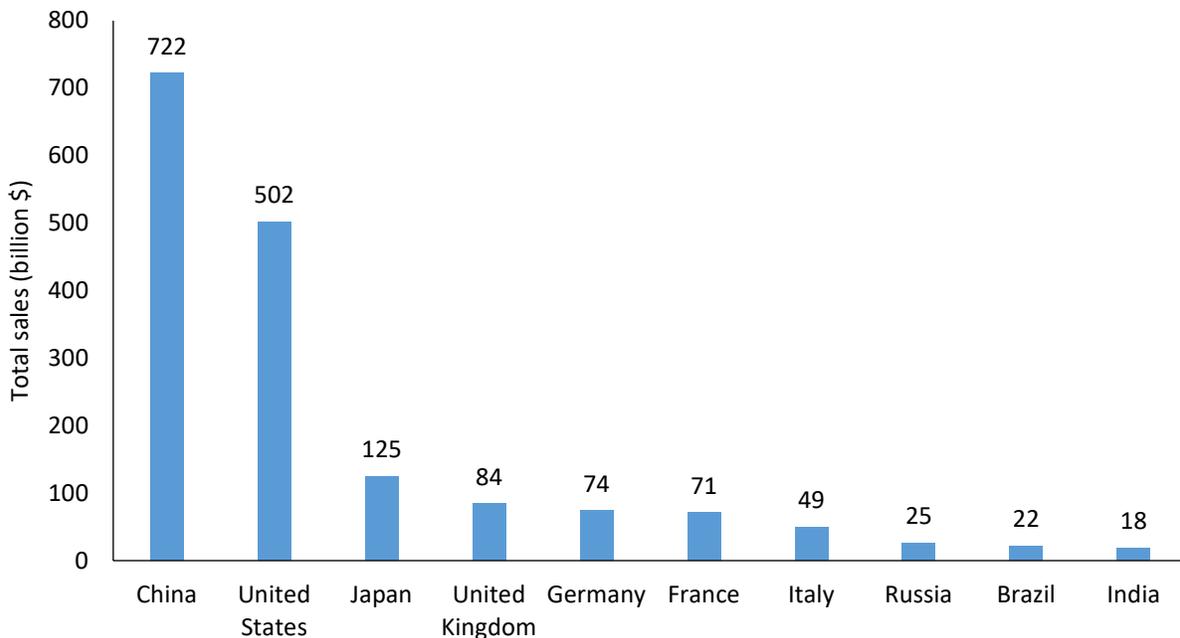
**Figure 5.2** Total retail and e-commerce growth in leading global markets, 2014–18



Source: Edge by Ascential, email message to USITC staff, March 14, 2019 (fee required).

Note: Germany’s total growth in retail was 0 percent from 2014 to 2018. Underlying data for this figure can be found in [appendix table B.19](#).

**Figure 5.3** E-commerce sales for leading global retail markets, 2018



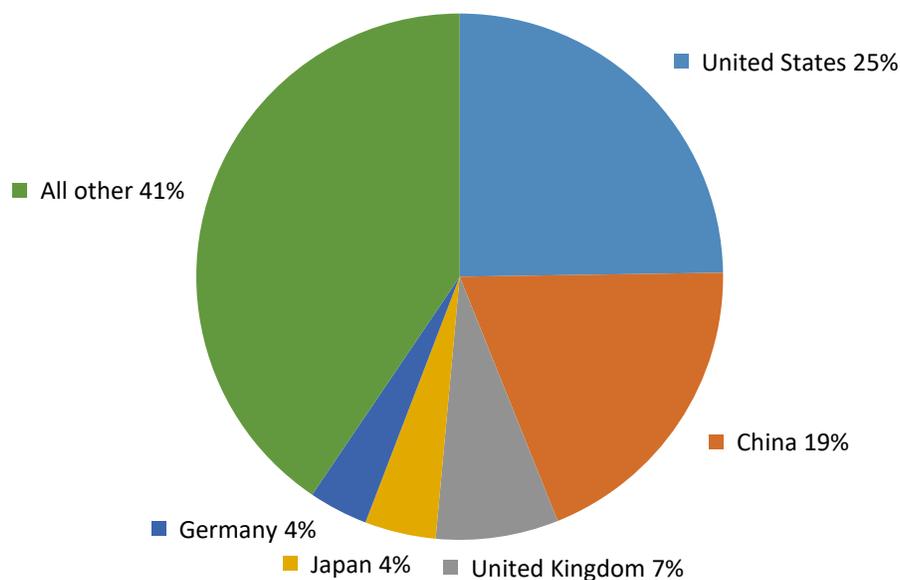
Source: Edge by Ascential, email message to USITC staff, March 14, 2019.

Note: Underlying data for this figure can be found in [appendix table B.20](#).

Within the rapidly growing e-commerce segment, cross-border transactions are also surging. According to the United Nations Conference on Trade and Development (UNCTAD), cross-border shopping

increased from 15 percent of total global e-commerce sales in 2015 to 21 percent in 2017, reaching \$412 billion in that year.<sup>233</sup> More specifically, U.S. cross-border e-commerce sales reached \$102 billion in 2017, followed by China (\$79 billion; 19 percent), and the UK (\$31 billion; 8 percent) (figure 5.4). Overall, cross-border e-commerce is forecast to grow at twice the rate of domestic e-commerce through 2019.<sup>234</sup>

**Figure 5.4** Estimated cross-border business-to-consumer e-commerce exports, 2017 (billion dollars)



Source: UNCTAD, “Global E-commerce Sales Surged to \$29 Trillion,” March 29, 2019.

Note: Underlying data for this figure can be found in [appendix table B.21](#).

## Supply and Demand Factors

### Transformation of Traditional Retail Models

The substantial and increasing share of e-commerce in the U.S. retail market, especially by Amazon (the “Amazon effect”), is forcing many well-known and established retailers to exit the industry or to transform and adapt their business models to the new competitive landscape.<sup>235</sup> During 2000–2018, for example, online retail sales grew by an estimated 300 percent, whereas department store sales dropped by nearly 50 percent during the same period.<sup>236</sup> Under these competitive pressures, certain segments of the U.S. retail sector have declined dramatically, particularly department stores and some mall-based

<sup>233</sup> UNCTAD, “Global E-commerce Sales Surged,” March 29, 2019.

<sup>234</sup> DHL, “How Cross-border E-commerce Can Boost Your Business,” March 21, 2017.

<sup>235</sup> Statista, “Market Share of Leading Retail E-Commerce Companies,” 2019. Amazon captured 47 percent of U.S. online sales as of February 2019, followed by eBay (6 percent).

<sup>236</sup> Amadeo, “U.S. Retail Sales Report,” June 14, 2019.

retailers. In 2017, roughly 21 major retailers declared bankruptcy, including the well-known retailer Toys R Us. Similarly, in 2018, 13 large retailers filed for bankruptcy, including Sears (and its Kmart unit), Mattress Firm, Brookstone, Rockport, and Nine West.<sup>237</sup> In 2019, Payless ShoeSource announced it was closing all of its 2,500 stores,<sup>238</sup> while JC Penney, Gap, Foot Locker, and Victoria's Secret reported combined closures of 465 stores.<sup>239</sup>

Overcapacity also presents a major challenge for some U.S. retailers, particularly in shopping malls, which were overbuilt in recent decades. One report, for example, estimates that U.S. malls have been built at four times the rate of U.S. population growth since 1975, leading to a situation in which U.S. retail square footage substantially exceeded that of other developed markets.<sup>240</sup> Overall, the decline of brick-and-mortar retail outlets has been product and format specific, with certain department stores, specialty soft-goods retailers (e.g., clothing, bedding), and drugstores experiencing the largest declines.<sup>241</sup>

Another challenge for traditional brick-and-mortar retailers, and the brands that they sell, is the surge in so-called direct-to-consumer (D2C) brands. D2C brands, which are reportedly less expensive to develop and market, are sold mostly online (often through social media) and are marketed to younger consumers, who reportedly prefer new and innovative products.<sup>242</sup> Well-known D2C brands—including Allbirds, Bucketfeet, and Greats (shoes); Casper (mattresses); Harry's and Dollar Shave Club (razors); Warby Parker (eyeglasses); and Glossier (makeup)—are capturing market share through differentiated online branding and marketing.<sup>243</sup> According to an eMarketer survey of internet users, nearly half of respondents expected to make between 20 and 59 percent of their purchases from D2C companies over the next five years.<sup>244</sup> Another survey suggests that D2C brands are the biggest challenge facing traditional brands, even greater than the threat of Amazon.<sup>245</sup>

Despite the enormous challenges presented by e-commerce competition, shopping is still primarily an in-store experience in the United States, with in-store sales accounting for an estimated 80 percent of total U.S. retail sales in 2017.<sup>246</sup> Although nearly all leading U.S. retailers operate brick-and-mortar establishments,<sup>247</sup> most are rapidly adapting to competition from e-commerce providers. Indeed, according to a report by McKinsey & Company, the U.S. retail industry, “far from moribund, is experiencing disruption—and reinvention—at unprecedented speed.”<sup>248</sup>

<sup>237</sup> Thomas, “Sears, Mattress Firm and More,” December 31, 2018.

<sup>238</sup> Hirsch, “Payless ShoeSource Files for Bankruptcy,” February 19, 2019.

<sup>239</sup> Scipioni, “Gap, JCPenney, Victoria's Secret, Foot Locker,” March 1, 2019.

<sup>240</sup> Holman and Buzak, “Debunking the Retail Apocalypse,” August 2017, 8. Statistics compare U.S. retail space, measured in square footage, to that of large European markets.

<sup>241</sup> NRF, “The State of Retail” (accessed March 22, 2019).

<sup>242</sup> Hang, Kohl, and Lal, “Winning in An Era of Unprecedented Disruption,” Winter 2018–19, 2.

<sup>243</sup> Lopsman, “D2C Brands Claim Another Victim,” March 4, 2019.

