RITA *Bureau of Transportation Statistics*

Freight Transportation: Global Highlights

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U.S. Department of Transportation

Research and Innovative Technology Administration

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Introduction

To move large quantities of goods across the country and around the world, Americans depend on the Nation's freight transportation system—a vast network of roads, bridges, rail tracks, airports, seaports, navigable waterways, pipelines, and equipment. Today, U.S. households can buy fresh fruits and vegetables in mid-winter, expect fast and reliable next-day deliveries of Internet purchases, and use electronic appliances manufactured thousands of miles away, often in other countries. Because economic activities worldwide have become more integrated and globalized, more goods produced by U.S. factories and farms are bound for export, and imports originate from more than 200 countries. This pace of trade Americans have become accustomed to is made possible by the complex intermodal transportation network that blankets the country and links the United States with world markets.

The movement of international freight among nations relies on a complex array of long-distance transportation services. The process involves many participants, including shippers, commercial for-hire carriers, third-party logistics providers, and consignees. Moreover, global trade depends on seaport and airport services to move large volumes of merchandise over long distances via a variety of transportation modes. The interaction of these services and participants is vital to successful global trade.

In 2008, U.S. carriers received $22 billion for commercial freight services provided to businesses in other countries. U.S. seaports and airports received $36 billion for port services. U.S. firms paid $45 billion to foreign carriers for freight services and $27 billion to foreign ports for port services (USDOC BEA 2009).

ABOUT THIS REPORT

This report provides a snapshot of freight transportation activity from a global perspective, highlighting physical characteristics and industry output for the U.S. and other leading world economies. The report gives a broad overview of trends in the movement of international freight among the top 25 world economies, measured by 2008 gross domestic product (GDP). It presents recent statistics on freight activity by leading global ocean and air carriers, seaports, and airports engaged in international freight services.

The report also presents an overview of major trends in U.S. international goods trade, as well as trends in U.S. freight and port services. It further examines how U.S. international freight activities compare with those of the world's top economies. The report concludes with a brief discussion of the key factors that are driving change in U.S. and global merchandise trade and freight activities.

OVERVIEW

The United States has the largest freight transportation system in the world, an extensive physical network of infrastructure and entities that provide transportation services:

- 4 million miles of public roads,
- 140,000 miles of railroad tracks operated by freight carriers,
- 25,000 miles of navigable waterways,
- 9,800 coastal and inland waterway facilities, and
- 5,200 public-use airports (USDOT RITA BTS 2009a).

The U.S. transportation network serves more than 300 million people and 7.5 million business establishments across 3.8 million square miles of land. Moving raw materials and finished goods between production and consumption centers, this freight network is a vital component of commerce in the United States.

The United States is the world's largest economy and leading importing nation, accounting for 23 percent of world GDP and 13 percent of the value of world merchandise imports in 2008.[1] Before 2002, the United States was the world's largest merchandise exporter. Germany became the leading exporting nation that year, and China moved to the top position in 2008.[2]

Despite recent setbacks caused by the 2008 U.S. and global economic downturn, the movement of freight globally shows a long-term upward trend. From 1998 to 2008, world merchandise freight exports nearly tripled in value from $5.4 trillion to $16 trillion. During this period, U.S. freight exports doubled from $682 billion to $1.3 trillion (USDOC CB FTD 2009). The rising trend in world exports indicates the strong interconnectedness among countries and the increased globalization of economic activities that generate freight movements.

While virtually all countries export goods and the United States receives exports from more than 200 countries, the overwhelming majority of global exports are concentrated in only a few countries. In 2008, the concentration of world exports among the top trading nations was significant:

- more than half (51 percent) of the exports were from 10 countries,
- three-quarters (76 percent) were from 25 countries, and
- about 91 percent were from the top 50 countries.

[1] This report analyzes trends in U.S. and global international merchandise trade and freight in terms of value because aggregate data for both exports and imports by weight are not available for all modes of transportation.

[2] In this report, China refers to the People's Republic of China. Data for Hong Kong are reported separately.

OVERALL TRENDS

Freight is generated by economic activity and the freight industry tends to respond to fluctuations in this activity and the resultant level of trade among nations. The 2008 global economic downturn caused by the collapse of major financial markets resulted in declines in U.S. merchandise trade with partners around the world. From mid-2008 to early 2009, as the U.S. and global economies struggled, world trade sagged and the movement of international goods by service providers slowed. By the second quarter of 2009, demand for U.S. and global freight shipments had plummeted. Financial liquidity problems and fluctuations in energy prices affected all modes of freight transportation and all sectors of the freight industry.

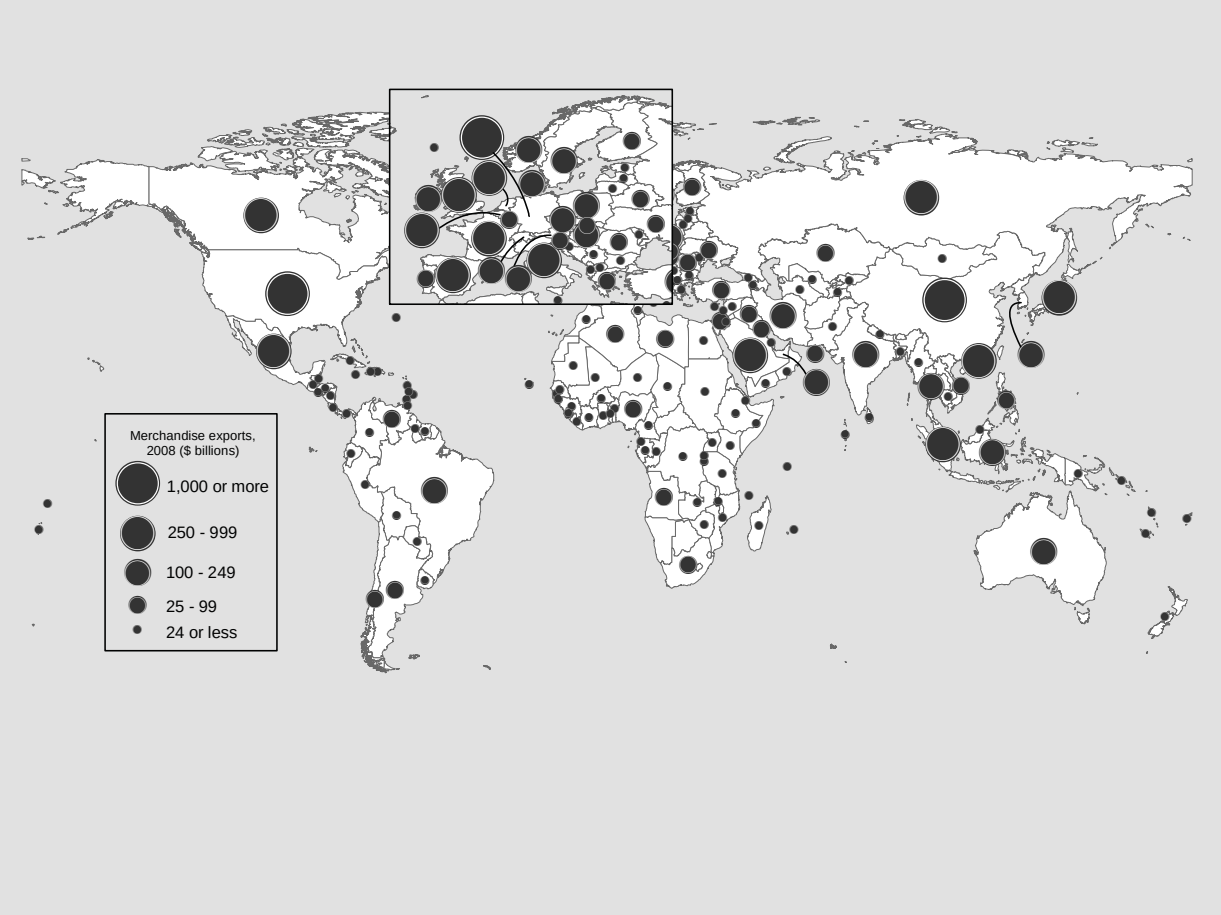
Before 2008, the global freight industry's primary challenge was growth in merchandise trade and the freight flows that strained system capacity. In 2009, declines in freight flows transformed the major challenge into the management of excess capacity. Shippers, carriers, and facility operators in the United States and around the world were forced to contract their freight operations in response to reduced trade volumes. By the end of September 2009, an estimated 548 container vessels with a carrying capacity of 1.3 million 20-foot equivalent units (TEUs) were idled at seaports worldwide as a result of the decline in global demand for containership services (AXS-Alphaliner 2009a).

The slowdown in economic activity in the United States and globally in 2008 and the subsequent reduction in U.S. consumer demand also affected international air cargo traffic and capacity. Global international air cargo, measured in freight ton-kilometers, fell 23 percent from 2007 (IATA 2009a).[3] During the second half of 2008, air carriers around the world struggled with excess capacity and lower revenues. In particular, carriers were negatively affected by global reductions in oil prices. In principle, declining oil prices should have resulted in lower fuel costs for the airlines, but fuel-hedging contracts taken out at the start of the year when prices were much higher resulted in unexpected financial losses (IATA 2009a).[4] By mid-2009, overall demand for air cargo and maritime freight had slowed because of weak economic activity and distressed financial markets.

[3] This report uses metric ton-kilometers instead of ton-miles to describe trends in air cargo because it is the standard industry unit of measure when comparing air freight activity among countries. Most countries report their air cargo data in metric ton-kilometers.

[4] Fuel hedging can negatively impact an airline if the price of jet fuel falls below the contracted price for future fuel deliveries, forcing the carrier to compete with those airlines purchasing fuel at the market rate. By mid-2008, crude oil sold for about $140 a barrel. Prices declined to less than $50 a barrel by end of the year as global economic activities slowed. Consequently, carriers who hedged in anticipation of higher prices recorded major losses in the fourth quarter of 2008.