<sup>244</sup> Statista, “Amount of Purchases,” 2019.

<sup>245</sup> Lopsman, “D2C Brands Claim Another Victim,” March 4, 2019; CBI Insights, “We Analyzed 12 of the Biggest Direct-to-Consumer,” February 6, 2019.

<sup>246</sup> USITC calculation using data from U.S. Census, “Estimated Annual U.S. Retail Sales” (accessed July 10, 2018).

<sup>247</sup> NRF, “The State of Retail” (accessed March 22, 2019).

<sup>248</sup> Hang, Kohl, and Lal, “Winning in an Era of Unprecedented Disruption,” Winter 2018/19, 2.

Broadly, traditional retailers are adapting to the digital age by adopting e-commerce technologies and serving customers through multiple sales channels. Most retailers, for example, are now competing in the digital space by redesigning their marketing strategies to attract the growing base of online shoppers.<sup>249</sup> Indeed, in 2019, the amount of advertising money devoted by all retailers to digital (online) media is forecast to exceed for the first time that of traditional media (TV, radio, billboards, newspapers).<sup>250</sup>

To match the quick-ship offerings of many e-commerce companies, including the hugely successful Amazon Prime,<sup>251</sup> many retailers are offering online ordering options that include a variety of shipping methods, including direct shipping (click-and-ship), expedited shipping, and free shipping, as well as in-store pickup (to leverage their network of physical stores). Walmart, for example, now offers free two-day shipping for purchases of \$35 or more; it also provides dedicated parking areas to make their click-and-collect services as fast and convenient as possible.<sup>252</sup> In addition, many retailers are creating and/or increasing their digital touchpoints (i.e., points to connect with consumers) on Google and other search engines, as well as on social media sites like Facebook.<sup>253</sup> Traditional retailers are also investing in logistics and fulfillment capabilities in an effort to compete with Amazon and other online providers. For example, Walmart has invested heavily in its e-commerce distribution infrastructure and now serves domestic online orders through 33 dedicated U.S. distribution centers.<sup>254</sup>

Large traditional retailers are expanding their online operations by purchasing both e-commerce rivals and logistics companies.<sup>255</sup> Two of the largest acquisitions include Walmart's purchase of an online retailer, Jet, for \$3.3 billion in 2016, and PetSmart's acquisition of Chewy, the largest online pet supply retailer, for \$3.6 billion in 2017.<sup>256</sup> Traditional brick-and-mortar stores are also partnering with online platforms to enhance their attractiveness to online shoppers and increase in-store foot traffic. For example, Kohl's (department stores) is partnering with Amazon to sell Fire TV and Echo voice assistants; Kohl's also accepts returns for items bought on Amazon.<sup>257</sup>

## The Rise of Multichannel and Omnichannel Retail Services

Traditional retailers have discovered that consumers are increasingly agnostic (uncommitted) about where they shop and that, as a result, retailers must engage with them across multiple sales channels

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<sup>249</sup> Hang, Kohl, and Lal, "Winning in an Era of Unprecedented Disruption," Winter 2018/19, 2.

<sup>250</sup> Engberg, "Digital Ad Spending 2019," March 2019.

<sup>251</sup> Vena, "3 Retailers Hoping to Copy the Success of Amazon Prime," July 11, 2019. The Amazon Prime service has 100 million members worldwide and has been one of the key drivers of Amazon's growth.

<sup>252</sup> Lampertius, "The Amazon Effect on Physical Retailers," April 8, 2019.

<sup>253</sup> A touchpoint is a way that retailers can interact with a consumer. For example, if a consumer searches online for a particular product, then models, prices, and ratings from specific retailers are shown with the Google search result.

<sup>254</sup> Walmart, "Form 10-K," January 31, 2019, 9.

<sup>255</sup> Kuntze et al., "Deliver On Time or Pay the Fine," September 2018.

<sup>256</sup> Molla, "These Are the Biggest E-commerce Acquisitions," April 21, 2019.

<sup>257</sup> Kohl's, Inc., "Now Accepting Amazon Returns," <https://www.kohls.com/feature/amazon.jsp> (accessed September 12, 2019).

to remain competitive, not just through physical stores.<sup>258</sup> Such sales methods include two similar formats, multichannel and omnichannel. Multichannel retailers are firms that sell through two or more retail channels, such as in-store and online. Most large retailers (and many small brick-and-mortar sellers) now serve customers not only through physical stores but also through e-commerce websites and other digital channels. Many traditional retailers that have expanded to multichannel methods still use brick-and-mortar stores as their primary supply channel, such as Walmart and Target.<sup>259</sup> At the same time, many online e-commerce retailers are now opening or investing in brick-and-mortar stores. In addition to Amazon, which purchased Whole Foods, many other D2C brands such as Warby Parker (eye glasses), Casper (mattresses), and Everland (apparel) are opening physical store locations.<sup>260</sup>

Building on the multichannel approach, omnichannel methods engage with consumers across all available channels to offer a “seamless” interface focused on enhancing and easing the customer experience. Omnichannel retailers supply the services enabling consumers to (1) buy online and pickup in-store (click and collect); (2) search for in-store products online, including stock availability by store; (3) access a shared cart across channels (e.g., mobile to desktop); (4) earn and use loyalty points across channels; (5) return products across channels; (6) use multiple channels to engage customer service; and (7) find consistent prices across channels.<sup>261</sup>

According to one study, retailers that provided omnichannel services substantially increased consumer loyalty and stimulated repeat purchases, ultimately benefiting from higher annual spending rates per customer.<sup>262</sup> Examples include Starbucks, with its rewards program integrated across all digital and physical channels, and beauty store chain Sephora, which connects online purchases with in-store visits.<sup>263</sup>

App-based services are key facilitators of multichannel and omnichannel marketing approaches. Such apps, primarily smartphone apps, are increasingly facilitating the various elements of the retail sales process, including product information, product reviews, ordering, payment, customer service, and order fulfillment. The use of smartphone apps to shop is reshaping many global markets, including developing markets like China, where a large and growing number of consumers are using smartphones in the retail process (box 5.1).<sup>264</sup>

Many retailers are also using online consumer data to analyze browsing and purchasing habits, which is facilitating the shift from one-size-fits-all marketing to a personalized online (and in-store) marketing

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<sup>258</sup> Deloitte, *Global Powers of Retail, 2018*, 2018, 5. One report suggests that in 2018, nearly 90 percent of U.S. shoppers used at least two sales channels. The National Retail Federation reports that the use of multichannel purchasing methods by U.S. consumers increased by 40 percent over 2017–18. NRF, “Thanksgiving Weekend Multichannel Shopping,” November 27, 2018.

<sup>259</sup> Orendorff, “Omni-Channel vs Multi-Channel,” February 9, 2018; CIO Review, “Digitizing the Retail Customer Experience” (accessed March 28, 2019).

<sup>260</sup> Magana, “E-tailers are Set to Open Hundreds of Physical Stores,” October 11, 2018.

<sup>261</sup> Total Retail, “Total Retail’s 2018 Top 100 Omni-channel Retailers,” April 3, 2018, 3; Fabregas, “Omnichannel and Multichannel Retailing,” July 12, 2018; Big Commerce, “2018 Omnichannel Buying Report,” 2018.

<sup>262</sup> Sopadjeva, Dholakia, and Benjamin, “A Study of 46,000 Shoppers,” January 3, 2017.

<sup>263</sup> Agius, “12 Examples of Brands with Brilliant Omni Chanel” (accessed June 12, 2019).

<sup>264</sup> Statista, *China E-commerce Dossier*, 2019.

approach that is geared toward individual consumer characteristics and preferences.<sup>265</sup> Increasingly, too, artificial intelligence and machine learning algorithms are used by retailers for recommendation-based shopping. Similarly, customer service chatbots—computer programs that converse with users through audio or text messages—have evolved from tools that answer simple questions to yet another sales channel.<sup>266</sup>

### **Box 5.1** E-commerce and Digital Technology Are Driving China’s Retail Market

China surpassed the United States in total e-commerce sales in 2013 to become the world’s leading e-commerce market. In 2019, it is poised to overtake the United States as the largest global market in terms of total retail sales.<sup>a</sup> E-commerce sales in China, a major driver of China’s retail sales growth, are estimated to be 35 percent of total retail sales in 2019.<sup>b</sup> In 2016, e-commerce sales in China accounted for an estimated 42 percent of global online shopping, climbing from just 1 percent in 2005.<sup>c</sup> China is a leading global e-commerce importer, with roughly 42 percent of online shoppers purchasing foreign goods online—primarily quality brands that are not available in China.<sup>d</sup>

Demographic factors, including rising incomes, a rapidly expanding middle class, and nearly 800 million smartphone users, are driving China’s surging demand for online retail services.<sup>e</sup> At the same time, leading Chinese e-commerce firms are investing heavily in the digital economy. Nearly half of Chinese venture capital investment comes from internet companies, including those heavily involved in e-commerce and supporting services such as Alibaba, Tencent, and Baidu.<sup>f</sup>

On the supply side, digital innovation by retailers, particularly in e-commerce, is also transforming China’s retail sector.<sup>g</sup> In fact, China’s e-commerce firms are among the leading global retail innovators, with recent activities aimed at merging e-commerce and traditional retail methods, creating “new retail.” Coined by Alibaba, “new retail” involves the use of digital technology, including data analytics, artificial intelligence, robotics, and augmented/virtual reality to vertically integrate retail services,<sup>h</sup> thereby optimizing retail services throughout the value chain.<sup>i</sup> New retail has also been characterized as the disappearance of the boundary between online and offline retail, with a complete focus on engaging consumers through their smartphones.<sup>j</sup>

Chinese companies are also global leaders in online payment services, which are frequently integrated with e-commerce platforms. Examples of these payment services include Alipay (25 percent market share), which is integrated with Taobao’s and Tmall’s platforms, and Tencent Finance (10 percent), which is integrated with WeChat.<sup>k</sup> Consumers are also able to use these popular mobile payment services at traditional brick-and-mortar retailers.