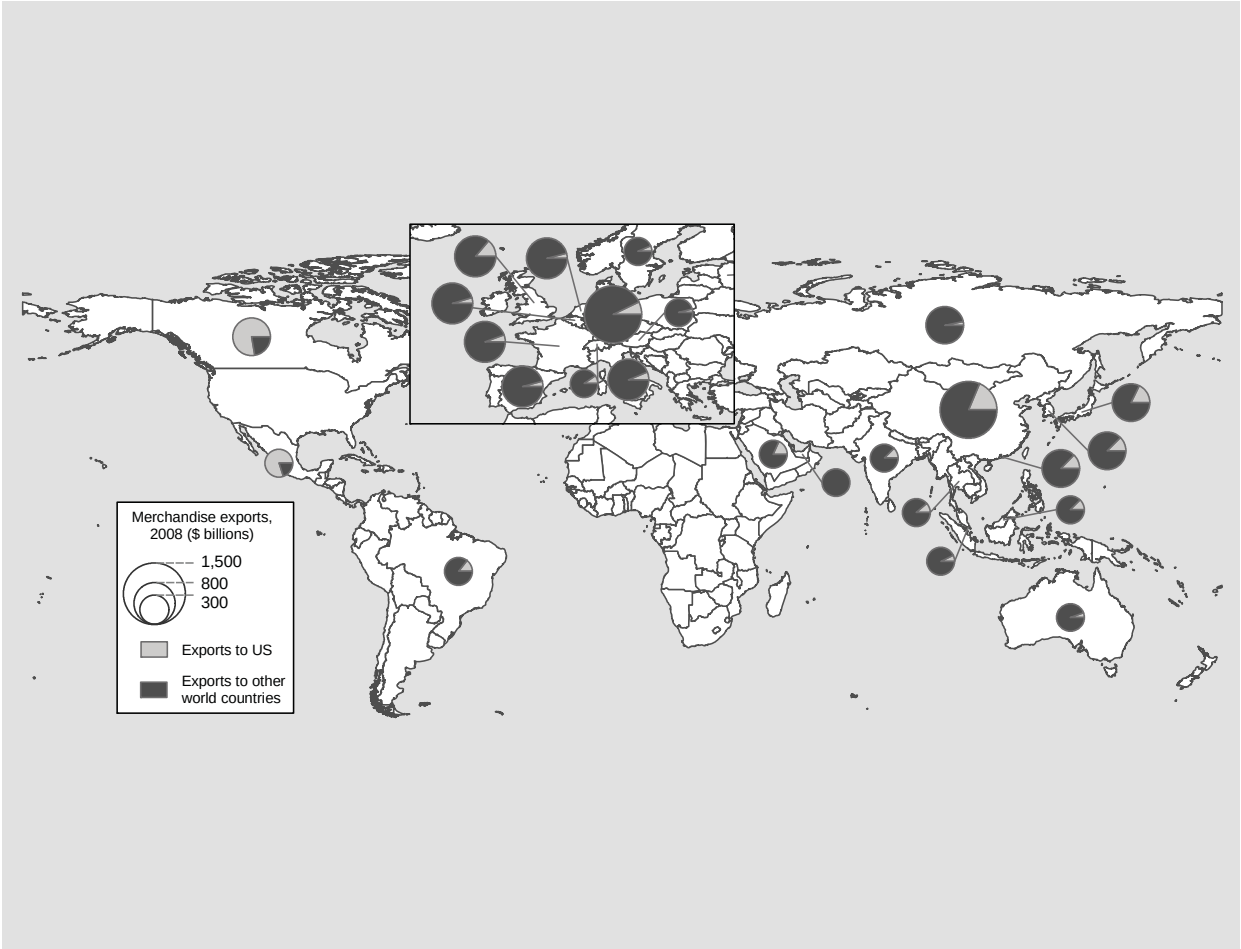
Figure 1. Value of World Goods Exports by Country: 2008



SOURCES: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from various sources. **United States**—U.S. Department of Commerce, U.S. Census Bureau, Foreign Trade Division, available at www.census.gov/foreign-trade/www as of May 12, 2009. **World**—International Monetary Fund, Direction of Trade Statistics. Available at www.imfstatistics.org/dot/ as of Sept. 14, 2009.

- The global freight transportation infrastructure handles large volumes of cargo. In 2008, more than $16 trillion of exported freight was transported worldwide. Maritime vessels, airplanes, trucks, and trains transported these goods from production centers to consumption markets.
- In 2008, the top three global merchandise exporters—China, Germany, and the United States—accounted for 26 percent of the value of total worldwide freight exports.

Figure 2. Goods Exports From Top Economies and Percent Share to the United States: 2008



SOURCES: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from various sources. **United States**—U.S. Department of Commerce, U.S. Census Bureau, Foreign Trade Division, available at www.census.gov/foreign-trade/www as of May 12, 2009. **World**—International Monetary Fund, Direction of Trade Statistics. Available at www.imfstatistics.org/dot/ as of Sept. 14, 2009.

- In 2008, about 13 percent of world freight exports from more than 200 countries ($2.1 trillion out of $16 trillion) were bound for the United States. Of this amount, 55 percent was oceanborne cargo, 20 percent was air cargo, and about 25 percent was carried by land modes of transportation (USDOC CB FTD 2009).
- For the United States' top three trading partners, the proportion of their exports bound to the United States were:
  - Canada, 78 percent;
  - China, 19 percent; and
  - Mexico, 80 percent.

International Overview and Physical System

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A significant proportion of global freight originates from the world's leading economies. In 2008, the world's top five economies by Gross Domestic Product GDP—the United States, Japan, China, Germany, and France—together accounted for:

- 35 percent of global goods exports ($5.6 trillion out of $16 trillion),
- 50 percent of global GDP ($30.1 trillion out of $60.9 trillion), and
- 28 percent of world population (1.9 billion out of 6.8 billion people).[5]

[5] China accounted for more than 1.3 billion people.

OVERVIEW OF LEADING ECONOMIES

Table 1. World's Leading Economies by Gross Domestic Product: 1995, 2000, and 2008 (Ranked by 2008 GDP)

Rank in 1995	Rank in 2000	Rank in 2008	Country	Billions of current U.S. $			Share of global GDP (percent)		
				1995	2000	2008	1995	2000	2008
			World	29,633	31,972	60,863	100.0	100.0	100.0
1	1	1	United States	7,398	9,817	14,265	25.0	30.7	23.4
2	2	2	Japan	5,278	4,669	4,924	17.8	14.6	8.1
8	6	3	China	728	1,198	4,402	2.5	3.7	7.2
3	3	4	Germany	2,525	1,906	3,668	8.5	6.0	6.0
4	5	5	France	1,572	1,333	2,866	5.3	4.2	4.7
5	4	6	United Kingdom	1,157	1,481	2,674	3.9	4.6	4.4
6	7	7	Italy	1,127	1,101	2,314	3.8	3.4	3.8
17	19	8	Russia	313	260	1,677	1.1	0.8	2.8
9	11	9	Spain	597	582	1,612	2.0	1.8	2.6
7	9	10	Brazil	770	644	1,573	2.6	2.0	2.6
10	8	11	Canada	591	725	1,511	2.0	2.3	2.5
14	13	12	India	354	462	1,210	1.2	1.4	2.0
16	10	13	Mexico	314	629	1,088	1.1	2.0	1.8
13	14	14	Australia	371	390	1,011	1.3	1.2	1.7
11	12	15	South Korea	539	534	947	1.8	1.7	1.6
12	15	16	The Netherlands	419	386	869	1.4	1.2	1.4
23	18	17	Turkey	228	266	729	0.8	0.8	1.2
31	25	18	Poland	139	171	526	0.5	0.5	0.9
24	28	19	Indonesia	223	166	512	0.8	0.5	0.8
18	22	20	Belgium	276	233	506	0.9	0.7	0.8
15	20	21	Switzerland	316	250	493	1.1	0.8	0.8
21	21	22	Sweden	254	246	485	0.9	0.8	0.8
30	24	23	Saudi Arabia	142	189	482	0.5	0.6	0.8
28	27	24	Norway	149	169	456	0.5	0.5	0.7
22	23	25	Austria	239	192	415	0.8	0.6	0.7

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from International Monetary Fund, World Economic Outlook Database, April 2009, available at www.imf.org as of Sept. 14, 2009.

- In 2008, the United States remained the world's leading economy, a position that directly reflects the level and composition of U.S. international freight transportation compared to that of the other large economies. China ranked third, a position that indicates its trade activity with the United States and freight shipments between the two countries.

Table 2. Geographic Overview of World's Top Economies: 2008

Ranked by population	National population (millions, July 2009 est.)	Population density (number of people per square kilometer)	Urban population (% of total national population, 2008)	Land area (thousands of square kilometers)
China	1,339	140	43	9,570
India	1,166	392	29	2,973
United States	307	34	82	9,162
Indonesia	240	133	52	1,812
Brazil	199	23	86	8,459
Russia	140	9	73	16,378
Japan	127	349	66	364
Mexico	111	57	77	1,944
Germany	82	236	74	349
Turkey	77	100	69	770
France	64	116	77	550
United Kingdom	61	253	90	242
Italy	58	198	68	294
South Korea	49	501	81	97
Spain	41	81	77	499
Poland	38	126	61	304
Canada	33	4	80	9,094
Saudi Arabia	29	13	82	2,150
Netherlands	17	493	82	34
Belgium	10	344	97	30
Sweden	9	22	85	410
Austria	8	100	67	82
Australia	8	0	89	21,263
Switzerland	8	190	73	40
Norway	5	15	77	304

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from Central Intelligence Agency, *Fact Book 2009*, available at www.cia.gov as of Sept. 20, 2009.

- The relatively larger area, lower population density, and higher urban population of the United States, in comparison to other countries, leads to relatively more freight activity. Freight must be transported greater distances as goods are shipped from production centers to consumers.

Table 3. Extent of Physical Transportation Systems in World's Top Economies: 2008

Ranked by total roadways	Roadways		Railways (km)	Waterways (km)	Pipelines (km)	Airports (number)
	Total (km)	Paved roads (km)				
United States	6,465,799	4,209,835	226,427	41,009	793,285	5,146
India	3,316,452	1,517,077	63,327	14,500	22,773	251
China	1,930,544	1,575,571	77,834	110,000	58,082	413
Brazil	1,751,868	96,353	28,857	50,000	19,289	734
Japan	1,196,999	949,101	23,506	1,770	4,082	144
Canada	1,042,300	415,600	46,688	636	98,544	514
France	951,500	951,500	29,213	8,501	22,804	295
Russia	933,000	754,984	87,157	102,000	246,855	596
Australia	812,972	341,448	37,855	2,000	30,604	462
Spain	681,224	681,224	15,288	1,000	11,743	154
Germany	644,480	644,480	41,896	7,467	31,586	331
Italy	487,700	487,700	19,729	2,400	18,785	101
Turkey	426,951	177,500	8,697	1,200	11,191	103
Sweden	425,300	139,300	11,633	2,052	786	249
Poland	423,997	295,356	22,314	3,997	15,792	126
United Kingdom	398,366	398,366	16,454	3,200	12,759	312
Indonesia	391,009	216,714	8,529	21,579	13,752	669
Mexico	356,945	178,473	17,516	2,900	40,016	243
Saudi Arabia	221,372	47,529	1,392	U	8,662	215
Belgium	152,256	119,079	3,233	2,043	2,023	42
Netherlands	135,470	113,018	2,811	6,215	4,897	27
Austria	107,262	107,262	6,399	358	3,541	55
South Korea	103,029	80,642	3,381	1,608	2,250	113
Norway	92,946	72,033	4,114	1,577	95	98
Switzerland	71,298	71,298	4,888	65	1,763	66

KEY: U = Data are unavailable.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from Central Intelligence Agency, *Fact Book 2009*, available www.cia.gov as of Sept. 20, 2009.

- The United States has the world's most extensive freight transportation network when measured in kilometers of public-use paved roads, railways, waterways, and pipelines, and number of airports.