In China, there is a substantial and growing trend related to the blending of social media and retail services,<sup>l</sup> with e-commerce firms leveraging popular social media platforms as key retail gateways. The e-commerce firm Pinduoduo, for example, has linked up with the highly popular messaging app, WeChat, to offer a range of retail and other services.<sup>m</sup> Currently, Pinduoduo, a model for social media retail, has captured 7 percent of all retail sales in China.<sup>n</sup> U.S.-based firms are also experimenting with strategies for using leading social media platforms such as WeChat and Weibo to drive online purchases in China.<sup>o</sup>

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<sup>265</sup> Hang, Kohl, and Lal, “Winning in an Era of Unprecedented Disruption,” Winter 2018/19; Lampertius, “The Amazon Effect on Physical Retailers,” April 8, 2019.

<sup>266</sup> Yu, *China E-commerce Market Forecast, 2018–2022*, November 2018, 7.

Chinese e-commerce firms are deploying digital technologies in the traditional, brick-and-mortar retail market as well.<sup>p</sup> In particular, Alibaba is investing heavily in certain physical retailers. In 2016, for example, it opened the Hema grocery chain, where it is introducing digital technologies like apps, robotics, and digital payment methods into the physical grocery store format.<sup>q</sup> Hema shoppers can use app-based, in-store shopping guides to provide information and personal recommendations, initiate in-store “click and collect,” and facilitate payment through Alipay and biometric facial recognition scanners. In addition, Hema allows customers to use their smartphones to buy prepared food and drinks that are subsequently delivered by robots. Hema stores are also used as e-commerce distribution centers. To fill online orders, pickers select and bag products which are placed on overhead conveyor belts, with packaged orders delivered throughout the store to waiting delivery vehicles.<sup>r</sup>

<sup>a</sup> eMarketer, “China to Surpass U.S. in Total Retail Sales,” January 22, 2019.

<sup>b</sup> eMarketer, “China to Surpass U.S. in Total Retail Sales,” January 22, 2019.

<sup>c</sup> Smith, “42% of Global E-commerce Is Happening in China,” April 10, 2018.

<sup>d</sup> Globally, 23 percent of e-commerce revenue comes from international sales. Ecommerce Foundation, *Ecommerce Report, China 2018*, 2018, 44; Yu, *China E-commerce Market Forecast, 2018–2022*, November 2018, 3; Deloitte, *Global Powers of Retailing, 2019*, 2019, 9.

<sup>e</sup> Ecommerce Foundation, *Ecommerce Report, China 2018*, 2018, 18; Birtwistle, *China’s Next Retail Disruption*, 2018.

<sup>f</sup> Smith, “42% of Global E-commerce Is Happening in China,” April 10, 2018.

<sup>g</sup> Emarketer, “The Changing Face of Retail in China,” January 14, 2019.

<sup>h</sup> Yu, *China e-commerce Market Forecast, 2018–2022*, November 2018, 3.

<sup>i</sup> Birtwistle, *China’s Next Retail Disruption*, 2018, 25.

<sup>j</sup> Bird, “Alibaba’s New Retail Revolution,” November 18, 2018.

<sup>k</sup> *SEO Shifu Blog*, “An Overview of Popular Online Payment,” January 11, 2018; Rosa-Bohrer, “Chinese Consumers Embrace Mobile Payments,” 2018.

<sup>l</sup> Ecommerce Foundation, *Ecommerce Report, China 2018*, 2018, 18.

<sup>m</sup> Pinduoduo also allows consumers to order food, pay bills, get a taxi, and access government services. Chadha, “Pinduoduo Blazes Trail,” January 24, 2019.

<sup>n</sup> Chadha, “Pinduoduo Blazes Trail,” January 24, 2019.

<sup>o</sup> Ecommerce Foundation, *Ecommerce Report, China 2018*, 2018, 38.

<sup>p</sup> Birtwistle, *China’s Next Retail Disruption*, 2018, 21.

<sup>q</sup> Birtwistle, *China’s Next Retail Disruption*, 2018, 21; Bird, “Alibaba’s New Retail Revolution,” November 18, 2018.

<sup>r</sup> Bird, “Alibaba’s New Retail Revolution,” November 18, 2018.

## Trade Trends

Unlike other distribution services covered in this report, there are no official U.S. data for cross-border trade in retail services. Data for the cross-border component of retail services are captured in the distribution margin (the difference between the wholesale cost and the retail price) in the value of goods traded across border, which is included in U.S. merchandise trade statistics. (For more information, see box 5.2.) Affiliate transactions (covered below) are retail sales by foreign affiliates that have a commercial presence in foreign markets. This section also covers U.S. foreign direct investment (FDI), an increasingly important channel for U.S. retailers interested in establishing a commercial presence in foreign markets.

### Box 5.2 Understanding Bureau of Economic Analysis Data on retail services

In order to gather data for its statistics on foreign affiliate sales in the retail industry, the Bureau of Economic Analysis (BEA) examines the full range of industry segments, categorized according to their North American Industry Classification System (NAICS) codes. These include general merchandise stores (NAICS 452); stores specializing in specific merchandise categories (e.g., furniture, electronics, clothing, and sporting goods) (NAICS 442–451); and nonstore retailers (e.g., telemarketers, online retailers, and

vending machine operators) (NAICS 454).<sup>267</sup> BEA does not report separate data for the cross-border supply of retailing services via e-commerce, considered mode 1 trade under the General Agreement on Trade in Services (GATS, see box 1.1). Instead, the value of such services is subsumed within the data for merchandise exports and imports.<sup>a</sup> Retail purchases by consumers outside their home country (mode 2 trade under GATS) are counted within BEA's travel accounts, but are not disaggregated from other types of travel expenditures.

In 2008, BEA introduced a major change in the way it calculates affiliate transactions in retail services. In consequence, it also revised its earlier estimates of such transactions dating to 2002 for foreign-owned affiliates and to 2004 for U.S.-owned affiliates. Previously, BEA reported only retailers' "sales of services." These included secondary services sold at an explicit price (e.g., an electronics retailer's sales of repair services), but not "service attributes," the costs of which are usually bundled into the price of merchandise (e.g., customer service, the assortment of goods offered, and information about the goods).<sup>b</sup> For the revised measure, BEA collects data on retail affiliates' sales, cost of goods sold, and beginning- and end-of-year inventories. It then calculates trade margins that capture the value of retail services associated with merchandise sales.<sup>c</sup> These adjustments led to a significant increase in BEA's estimates of affiliate activity in the retailing industry.

The BEA 2014 Benchmark Survey of U.S. Direct Investment Abroad reported that the value of services supplied abroad through the affiliates of U.S. multinational enterprises was 14 percent higher in 2014 than in 2013. This increase is predominantly attributable to concerted outreach efforts by the BEA to improve survey coverage, which increased the number of reporting companies that were ultimately included in the 2014 Benchmark Survey sample. As a result, 2014 affiliate sales in retail services may not be comparable to sales reported prior to 2013.<sup>d</sup>

The BEA is also the source for statistics on U.S. outbound and inward foreign direct investment (FDI). Outbound FDI stocks are the measure of the total outstanding investments owned by U.S. retail-sector parent companies (NAICS codes 44, 45) in their foreign affiliates.<sup>e</sup> The stock of inbound FDI reflects investment by foreign parents in U.S.-based affiliate companies. The data are derived from BEA surveys of U.S. companies with investments abroad and foreign firms with investments in the United States.<sup>f</sup>

<sup>a</sup> Borga, "Improved Measures of U.S. International Services," March 2, 2008, 24–25.

<sup>b</sup> Borga, "Supplemental Estimates of Insurance, Trade Services," October 2007, 109–10.

<sup>c</sup> USDOC, BEA representative, email message to USITC staff, February 22, 2010. Data from the U.S. Census Bureau are used to calculate margins in instances where the needed data are not available from BEA's surveys.

<sup>d</sup> USDOC, BEA, "U.S. International Services: Trade in Services in 2015 and Services Supplied through Affiliates in 2014," December 2016, 24; Scott, "Activities of U.S. Multinational Enterprises," December 2016, 12. Since 2014, the BEA has not changed the way it measures cross-border trade and affiliate transactions.

<sup>e</sup> USDOC, BEA, "A Guide to BEA Statistics on U.S. Multinational Companies" (accessed May 6, 2019).

<sup>f</sup> For a detailed description of BEA investment surveys, see USDOC, BEA, "A Guide to BEA's Direct Investment Surveys," <https://www.bea.gov/media/1531> (accessed May 6, 2019). For examples of FDI surveys, see the following: USDOC, BEA, BE-577, "Quarterly Survey of U.S. Direct Investment Abroad," November 2016, <https://www.bea.gov/sites/default/files/2018-04/be577.pdf> and USDOC, BEA, BE-605, "Quarterly Survey of Foreign Direct Investment in the United States," February 2018, <https://apps.bea.gov/surveys/pdf/be605.pdf>.