Table 4. Intensity of Physical Transportation Systems of World's Top Economies: 2008

Ranked by total road miles per capita	Population density (number of people per square kilometer)	Total roadways		Paved roadways	
		Kilometers per capita (1,000 persons)	Roadway kilometers per square kilometer land area	Kilometers per capita (1,000 persons)	Roadway kilometers miles per square kilometer land area
Australia	0.4	105.8	0.04	44.4	0.02
Sweden	22	46.9	1.04	15.4	0.34
Canada	4	31.1	0.11	12.4	0.05
United States	34	21.0	0.71	13.7	0.46
Norway	15	19.9	0.31	15.5	0.24
Spain	81	16.8	1.37	16.8	1.37
France	116	14.9	1.73	14.9	1.73
Belgium	344	14.6	5.03	11.4	3.93
Austria	100	13.1	1.30	13.1	1.30
Poland	126	11.0	1.39	7.7	0.97
Japan	349	9.4	3.28	7.5	2.60
Switzerland	190	9.4	1.78	9.4	1.78
Brazil	23	8.8	0.21	0.5	0.01
Italy	198	8.4	1.66	8.4	1.66
Netherlands	493	8.1	4.00	6.8	3.33
Germany	236	7.8	1.85	7.8	1.85
Saudi Arabia	13	7.7	0.10	1.7	0.02
Russia	9	6.7	0.06	5.4	0.05
United Kingdom	253	6.5	1.65	6.5	1.65
Turkey	100	5.6	0.55	2.3	0.23
Mexico	57	3.2	0.18	1.6	0.09
India	392	2.8	1.12	1.3	0.51
Korea	501	2.1	1.06	1.7	0.83
Indonesia	133	1.6	0.22	0.9	0.12
China	140	1.4	0.20	1.2	0.16

NOTE: In this report, intensity is defined as a ratio of the extent of the physical transportation system to the geographical area it covers and to population size. It indicates the relative concentration of the infrastructure and the size that is available for use by the population.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from Central Intelligence Agency, *Fact Book 2009*, available at www.cia.gov as of Sept. 20, 2009.

- When road networks are viewed in relation to total land area, countries such as Japan, the United Kingdom, and France have at least twice as many kilometers of roadways per square kilometer of land area as the United States. However, if road networks are viewed in relation to population, those three countries have fewer roadway kilometers per person than the United States—the result of the lower population density and vast geographic expanse of the United States.

Table 5. U.S. Share of World Gross Domestic Product: 1990–2008
(Billions of current U.S. $)

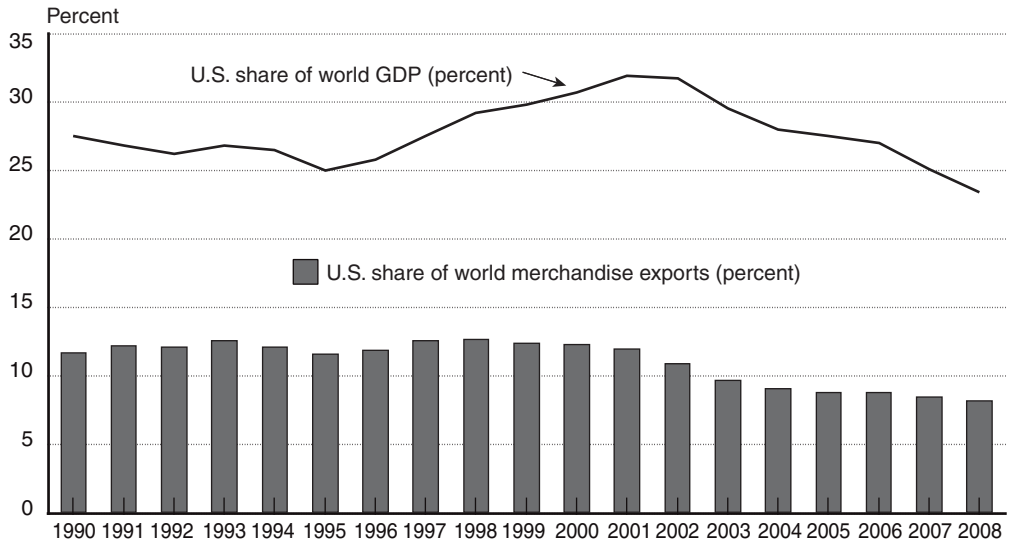
Year	World GDP	United States GDP	U.S. share of world GDP (percent)
1990	21,137	5,803	27.5
1991	22,386	5,996	26.8
1992	24,235	6,338	26.2
1993	24,860	6,657	26.8
1994	26,695	7,072	26.5
1995	29,633	7,398	25.0
1996	30,353	7,817	25.8
1997	30,240	8,304	27.5
1998	29,970	8,747	29.2
1999	31,103	9,268	29.8
2000	31,972	9,817	30.7
2001	31,744	10,128	31.9
2002	33,052	10,470	31.7
2003	37,140	10,961	29.5
2004	41,809	11,686	28.0
2005	45,183	12,422	27.5
2006	48,882	13,178	27.0
2007	54,999	13,808	25.1
2008	60,863	14,265	23.4

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from International Monetary Fund, World Economic Outlook Database, April 2009, available at www.imf.org, as of Sept. 14, 2009.

- Trends in global economic activities directly affect the volume of merchandise trade and worldwide movement of freight. The growing reliance on global supply chains means the effect of an economic downturn is not limited to exporting and importing nations. Other nations that provide freight and port services to transport traded goods are also affected.

- Between 2001 and 2008, the U.S. share of world GDP declined as the share of emerging and developing economies grew. Many other factors contributed to this trend, including foreign currency exchange rates, business cycles, balance of payments, and central banks policies—all of which affect the value of internationally traded goods.

Figure 3. U.S. Share of World Gross Domestic Product and Merchandise Exports: 1990–2008



SOURCES: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from various sources: **GDP**–International Monetary Fund, World Economic Outlook Database, April 2009. Available at www.imf.org/external/data.htm as of Sept. 14, 2009. **Trade**—International Monetary Fund, Direction of Trade Statistics. Available at www.imfstatistics.org/dot/ as of Sept. 14, 2009.

- The U.S. share of world GDP and merchandise exports increased from 1995 to 2001 during the "dot-com boom" period of U.S. economic expansion. Since 2001, the expansion of developing economies in Asia—notably China's economy—contributed to the decline of the U.S. share of world GDP and merchandise exports.

- Top goods exports from the United States include civilian aircraft and parts, motor vehicles and parts, electrical equipment, electronics, and medical equipment (USDOC CB FTD 2009).

Table 6. World's Top Merchandise Exporting Countries and Their Exports to the United States: 2008 (Millions of current U.S. $)

Rank in 2008	Country	Total exports	Share of world total exports (percent)	Exports to United States	Exports to U.S. as share of country's total (percent)
NA	World	16,044,000	100.0	2,063,720	12.9
1	China	1,469,280	9.2	273,129	18.6
2	Germany	1,465,200	9.1	104,728	7.1
3	United States	1,300,190	8.1	NA	NA
4	Japan	783,149	4.9	139,022	17.8
5	Netherlands	633,842	4.0	24,837	3.9
6	France	606,623	3.8	35,013	5.8
7	Italy	539,933	3.4	33,905	6.3
8	Belgium	477,159	3.0	23,095	4.8
9	United Kingdom	460,693	2.9	63,765	13.8
10	Canada	456,485	2.8	354,687	77.7
11	Russia	456,075	2.8	15,285	3.4
12	Korea	426,763	2.7	46,501	10.9
13	Hong Kong	362,985	2.3	46,290	12.8
14	Singapore	339,414	2.1	24,196	7.1
15	Mexico	291,343	1.8	233,523	80.2
16	Saudi Arabia	285,928	1.8	51,823	18.1
17	Spain	267,581	1.7	11,229	4.2
18	Malaysia	224,490	1.4	28,321	12.6
19	Switzerland	200,065	1.2	19,221	9.6
20	Brazil	197,067	1.2	28,558	14.5
21	India	191,926	1.2	24,483	12.8
22	Australia	185,693	1.2	10,290	5.5
23	Sweden	184,000	1.1	12,091	6.6
24	Austria	181,737	1.1	7,802	4.3
25	Thailand	173,235	1.1	19,754	11.4
	Rest of the world	3,883,144	24.2	432,171	11.1

KEY: NA= Not applicable.

NOTE: Hong Kong is a special administrative region of China, but is separate from China in U.S. Foreign Trade Statistics.

SOURCES: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from various sources. **United States**—U.S. Department of Commerce, U.S. Census Bureau, Foreign Trade Division, available at www.census.gov as of May 12, 2009. **World**—International Monetary Fund, Direction of Trade Statistics. Available at www.imfstatistics.org as of Sept. 14, 2009.

- In 2008, the United States was the world's third-ranked exporting nation, behind China and Germany. U.S. goods exports accounted for 8 percent of the value of worldwide exports.
- Among the world's top exporting nations, Canada and Mexico ranked 10th and 15th, respectively.
- The majority of exports from Canada and Mexico continue to be bound for the United States. Most enter by surface modes of transportation.
- The United States received nearly one-fifth (19 percent) of the exports from China. The top exports from China to the United States include finished goods such as computer equipment, electronics, toys, apparel, furniture, and other household goods.

Table 7. World's Top Merchandise Importing Countries and Their Imports From the United States: 2008 (Millions of current U.S. $)

Rank in 2008	Country	Total imports	Share of world total imports (percent)	Imports from United States	Imports from U.S. as share of country's total (percent)
NA	World	16,708,900	100.0	1,340,520	8.0
1	United States	2,166,020	13.0	NA	NA
2	Germany	1,204,750	7.2	50,399	4.2
3	China	1,196,750	7.2	80,723	6.7
4	Japan	761,803	4.6	78,974	10.4
5	France	706,670	4.2	30,274	4.3
6	United Kingdom	634,542	3.8	55,192	8.7
7	Netherlands	573,758	3.4	43,368	7.6
8	Italy	556,328	3.3	17,355	3.1
9	Belgium	470,194	2.8	26,112	5.6
10	Canada	449,077	2.7	235,479	52.4
11	South Korea	435,275	2.6	38,556	8.9
12	Spain	403,045	2.4	13,893	3.4
13	Hong Kong	388,947	2.3	19,541	5.0
14	Mexico	339,464	2.0	166,468	49.0
15	Singapore	319,779	1.9	37,853	11.8
16	India	304,166	1.8	20,533	6.8
17	Russia	274,284	1.6	12,204	4.4
18	Brazil	229,877	1.4	34,233	14.9
19	Australia	211,111	1.3	25,346	12.0
20	Poland	205,148	1.2	2,973	1.4
21	Turkey	201,964	1.2	11,977	5.9
22	United Arab Emirates	190,203	1.1	17,324	9.1
23	Austria	184,501	1.1	3,306	1.8
24	Switzerland	183,002	1.1	10,612	5.8
25	Malaysia	181,851	1.1	14,543	8.0
	Rest of the world	3,936,391	23.6	293,284	7.5

KEY: NA= Not applicable.