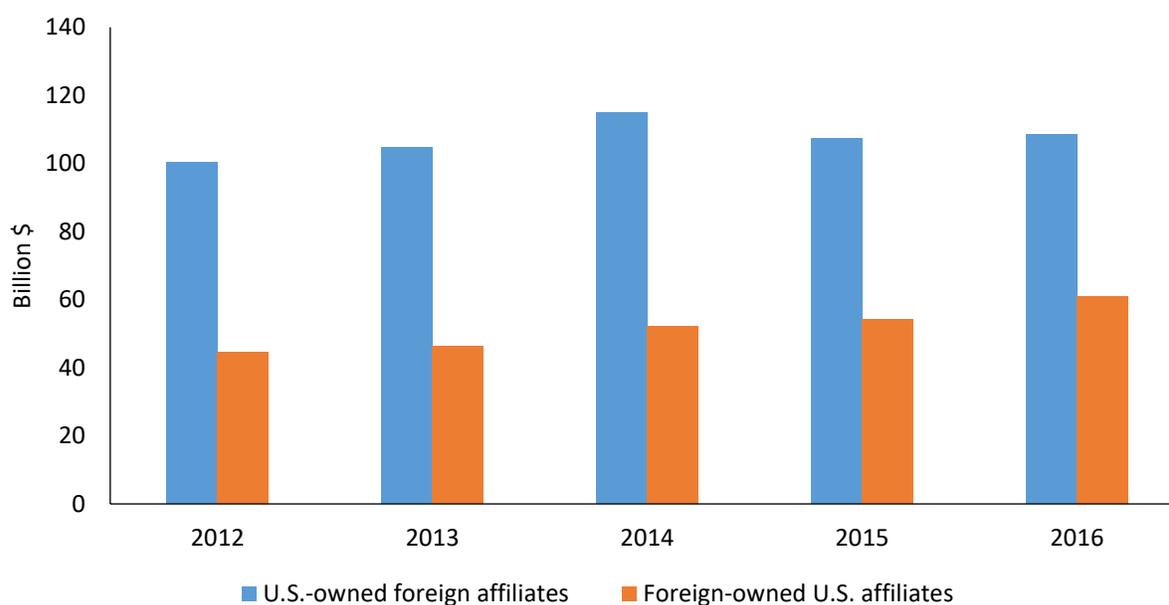
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<sup>267</sup> For a detailed description of retail NAICS codes, see U.S. Census, "2012 NAICS: 44–45 Retail Trade" (accessed May 4, 2019).

## Affiliate Transactions, 2016

The relative strength of the U.S. economy during 2012–16, relative to many leading U.S. trading partners, led to uneven growth in U.S. and foreign affiliates’ retail services transactions. U.S.-owned foreign affiliates supplied \$108.6 billion in retail services in 2016, up from \$100.2 billion in 2012, an increase of just under 8 percent over the period (1.7 percent average annual growth). This reflects relatively slower GDP growth and consumer retail spending in key foreign markets.<sup>268</sup> Leading markets for U.S.-owned affiliates in the retail services sector were also major U.S. trading partners overall—namely, the UK, Canada, Mexico, Germany, and China (figure 5.5). In 2016, the UK (\$23.7 billion) and Canada (\$23.2 billion) accounted for nearly half of U.S. foreign affiliate sales in the retail sector, due in large part to cultural and economic ties and to Canada’s geographic proximity. In that same year, strong retail spending caused China to overtake Japan as the leading Asian market for U.S.-owned affiliate retail services. The sales of U.S.-owned retail affiliates in Germany, however, declined during the period, reflecting relatively slow economic growth and flat retail sales in the country. The ongoing expansion of U.S. cross-border e-commerce sales may also be displacing a portion of affiliate sales by U.S.-owned foreign affiliates.

**Figure 5.5** Retail Services: U.S. affiliate sales and affiliate purchases, 2012–16



Source: USDOC, BEA, table 4.1, “Services Supplied to Foreign Persons by U.S. MNEs through Their MOFAs, by Industry of Affiliate and by Country of Affiliate,” and table 5.1, “Services Supplied to U.S. Persons by Foreign MNEs through Their MOUSAs, by Industry of Affiliate and by Country of UBO,” October 19, 2018.

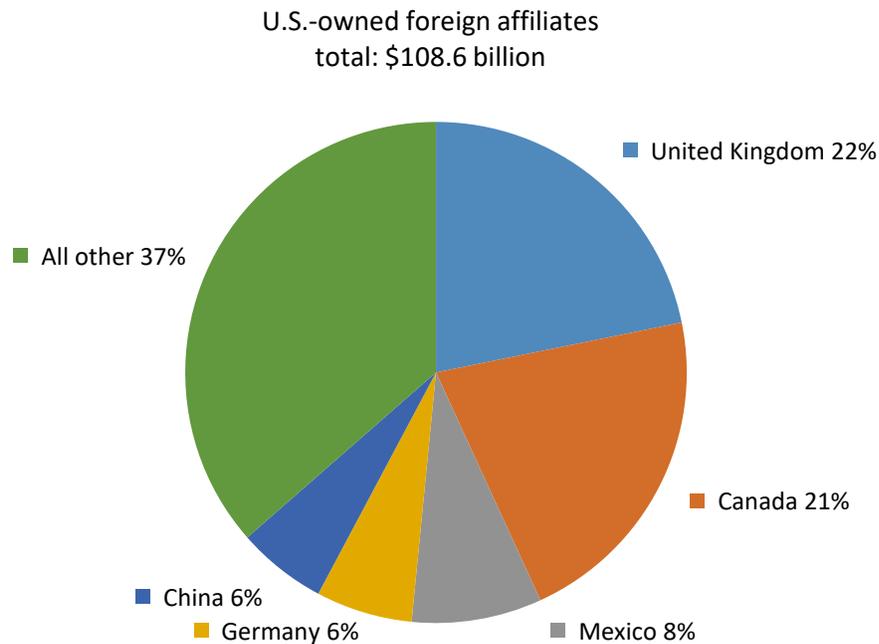
MNEs = multinational enterprises; MOFAs = majority-owned foreign affiliates; MOUSA = majority-owned U.S. affiliate; UBO = ultimate beneficial owner.

Note: Affiliate sales in 2014 may not be directly comparable to those sales in 2013 (see box 5.2). Underlying data for this figure can be found in [appendix table B.22](#).

<sup>268</sup> This trend coincides with the overall trend in U.S.-owned foreign affiliate sales, which have been flat or declined in most leading markets during 2012–16. USDOC, BEA, “BEA International Trade and Investment Country Facts,” <https://apps.bea.gov/international/factsheet/> (accessed March 5, 2019).

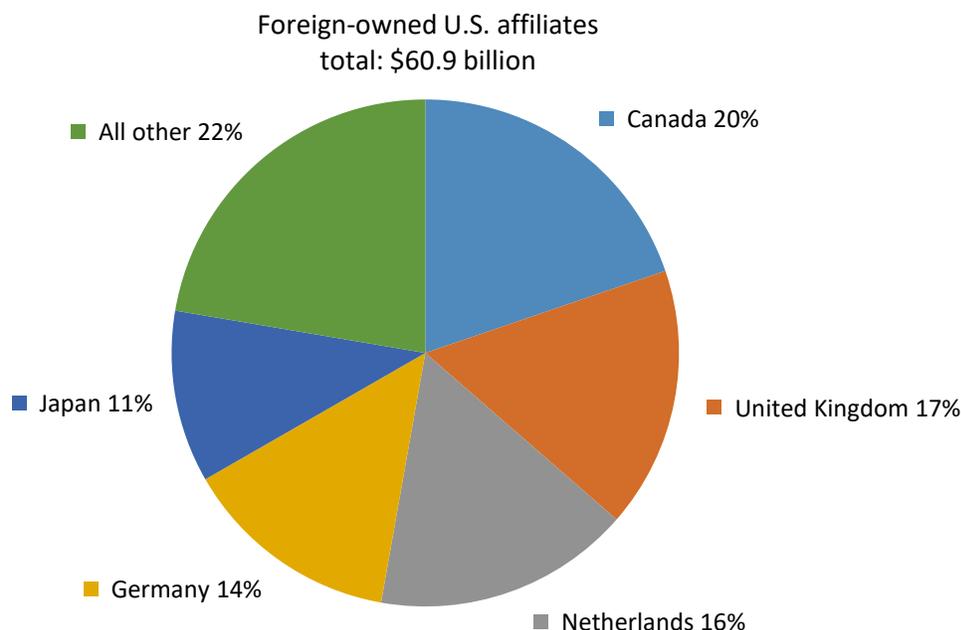
By contrast, the sales of foreign-owned affiliates in the United States grew at an average annual rate of 8 percent during 2012–16, reflecting the strong growth in the U.S. retail market as well as in foreign investment during the period. Canadian-owned retail affiliates in the United States accounted for \$12.0 billion in sales in 2016, or 20 percent of such sales, followed by affiliates whose headquarters were based in the UK (\$10.1 billion), the Netherlands (\$10.0 billion), and Germany (\$8.5 billion). The Dutch company Ahold Delhaize and German companies Aldi and Lidl operate several grocery store chains in the United States.<sup>269</sup> Japan (\$6.7 billion) was the leading Asian supplier of retail services in the United States. In fact, 7-Eleven, the largest U.S. convenience store retailer, is owned by Japan-based Seven & i Holdings.<sup>270</sup>

**Figure 5.6** Retail services: U.S. affiliate sales and affiliate purchases by country, 2016



<sup>269</sup> The Netherlands is home to Ahold Delhaize, which owns Food Lion, Giant, and Stop & Shop, while Germany’s Aldi owns Trader Joe’s and Aldi stores, including nearly 2,000 stores in the United States. Ahold Delhaize, “United States: All the Facts about Our Stores,” <https://www.aholddelhaize.com/en/brands/united-states/our-brands-in-the-united-states/> (accessed April 8, 2019); Aldi, “ALDI History,” <https://corporate.aldi.us/en/aldi-history/> (accessed April 8, 2019).

<sup>270</sup> Convenience Store News, “The Top 100 Convenience Store Chains of 2018,” July 9, 2018.



Source: USDOC, BEA, table 4.1, “Services Supplied to Foreign Persons by U.S. MNEs through Their MOFAs, by Industry of Affiliate and by Country of Affiliate,” and table 5.1, “Services Supplied to U.S. Persons by Foreign MNEs through Their MOUSAs, by Industry of Affiliate and by Country of UBO,” October 19, 2018.

MNEs = multinational enterprises; MOFAs = majority-owned foreign affiliates; MOUSA = majority-owned U.S. affiliate; UBO = ultimate beneficial owner.

Note: Figures may not total to 100 percent due to rounding. Underlying data for this figure can be found in [appendix table B.23](#).

## Foreign Direct Investment, 2017

The stock of U.S. foreign direct investment (FDI) in retail operations abroad increased from \$60.5 billion in 2013 to \$76.8 billion from 2017.<sup>271</sup> Overall, total U.S. retail FDI grew by 27 percent during 2013–17, led by general merchandise stores (70 percent growth), clothing stores (45 percent), and non-store retail (27 percent). Non-store retailers (\$30.4 billion), which includes e-commerce, led all FDI retail categories, accounting for 40 percent of total U.S. retail sector FDI in 2017.<sup>272</sup> Other leading categories were general merchandise stores (\$12.4 billion; 16 percent) and clothing stores (\$10.5 billion; 14 percent). For example, Walmart is investing heavily in higher-growth markets, including China, where it purchased 12 percent of JD.com, and India, where it owns a large stake in Flipkart, an e-commerce company. In Chile and Mexico, Walmart also recently purchased Cornershop, an online marketplace for crowdsourced deliveries from supermarkets, pharmacies, and specialty food retailers.<sup>273</sup> These types of investments expand traditional retailers’ multichannel capabilities.

<sup>271</sup> FDI is a useful measure of the activities and expectations of U.S. retailers in foreign markets. Increasing FDI stocks indicate that U.S. retailers are looking to foreign markets for growth. USDOC, BEA, “U.S. Direct Investment Abroad: Direct Investment Position on a Historical-Cost Basis by Detailed Industry of Foreign Affiliate, 2009–2017” (accessed March 5, 2019).

<sup>272</sup> USDOC, BEA, “U.S. Direct Investment Abroad: Direct Investment Position on a Historical-Cost Basis by Detailed Industry of Foreign Affiliate, 2009–2017” (accessed March 5, 2019).

<sup>273</sup> Sun, “Walmart Buys Another E-commerce Player,” September 18, 2018.

During 2013–17, the stock of total inbound foreign investment in the U.S. retail sector increased by 68 percent, reaching \$88.6 billion in 2017. Food and beverage stores (\$34.9 billion) was the leading FDI category, accounting for 39 percent of total foreign retail investment in 2017. Other leading retail sectors were clothing stores (\$17 billion) and health and personal care stores (\$10.4 billion).<sup>274</sup>

## Outlook

Industry analysts expect overall U.S. retail services growth to expand slowly over the next five years.<sup>275</sup> In contrast, e-commerce sales are forecast to post strong growth during the period; one estimate forecasts that U.S. e-commerce sales will rise by over 50 percent in the next five years.<sup>276</sup> Globally, e-commerce via mobile commerce, or m-commerce (e-commerce using smartphones and tablets), is expected to be the most popular means for shopping online, capturing a growing majority of online e-commerce purchases in the coming years.<sup>277</sup> China is expected to outpace the United States as the world's largest retail market and expand its lead as the world's largest e-commerce market.<sup>278</sup> Amazon, Alibaba, and other global e-commerce platforms are expected to increase market shares domestically and globally—and, particularly, compete for customers in high-growth emerging markets.<sup>279</sup> Cross-border e-commerce is expected to more than double transaction volumes in the next five years and represent over one-fifth of total global e-commerce sales.<sup>280</sup> To prepare for the expected growth, retailers will continue to make large investments in their delivery and logistics capabilities.<sup>281</sup>

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<sup>274</sup> USDOC, BEA, “Foreign Direct Investment in the United States: Selected Items by Detailed Industry of U.S. Affiliate, 2008–2017” (accessed March 8, 2019).

<sup>275</sup> IBISWorld, *Retail Trade in the US*, June 2018, 5; eMarketer, “Worldwide Retail and E-Commerce,” January 29, 2008.

<sup>276</sup> IBISWorld, *E-Commerce & Online Auctions*, February 2019, 6.

<sup>277</sup> eMarketer, “Worldwide Retail and E-Commerce,” January 29, 2008.

<sup>278</sup> IBISWorld, “E-commerce Sales,” May 2018.

<sup>279</sup> eMarketer, “2019: China to Surpass U.S. in Total Retail Sales,” January 23, 2019.

<sup>280</sup> Yu, *China e-Commerce Market*, November 2018, 5.

<sup>281</sup> IDC, “Optimizing Retail Initiatives” (accessed March 25, 2019); Statista, “Cross-border E-Commerce,” 2019.

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# Chapter 6

## Services Roundtable

The Commission hosted its 12th annual Services Roundtable on November 7, 2018. These roundtable discussions are held regularly to encourage dialogue among individuals from government, industry, and academia about issues affecting trade in services. The 2018 event focused on two themes: (1) the impact of tariffs, World Trade Organization (WTO) commitments, and other rules and agreements for trade in goods and crosscutting issues, and (2) differences in the services economies of developed and emerging markets. Commissioner Meredith Broadbent moderated the first half of the discussion, and Commissioner Jason Kearns moderated the second half.

### Impacts of Crosscutting Issues on Global Service Trade

The first half of the roundtable focused on the ways that crosscutting issues in the global trade landscape can affect trade in services. In particular, participants mentioned crosscutting policies such as investment, intellectual property, and data flow measures. They also discussed policies, such as tariffs, which are applied to manufactured goods but can also affect services sectors. In addition, participants considered such policies as country-specific tax regimes and subsidies, which are not necessarily directed at trade but can affect trade in services.

Multiple participants indicated that regulations on both investment and cross-border trade can impact services sector trade, and many sectors use a combination of commercial presence and cross-border trade to export their services. One participant stated that the WTO General Agreement on Trade in Services (GATS) does not always correspond to on-the-ground policies in specific countries, so international trade agreements serve as a source of the most up-to-date investment commitments. Another participant noted that in the insurance sector, cross-border trade is limited to specific types of insurance, leaving investment as the only way to access customers in foreign markets for some insurance segments. A third participant stated that in retail services, the movement toward e-commerce has not eliminated the need for a physical retail presence abroad; in countries where internet access is limited, a physical presence can actually be used to facilitate e-commerce purchases.

Data localization and data-transfer measures also were identified as crosscutting issues that affect services trade. One participant stated that it is not clear whether data should be considered a good, a service, or a new category of trade, and that in some cases data have been considered a separate category of trade flows. Multiple participants also stated that the data provisions in the financial sector chapter of United States-Mexico-Canada Agreement (USMCA) are recognized as important for the delivery of financial services; these are the provisions that preclude the three parties' adopting data transfer and localization rules. One participant also noted that because of the value of services bundled with manufactured goods, U.S. manufacturing companies that operate internationally also stand to benefit from the digital trade provisions in the USMCA agreement.

Finally, intellectual property rights were also mentioned as a crosscutting issue that affects services sectors. One participant noted that intellectual property transactions represent one of the biggest categories of cross-border services, while other participants pointed out that software services providers, audiovisual content creators, and other creative industries rely on copyright and intellectual property protection in their business models.

In addition to these crosscutting issues, participants also highlighted the impact of tariffs on trade in services. One participant stated that tariffs on electronic goods associated with services could limit trade in services. This participant gave the example of an internet-based video game, which could be more expensive to sell in a country with tariffs on video game consoles (which are required to play those video games). Another participant asserted that the lack of tariffs on information and communications technology (ICT) goods in India helped it to develop a more advanced technology sector than that in Brazil, which imposes tariffs on ICT goods. A third participant cautioned that Indonesia has added 6-digit subheadings to its tariff schedule for digitally traded goods, which could be a step toward the imposition of tariffs on digital products.

Finally, participants also mentioned tax and subsidy policies as issues that can affect services trade. According to one participant, policies that tax services based on where they are consumed—rather than where they are produced—could improve the current global tax system by reducing the perception that services firms locate in particular jurisdictions to avoid paying taxes. On the subject of subsidies, one participant noted that state-owned enterprises are a key concern in the services sector, because 75 to 80 percent of state-owned enterprises are services providers. Another participant explained that subsidies on goods like agriculture products could also affect insurance services due to the complexities associated with crop insurance.

## Services Trade in Emerging Economies

In the second part of the roundtable, participants considered the differences between providing services in developed and emerging markets. Regulatory coherence was the main theme of the discussion, which also covered the motivation behind services trade regulations in emerging markets.

Many participants stated that global rules and standards surrounding services trade would help facilitate trade in both emerging and developed economies. One participant pointed out that while developed economies have strong rules governing services trade because of recent trade agreements, many emerging markets do not have equivalent rules.

In particular, one participant stated that emerging economies do not yet have data-related standards in place, and noted that the General Data Protection Regulation (GDPR) adopted by the European Union (EU) has made the EU—rather than the United States—a model for those countries. Another participant said that emerging markets do not currently have a clear grasp of how to view data, digital trade, and digital protectionism. A third participant added that some emerging markets have introduced localization requirements that limit firms' ability to perform cybersecurity and fraud analysis by limiting the scope of the data that can be used in performing global threat assessments.

Several participants expressed support for global principles that are flexible and can adapt to changes in an industry. In the financial sector, one participant stated that since the 2008 financial crisis, there has

been an increased interest in regulatory cooperation. Another participant asserted that in the insurance sector, regulation is helpful when entering new markets and is necessary to protect consumers.

Participants also compared the services industries in emerging and developed markets. One participant reported that emerging markets have developed their own services trade across all four modes of delivery.<sup>282</sup> This participant also noted that because services are incorporated into goods and agricultural products, emerging markets need to develop efficient services sectors along with their manufacturing and agricultural development. Another participant remarked that in some emerging markets, such as India, inflexible labor markets in the manufacturing sector have facilitated the growth of the services sector.