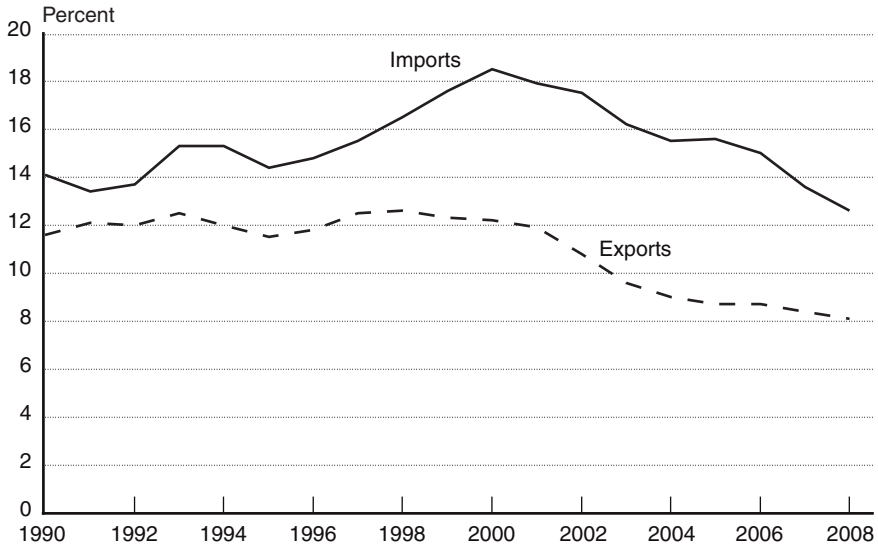
NOTE: Hong Kong is a special administrative region of China, but is separate from China in U.S. Foreign Trade Statistics.

SOURCES: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from various sources. **United States**—U.S. Department of Commerce, U.S. Census Bureau, Foreign Trade Division, available at www.census.gov as of May 12, 2009. **World**—International Monetary Fund, Direction of Trade Statistics, available at www.imfstatistics.org as of Sept. 14, 2009.

- The United States is the world's largest importer of goods. Crude oil, petroleum products, passenger motor vehicles, electrical machinery, and electronics are among the top imports by value (USDOC CB FTD 2009).
- Canada, Mexico, and Brazil's imports from the United States account for a large proportion of their overall imports.
- Over half of Canada's imports are from the United States. Canada's top imports from the United States include passenger cars, trucks, buses, vehicle parts, and civilian aircraft.
- Nearly half of Mexico's imports are from the United States. The top imports from the United States are motor vehicles and parts, electronic equipment and parts, electrical apparatus, and petroleum products.

- The United States accounted for about 15 percent of imports into Brazil, an important emerging economy. Top imports into Brazil from the United States include civilian aircraft and parts, computer equipment, and telecommunications equipment.
- In 2008, China imported less from the United States ($81 billion) than it exported to the United States ($273 billion). Its imports from the United States accounted for 7 percent of the country's total imports, and its exports to the United States accounted for 19 percent of its total exports.

Figure 4. U.S. Share of World Merchandise Trade: 1990–2008



SOURCES: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from various sources. **United States**—U.S. Department of Commerce, U.S. Census Bureau, Foreign Trade Division, available at www.census.gov/foreign-trade/index.html as of May 12, 2009. **World**—International Monetary Fund, Direction of Trade Statistics. Available at www.imfstatistics.org/dot/ as of Sept. 14, 2009.

- From 1990 to 2008, the U.S. share of the world's total imports was larger than its share of exports. During this period, the U.S. share of total exports fell faster than its share of the world's total imports (IMF 2009).

Worldwide Oceanborne and Air Freight

Stock photo

Businesses rely on all freight modes to transport international merchandise trade. Often, goods are moved by a multimodal combination of airplanes, maritime vessels, trains, and trucks.

Figure 5. Worldwide Oceanborne Cargo

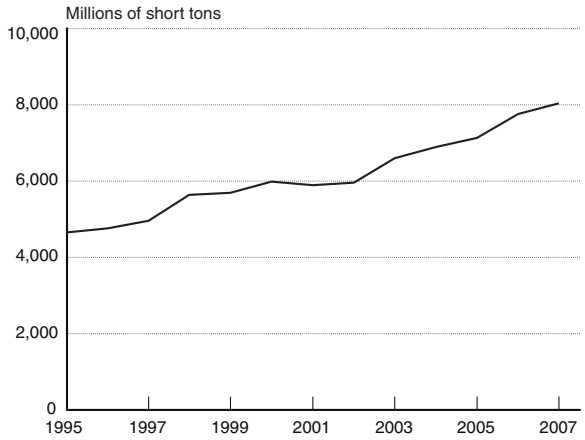
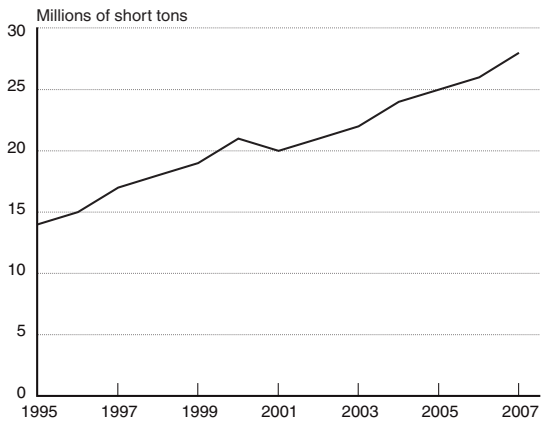


Figure 6. Worldwide Air Cargo

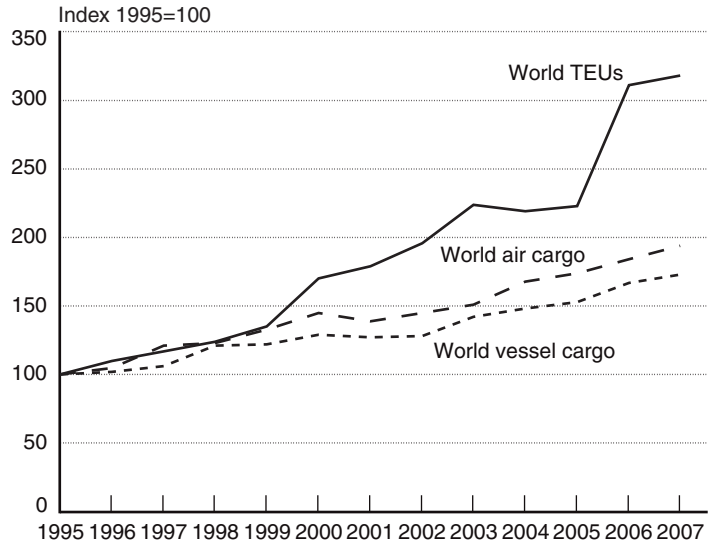


NOTE: Although figures 5 and 6 are not to the same scale, they both show nearly a doubling of cargo, by weight, over identical time spans.