Finally, participants considered the reasons for differences in regulation across emerging and developed economies. One participant stated that in the financial sector, developed-country regulators focus exclusively on consumer protection, whereas regulators in emerging markets may also be interested in building the local industry. Another participant added that emerging-market regulators are more likely than their developed-economy counterparts to introduce regulations for political reasons, rather than economic or prudential ones. A third participant said that in emerging markets, it is important to understand the historical and cultural drivers of trade policy. In e-commerce, one participant noted that low *de minimis* levels might be seen as a way to generate revenue, rather than as a trade-limiting policy.<sup>283</sup>

By contrast, in audiovisual services, according to one participant, there is no distinction between emerging and developing markets; this is largely because both types of markets have regulations that reflect out-of-date nondigital modes of audiovisual content delivery. The participant gave the example of many countries' domestic film quotas, which were established in an era in which the physical space in video rental stores limited the number of films that were available to rent. However, now those quotas are applied to video-streaming platforms, which do not face the same physical space constraints.

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<sup>282</sup> See chapter 1, box 1.1, for a discussion of modes of services trade.

<sup>283</sup> *De minimis* refers to a customs rule under which import shipments valued below a specified threshold are not required to pay customs duties or undergo other customs procedures.



# **Appendix A**

## **Selected Services Research**



# Selected Services Research

This appendix provides summaries and links to recent U.S. International Trade Commission publications that feature topics in service trade. Some are reports prepared under section 332(g) of the Tariff Act of 1930 (19 U.S.C § 1332 (g)) in response to requests from the U.S. Trade Representative, the U.S. House of Representative Committee on Ways and Means, and/or the U.S. Senate Committee on Finance. Others present results of recent Services Division staff research, including Executive Briefings on Trade, articles in the *Journal of International Commerce and Economics*, and working papers.

The documents summarized in this appendix are the result of the ongoing professional research of USITC staff and are solely meant to represent the opinions and professional research of their authors. They are not meant to represent in any way the view of the U.S. International Trade Commission, any of its individual Commissioners, or the United States government.

## Investigations

### **U.S.-Mexico-Canada Trade Agreement: Likely Impact on the U.S. Economy and on Specific Industry Sectors**

**Serge Shikher (Office of Economics) and Mihir Torsekar (Office of Industries), project leaders**  
**Jennifer Powell (Office of Industries, Services Division), chapter 6 lead**  
**George Serletis (Office of Industries, Services Division), chapter 7 lead**  
**Investigation No. TPA-105-003, April 2019**

<https://www.usitc.gov/sites/default/files/publications/332/pub4889.pdf>

This report provided both a qualitative and quantitative assessment of the impact of the U.S.-Mexico-Canada Trade Agreement (USMCA), including USMCA provisions related to services. The report quantified the impact of changes in investment provision, cross-border trade provisions, de minimis thresholds, and data transfer and data localization provisions on U.S. services trade. It also assessed the likely impact of USMCA provisions on particular services sectors, including audiovisual, financial, professional, transportation, computer, telecommunications, e-commerce, electronic payment, and express and postal services.

## Executive Briefings on Trade

### West Africa Is Expanding Its Maritime Ports to Accommodate Growing Container Trade

Jeremy Streatfeild (Office of Industries, Services Division), May 2018

[https://www.usitc.gov/sites/default/files/publications/332/executive\\_briefings/west\\_african\\_ports\\_expansion\\_final.pdf](https://www.usitc.gov/sites/default/files/publications/332/executive_briefings/west_african_ports_expansion_final.pdf)

Over the past decade, growth in the volume of West Africa’s container trade has exceeded that of any other global region—doubling to almost 5 million twenty-foot equivalent units (TEUs). This expansion, fueled by rising incomes in the region, is also contributing to increased congestion in West African ports, further exacerbated by a lack of deep-water berths to handle more efficient, larger ships. To address the problem, many West African ports are investing to improve the capacity of their port infrastructure as well as turning to a handful of foreign terminal operating companies (TOC) to improve their handling efficiency.

### Trends in U.S. Architectural and Engineering Service Exports

Jennifer Baumert Powell (Office of Industries, Services Division), October 2018

[https://www.usitc.gov/sites/default/files/publications/332/executive\\_briefings/ae\\_ebot\\_final.pdf](https://www.usitc.gov/sites/default/files/publications/332/executive_briefings/ae_ebot_final.pdf)

In recent years, U.S. cross-border exports of architecture and engineering (AE) services, as well as sales by foreign affiliates of U.S. AE services firms, have decreased substantially. These decreases were likely a product of declines in global AE services revenues and earnings during roughly the same period. Weak oil and gas prices and economic and political instability are among the factors that may have led to these declines.

## Journal of International Commerce and Economics

### Low Electricity Supply in Sub-Saharan Africa: Causes, Implications and Remedies

Jeremy Streatfeild (Office of Industries, Services Division), July 2018

[https://www.usitc.gov/sites/default/files/publications/332/journals/low\\_electricity\\_supply\\_in\\_ssa\\_final.pdf](https://www.usitc.gov/sites/default/files/publications/332/journals/low_electricity_supply_in_ssa_final.pdf)

Electricity supply is lower and costs are higher in sub-Saharan Africa (SSA) than in any other world region. While several SSA countries have sought to address this issue through cross-border trade and

investment in domestic infrastructure, these efforts have been greatly impeded by the high degree of systems losses—the difference between output and sales of electricity—as well as by electricity tariffs that are too low to recover utilities’ costs. This paper assesses the extent and economic significance of low levels of electricity supply in SSA, gives a regional overview of electricity generation levels, and discusses SSA countries’ efforts to engage in electricity trade in order to improve regional economies of scale.

## Electricity Investment in Sub-Saharan Africa: A Historical Overview and a Way Forward

Jeremy Streatfeild (Office of Industries, Services Division), July 2018

[https://www.usitc.gov/sites/default/files/publications/332/journals/electricity\\_in\\_ssa-final.pdf](https://www.usitc.gov/sites/default/files/publications/332/journals/electricity_in_ssa-final.pdf)

Rising demand, failing infrastructure, and untapped potential for electricity generation in sub-Saharan Africa have created a substantial need for large-scale investment in the region. This paper identifies traditional providers of foreign and domestic investment in electricity generation in the region, discusses historical and recent trends, and assesses U.S. firms’ position in this market.

## Staff Publications and Working Papers

### Neural Network Analysis of International Trade

Isaac Wohl (Office of Industries, Services Division) and Jim Kennedy (Office of Analysis and Research Services), May 2018

[https://www.usitc.gov/sites/default/files/publications/332/working\\_papers/neural\\_networks\\_and\\_international\\_trade\\_-\\_compiled\\_draft\\_06.pdf](https://www.usitc.gov/sites/default/files/publications/332/working_papers/neural_networks_and_international_trade_-_compiled_draft_06.pdf)

This paper presents a very preliminary attempt to analyze international trade data with neural networks. We use a dataset assembled for an international trade gravity model, which has bilateral trade as the dependent variable, and the distance between countries; the exporter’s GDP; the importer’s GDP; dummy variables indicating whether the countries share a language, border, colonial relationship, or trade agreement; and country or country-year fixed effects as independent variables. The paper provides a brief overview of gravity models, explains neural networks, discusses the difference between hypothesis testing and prediction, and presents the results of our analysis. We divide the data randomly into a training set and a test set; use the training set data to create an OLS estimator, a Poisson pseudo-maximum likelihood estimator, and a neural network; and then use the test data to measure how well the different methods generalize to new data. We compare a baseline model, a model with country fixed effects, and a model with country-year fixed effects. The estimator that yields the most accurate out-of-sample estimates is the neural network with country fixed effects, as seen in a comparison of root mean squared errors. We then compare neural network predictions with actual trade between the United States and its major trading partners outside of the sample period. Finally, we suggest directions in future research.

## Trade Restrictions and Modes of Supply in Services Trade

**Tamar Khachaturian (Office of Industries, Services Division), July 2018**

[https://www.usitc.gov/sites/default/files/publications/332/working\\_papers/id\\_18\\_051\\_modes\\_of\\_supply\\_tamar\\_khachaturian\\_061418\\_final\\_compliant\\_version.pdf](https://www.usitc.gov/sites/default/files/publications/332/working_papers/id_18_051_modes_of_supply_tamar_khachaturian_061418_final_compliant_version.pdf)

Services are supplied to foreign markets through multiple modes of delivery. However, the share of services supplied through particular modes is not well known, it is not clear whether and to what degree these different modes are complements or substitutes, and the effects of trade policy on the mode of services delivery is an open question. The analysis in this paper calculates the ratios of U.S. cross-border exports to foreign affiliate sales in professional services and financial services and relates them to the ratios of barriers across modes in each country to assess whether their relationship is consistent with substitutability or complementarity in the provision of services in foreign markets. There appears to be a negative relationship between the relative proportion of cross-border exports to foreign affiliate sales and relative services trade restrictions across modes, which is consistent with inter-modal substitution and suggests that service providers may shift between modes in response to these barriers.

## Using Firm-level Data to Compare Productivities across Countries and Sectors: Possibilities and Challenges

**Saad Ahmad (Office of Economics), Sarah Oliver (Office of Industries, Services Division), Caroline Peters (Office of Economics), July 2018**

[https://www.usitc.gov/sites/default/files/publications/332/working\\_papers/ahmad\\_oliver\\_peters.pdf](https://www.usitc.gov/sites/default/files/publications/332/working_papers/ahmad_oliver_peters.pdf)

A five-year panel of cross-country data for 2012-2016 drawn from the Orbis database is used to evaluate the advantages and shortcomings of this data source in calculating firm level productivity. We find that conditional on the productivity measure employed, country and sector coverage can vary widely in the Orbis database due to different national reporting requirements across countries. This paper also compares the average productivity of the same sector across countries and the average productivity of domestic and foreign owned firms in the same sector. In every type of productivity calculation employed in this analysis, foreign firms are significantly more productive than their domestic counterparts.

## International Insurance Services

**Tamar Khachaturian (Office of Industries, Services Division), and David Riker (Office of Economics), August 2018**

[https://www.usitc.gov/sites/default/files/publications/332/working\\_papers/modeling\\_international\\_insurance\\_services\\_08-14-18\\_compiled\\_equations\\_in\\_appendix.pdf](https://www.usitc.gov/sites/default/files/publications/332/working_papers/modeling_international_insurance_services_08-14-18_compiled_equations_in_appendix.pdf)

We examine foreign firm participation in national insurance markets. We explain how a structural model of mode 3 international trade in services with firm heterogeneity can provide a simple formula for estimating differences in the costs of market entry facing foreign and domestic firms in each country. When the formula is applied to OECD and Eurostat data for the insurance industry for many national markets, the implied relative fixed costs vary significantly across countries, though in the majority of countries these fixed costs are lower for foreign firms rather than domestic firms. The results suggest that the foreign firms typically benefit from multi-country economies of scale that more than offset barriers to entry.

## Services in the NAFTA

**Jennifer Baumert Powell (Office of Industries, Services Division), September 2018**

[https://www.usitc.gov/sites/default/files/publications/332/working\\_papers/services\\_in\\_the\\_nafta\\_compiled\\_version\\_91818\\_ss\\_tc.pdf](https://www.usitc.gov/sites/default/files/publications/332/working_papers/services_in_the_nafta_compiled_version_91818_ss_tc.pdf)

Services trade is a significant component of the United States' overall trade relationship with its North American Free Trade Agreement (NAFTA) partners, generating substantial surpluses and accounting for a large (though slightly decreasing) share of total U.S. cross-border services trade. NAFTA established an important baseline for North American services trade rules and set a precedent for later U.S. trade agreements, perhaps most notably by including negative-list market access commitments on services trade. However, in the years since the conclusion of the NAFTA, services trade rules have continued to evolve and technological developments have transformed the operation of global services markets. Notably, the advent of the internet and digital communications has increased firms' ability to offer new services to customers and to trade certain services internationally, impacting their competitiveness in the global marketplace.

It is important to note that NAFTA has no provisions that are specific to digital trade, a market segment that has grown rapidly during the past 20 years and that is covered to some extent in several recent trade agreements. The ongoing NAFTA renegotiation aims to update this agreement's services trade rules to better reflect current conditions in the North American services market. As a result, a new, revised NAFTA may have a significant impact on U.S. services trade.

## Firm Level Analysis of Trade Restrictions in the Maritime Port Services Industry

Arthur Chambers (Office of Industries, Services Division) and Joann Peterson (Office of Industries, Services Division), July 2019

[https://www.usitc.gov/sites/default/files/publications/332/working\\_papers/id-059\\_firm\\_level\\_analysis\\_of\\_trade\\_restrictions\\_in\\_the\\_maritime\\_port\\_services\\_industry\\_final\\_0729-checked\\_0.pdf](https://www.usitc.gov/sites/default/files/publications/332/working_papers/id-059_firm_level_analysis_of_trade_restrictions_in_the_maritime_port_services_industry_final_0729-checked_0.pdf)

This paper examines competition and profitability in the port services sector using data from the OECD's Services Trade Restrictiveness Index (STRI) and Orbis. It is part of an ongoing series in the Services Division of the Office of Industries examining firm profitability and barriers to entry in the services sector. The paper begins with an overview of the maritime port services industry, describing industry structure, regulation, and competition. It then discusses how trade restrictions in the maritime cargo-handling segment affect the competitive landscape and, ultimately, the profitability of firms that provide port services. The paper includes a quantitative analysis of the relationship between these factors using the OECD STRI scores for logistics-related cargo handling services, as a proxy for port services, and Orbis-generated firm-level profitability data for cargo-handling firms. The analysis indicates the degree to which high entry barriers in the port services sector lead to less competition and higher profits among cargo handling firms in the maritime sector. The paper concludes with recommendations for future areas of research on competition in port services.

# **Appendix B**

## **Data Tables for Figures**



**Table B.1** Real value added by U.S. industry, 2013–17 (billion dollars)

Year	2013	2014	2015	2016	2017
Private goods-producing industries	3,135.9	3,201.7	3,279.9	3,274.4	3,327
Private services-supplying industries	11,166.5	11,480.2	11,859.3	12,107.4	12,383.9

Source: USDOC, BEA, "Real Value Added by Industry," November 1, 2018 (corresponds to [figure 1.1](#)).

**Table B.2** Global services: Cross-border exports and imports of commercial services, 2017 (billion dollars)

Country	Exports	Imports
United States	778.4	520.4
United Kingdom	353.1	209.8
Germany	303.4	329.2
France	274.0	245.3
China	226.4	464.1
Netherlands	215.8	206.1
Ireland	184.7	200.6
Japan	181.6	190.8
India	179.5	181.3
Singapore	172.3	154.0
All other	2,488.6	2,409.4
Total value	5,357.7	5,108.3

Source: WTO, Statistics Database, Times Series on International Trade, "Trade in Commercial Services, 2005–onward" (accessed July 22, 2019) (corresponds to [figure 1.2](#)).

Notes: Excludes public-sector transactions.

**Table B.3** U.S. services: Cross-border services trade and sales, and purchases of services through affiliates, 2009–17 (billion dollars)

Year	Services supplied by U.S. firms' foreign affiliates	U.S. cross-border exports of private services	Services supplied by U.S. affiliates of foreign firms	U.S. cross-border imports of private services
2009	1,013.3	492.2	586.8	355.3
2010	1,095.3	543.5	608.4	377.4
2011	1,177.5	605.6	668.6	404.5
2012	1,209.8	633.6	698.0	424.2
2013	1,238.8	678.6	772.2	435.7
2014	1,446.5	721.4	811.4	456.5
2015	1,383.2	735.2	831.5	470.4
2016	1,384.5	740.1	876.9	488.3
2017	n.a.	778.4	n.a.	520.4

Sources: USDOC, BEA, table 2.1, "U.S. Trade in Services, by Type of Service," October 19, 2018; table 4.1, "Services Supplied to Foreign Persons by U.S. Multi National Enterprises through Their MOFAs, by Industry of Affiliate and by Country of Affiliate," October 19, 2018; table 5.1, "Services Supplied to U.S. Persons by Foreign Multi National Enterprises through Their Majority-Owned U.S. Affiliate, by Industry of Affiliate and by Country of Ultimate Beneficial Owner," Interactive tables: International Data, International Services, October 19, 2018 (corresponds to [figure 1.3](#)).

n.a. = data not available.

**Table B.4** U.S. services: Cross-border trade by services industry, 2017 (billion dollars)

Service industry	Exports	Imports
Distribution services	49.4	64.6
Electronic services	100.9	63.2
Financial services	127.7	79.6
Travel services	251.4	173.9
Charges for the use of intellectual property	69.7	28.1
Professional services	163.1	96.8
Other services	16.2	14.2
Total value	778.4	520.4

Source: USDOC, BEA, table 2.1, "U.S. Trade in Services, by Type of Service," October 19, 2018 (corresponds to [figure 1.4](#)).

Note: Export and imports excludes public-sector services transactions.

**Table B.5** Affiliate sales and affiliate purchases by industry, 2016 (billion dollars)

Industry	Services supplied by	Services purchased from U.S.
	foreign affiliates of U.S. firms	affiliates of foreign firms
Manufacturing	34.6	91.1
Distribution services	407.9	294.8
Electronic services	288.7	121.0
Financial services	274.7	187.5
Professional services	102.1	111.0
Other	348.1	189.6
Total value	1,456.2	995.1

Source: USDOC, BEA, 4.1, "Services Supplied to Foreign Persons by U.S. MNEs through Their MOFAs, by Industry of Affiliate and by Country of Affiliate," October 19, 2018; 5.1, "Services Supplied to U.S. Persons by Foreign MNEs through Their MOUSAs, by Industry of Affiliate and by Country of UBO," October 19, 2018. (corresponds to [figure 1.5](#))

MNEs = multinational enterprises; MOFAs = majority-owned foreign affiliates; MOUSA = majority-owned U.S. affiliate; UBO = ultimate beneficial owner.

Notes: Manufacturing includes ancillary services provided by goods manufacturers. Beginning in the 2018 *Recent Trends in U.S. Services Trade* report, software publishing was reallocated from "Other Services" to "Electronic Services" to better reflect the industry composition.

Therefore, electronic services data cannot be directly compared in USITC reports published before 2018. "Other" includes mining, agriculture, and other services.

**Table B.6** Franchising fees: U.S. cross-border trade 2013–17 (million dollars)

Year	Exports	Imports
2013	6,094	189
2014	5,784	174
2015	5,256	76
2016	5,333	61
2017	5,283	43

Source: USDOC, BEA, table 2.1, "U.S. Trade in Services, by Type of Service" (accessed March 19, 2019) (corresponds to [figure 1.6](#)).

**Table B.7** Franchising fees: U.S. exports by region, 2017 (million dollars)

Country	Exports
Europe	1,595
Asia and Pacific	1,382
Canada	1,271
Latin America	782
Africa	128
Middle East	125
Total value	5,283

Source: USDOC, BEA, table 2.1, "U.S. Trade in Services, by Type of Service" (accessed March 19, 2019) (corresponds to [figure 1.7](#)).

**Table B.8** U.S. distribution services: Exports and imports, by industry, 2017 (billion dollars)

Service Industry	Exports	Imports
Maritime transport services	18.7	37.1
Other modes of transport	4.7	3.9
Trade-related services	1.4	1.7
Logistics services	24.6	21.9
Total distribution services	49.4	64.6

Source: USDOC, BEA, table 2.1, "U.S. Trade in Services, by Type of Service," October 19, 2018 (corresponds to [figure 2.1](#)).

**Table B.9** U.S. distribution services: Affiliate sales and affiliate purchases by industry, 2016 (billion dollars)

	Services supplied by foreign affiliates of U.S. firms	Purchases from U.S. affiliates of foreign firms
Wholesale	189.0	227.7
Retail	60.9	108.6
Transport and warehousing	45.0	71.7
Total value	294.8	407.9

Source: USDOC, BEA, 4.1, "Services Supplied to Foreign Persons by U.S. MNEs through Their MOFAs, by Industry of Affiliate and by Country of Affiliate," October 19, 2018; 5.1, "Services Supplied to U.S. Persons by Foreign MNEs through Their MOUSAs, by Industry of Affiliate and by Country of UBO," October 19, 2018.

MNEs = multinational enterprises; MOFAs = majority-owned foreign affiliates; MOUSA = majority-owned U.S. affiliate; UBO = ultimate beneficial owner. (corresponds to [figure 2.2](#)).

**Table B.10** Logistics services: U.S. cross-border trade, 2013–17 (billion dollars)

Year	Exports	Imports
2013	23.9	18.1
2014	24.0	18.8
2015	23.0	20.4
2016	22.8	20.7
2017	24.6	21.9

Source: USDOC, BEA, table 2.2, "U.S. Trade in Services, by Type of Services and Country or Affiliation," October 19, 2018 (corresponds to [figure 3.1](#)).

**Table B.11** Logistics services: U.S. cross-border trade by country, 2017 (billion dollars)

Country/region	Exports	Import
United Kingdom	4.2	2.4
Germany	1.7	1.8
Japan	1.5	2.3
China	1.3	1.6
Brazil	1.1	0.5
Africa and the Middle East	2.2	1.2
Other Asia-Pacific	4.1	4.2
Other Western Hemisphere	3.7	3.2
Other Europe	4.9	4.8
Total value	24.6	21.9

Source: USDOC, BEA, table 2.2, "U.S. Trade in Services, by Type of Services and Country or Affiliation," October 19, 2019 (corresponds to [figure 3.2](#)).

**Table B.12** Logistics services: U.S. cross-border exports and trade balance by major partner, 2017 (billion dollars)

	Exports	Imports	Trade balance
United Kingdom	4.2	2.4	1.8
Germany	1.7	1.8	-0.1
Japan	1.5	2.3	-0.7
China	1.3	1.6	-0.3
Brazil	1.1	0.5	0.6

Source: USDOC, BEA, International Data, International Services, table 2.2, "U.S. Trade in Services, by Type of Services and Country or Affiliation" (accessed February 19, 2019) (corresponds to [figure 3.3](#)).

**Table B.13** Logistics services: U.S. affiliate sales and affiliate purchases, 2012–16 (billion dollars)

Year	Services supplied by foreign affiliates of U.S. firms	Services purchased from U.S. affiliates of foreign firms
2012	51.4	44.5
2013	54.6	47.3
2014	70.3	50.9
2015	69.5	45.9
2016	64.6	40.8

Source: USDOC, BEA, 4.1, "Services Supplied to Foreign Persons by U.S. MNEs through Their MOFAs, by Industry of Affiliate and by Country of Affiliate," October 19, 2018; 5.1, "Services Supplied to U.S. Persons by Foreign MNEs through Their MOUSAs, by Industry of Affiliate and by Country of UBO," October 19, 2018.

MNEs = multinational enterprises; MOFAs = majority-owned foreign affiliates; MOUSA = majority-owned U.S. affiliate; UBO = ultimate beneficial owner. (corresponds to [figure 3.4](#)).

Note: Affiliate sales in 2014 may not be directly comparable to sales in 2013 (see box 3.3).

**Table B.14** Maritime transport services: U.S. cross-border trade, 2013–17 (billion dollars)

Year	Exports	Imports
2013	17.3	36.3
2014	18.2	36.3
2015	18.0	37.3
2016	18.1	35.1
2017	18.7	37.1

Source: USDOC, BEA, table 2.2, "U.S. Trade in Services, by Type of Services and Country or Affiliation," October 19, 2018 (corresponds to [figure 4.1](#)).

**Table B.15** Maritime transport services: U.S. cross-border exports by country, 2017 (billion dollars)

Country/region	Exports
Japan	2.5
Taiwan	1.7
Germany	1.5
South Korea	1.3
Switzerland	1.1
China	1.1
Middle East	0.7
Other Western Hemisphere and Africa	2.0
Other Asia-Pacific	1.9
Other Europe	5.0
Total value	18.7

Source: USDOC, BEA, International Data, International Services, table 2.2, "U.S. Trade in Services, by Type of Services and Country or Affiliation," October 19, 2018 (corresponds to [figure 4.2](#)).

Notes: Data for Africa are suppressed for both imports and exports. The category "Other Western Hemisphere and Africa" contains all suppressed data.

**Table B.16** Maritime transport services: U.S. maritime exports in freight and port services, and trade balance, 2017 (million dollars)

Country	Sea freight		Maritime total	Maritime total	Maritime trade
	exports	Sea port exports	exports	imports	balance
Japan	306	2,165	2,471	5,172	-2,701
Taiwan	108	1,568	1,676	2,678	-1,002
Germany	109	1,428	1,537	2,715	-1,178
South Korea	68	1,233	1,301	2,482	-1,181
Switzerland	4	1,078	1,082	1,940	-858

Source: USDOC, BEA, table 2.2, "U.S. Trade in Services, by Type of Services and Country or Affiliation," October 19, 2018 (corresponds to [figure 4.3](#)).

**Table B.17** Maritime transport services: U.S. affiliate sales and affiliate purchases, 2012–16 (billion dollars)

Year	Services supplied by foreign affiliates of U.S. firms	Services purchased from U.S. affiliates of foreign firms
2012	8.5	6.3
2013	8.5	6.6
2014	9.8	6.2
2015	9.9	4.7
2016	7.0	4.1

Source: USDOC, BEA, 4.1, "Services Supplied to Foreign Persons by U.S. MNEs through Their MOFAs, by Industry of Affiliate and by Country of Affiliate," October 19, 2018; 5.1, "Services Supplied to U.S. Persons by Foreign MNEs through Their MOUSAs, by Industry of Affiliate and by Country of UBO," October 19, 2018.

MNEs = multinational enterprises; MOFAs = majority-owned foreign affiliates; MOUSA = majority-owned U.S. affiliate; UBO = ultimate beneficial owner. (corresponds to [figure 4.4](#)).

Note: Affiliate sales in 2014 may not be directly comparable to sales in 2013 (see box 4.3).

**Table B.18** Leading global retail markets, 2018 (trillion dollars)

Country	Sales revenue
United States	4.1
China	3.7
India	1.2
Japan	1.0
Germany	0.7
France	0.6
United Kingdom	0.5
All other	8.3
Total value	20.1

Source: Edge by Ascential data, email message to USITC staff, March 14, 2019 (fee required) (corresponds to [figure 5.1](#)).

**Table B.19** Total retail and e-commerce growth in leading global markets, 2014–18

Country	Total retail growth (percent)	E-commerce growth (percent)
United States	12	54
China	29	181
India	27	237
Japan	-2	37
Germany	0	32
France	-5	49
United Kingdom	-12	33
Russia	-29	31
Italy	-5	135
Brazil	-33	43

Source: Edge by Ascential, email message to USITC staff, March 14, 2019 (fee required) (corresponds to [figure 5.2](#)).

**Table B.20** Leading e-commerce markets by sales, 2018 (billion dollars)

Country	Total e-commerce sales
China	722
United States	502
Japan	125
United Kingdom	84
Germany	74
France	71
Italy	49
Russia	25
Brazil	22
India	18

Source: Edge by Ascential, email message to USITC staff, March 14, 2019 (fee required) (corresponds to [figure 5.3](#)).

**Table B.21** Estimated cross-border business-to-consumer e-commerce exports, 2017 (billion dollars)

Country	Exports
United States	102
China	79
United Kingdom	31
Japan	18
Germany	15
All other	167
Total value	412

Source: UNCTAD, "Global E-commerce Sales Surged to 29 Trillion," March 29, 2019 (corresponds to [figure 5.4](#)).

**Table B.22** Retail Services: U.S. affiliate sales and affiliate purchases, 2012–2016 (billion dollars)

Year	Services supplied by foreign affiliates of U.S. firms	Services purchased from U.S. affiliates of foreign firms
2012	100.2	44.5
2013	104.6	46.4
2014	115.0	52.1
2015	107.4	54.3
2016	108.6	60.9

Source: USDOC, BEA, 4.1, "Services Supplied to Foreign Persons by U.S. MNEs through Their MOFAs, by Industry of Affiliate and by Country of Affiliate," October 19, 2018; 5.1, "Services Supplied to U.S. Persons by Foreign MNEs through Their MOUSAs, by Industry of Affiliate and by Country of UBO," October 19, 2018.

MNEs = multinational enterprises; MOFAs = majority-owned foreign affiliates; MOUSA = majority-owned U.S. affiliate; UBO = ultimate beneficial owner. (corresponds to [figure 5.5](#)).

Note: Affiliate sales in 2014 may not be directly comparable to sales in 2013 (see box 5.2).

**Table B.223** Retail Services: U.S. affiliate sales and affiliate purchases by country, 2016 (billion dollars)

Services supplied by foreign affiliates of U.S. firms		Services purchased from U.S. affiliates of foreign firms	
Country		Country	
United Kingdom	23.7	Canada	12.0
Canada	23.2	United Kingdom	10.1
Mexico	9.1	Netherlands	10.0
Germany	6.8	Germany	8.5
China	6.3	Japan	6.7
All other	39.6	All other	13.6
<b>Total value</b>	<b>108.6</b>		<b>60.9</b>

Source: USDOC, BEA, 4.1, "Services Supplied to Foreign Persons by U.S. MNEs through Their MOFAs, by Industry of Affiliate and by Country of Affiliate," October 19, 2018; 5.1, "Services Supplied to U.S. Persons by Foreign MNEs through Their MOUSAs, by Industry of Affiliate and by Country of UBO," October 19, 2018.

MNEs = multinational enterprises; MOFAs = majority-owned foreign affiliates; MOUSA = majority-owned U.S. affiliate; UBO = ultimate beneficial owner. (corresponds to [figure 5.6](#)).