SOURCES: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from various sources. **Oceanborne cargo**—United Nations Conference on Trade and Development, Review of Maritime Transport, various issues, available at www.unctad.org/rmt as of Oct. 3, 2009. **Air cargo**—International Civil Aviation Organization (ICAO), special tabulations, Sept. 28, 2009.

- In 2007, the most recent year for which data are available, the volume of worldwide international oceanborne cargo reached more than 8 billion tons. During the past decade, the annual average growth rate was about 3 percent.
- Worldwide international air cargo reached 28 million tons in 2007, growing at an annual average rate of 5 percent over the past decade. This growth trend reflects continuing globalization of economic activities and increasing adoption of inventory management strategies.
- By weight, the overwhelming majority of global overseas merchandise trade is carried by ocean vessel rather than airplane (excluding land modes of transportation). While generally ocean vessels transport low value-per-ton commodities (e.g., crude oil, grains, and coal), container vessels transport high value-per-ton manufactured goods of all kinds, such as automobiles, appliances, computer equipment, and apparel.

Figure 7. Worldwide Overseas Oceanborne and Air Cargo by Weight: 1995–2007



SOURCES: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from various sources. **Oceanborne cargo**–United Nations Conference on Trade and Development, Review of Maritime Transport, various issues, available at www.unctad.org/rmt as of Oct. 3, 2009. **Air cargo**–International Civil Aviation Organization (ICAO), special tabulations, Sept. 28, 2009.

- By weight, air carriers carry less global merchandise trade than ocean vessels. Air carriers transport high value-per-ton commodities. During the past decade, however, the tonnage of air cargo transported globally grew at a faster rate than total oceanborne cargo.
- Air cargo tonnage grew as demand for international express traffic increased and shippers sought more time-definite deliveries. While ocean carriers provide lower transportation costs, air carriers provide faster delivery times.
- Containerized cargo, a segment of the maritime industry that, like air cargo, includes high value-per-ton goods, grew faster than air cargo and total oceanborne cargo during this period.

Table 8. Value and Weight of Worldwide and U.S. Oceanborne Export Freight: 1995–2007

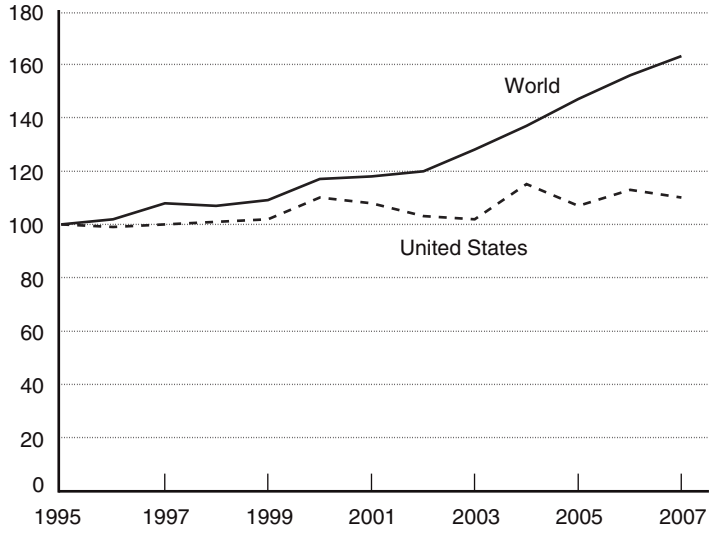
	World exports		U.S. exports	
Year	Value (billions U.S. $)	Weight (millions of short tons)	Value (billions U.S. $)	Weight (millions of short tons)
1995	2,252	4,651	228	475
1996	2,354	4,758	238	451
1997	2,422	4,953	225	432
1998	2,243	5,631	192	405
1999	2,354	5,683	182	400
2000	3,027	5,984	199	415
2001	2,901	5,891	199	399
2002	2,979	5,948	191	384
2003	3,646	6,598	206	373
2004	4,551	6,893	234	416
2005	5,290	7,122	263	402
2006	6,301	7,761	308	434
2007	7,723	8,032	375	467

SOURCES: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from various sources.
World: Value–IHS Global Insight World Trade Service, special tabulations from June 2009 Forecast Series, as of Sept. 29, 2009. **Weight**–United Nations Conference on Trade and Development, Review of Maritime Transport, various issues, available at www.unctad.org as of Oct. 3, 2009.
United States: Value–U.S. Department of Transportation, Maritime Administration, available at www.marad.gov as of Oct. 2, 2009. **Weight**–U.S. Army Corps of Engineers, Waterborne Commerce of the United States 2007, Table 1-6, available at www.iwr.usace.army.mil as of Oct. 2, 2009.

- Between 1995 and 2007, world oceanborne export freight, as measured by weight, nearly doubled to 8 billion short tons. By comparison, the total weight of U.S. oceanborne exports remained steady.

- The weight, value, and physical characteristics of oceanborne cargo determine the type of vessels used for particular shipments (tanker, container, or bulk) and the seaports where they call. In 2008, Houston was the leading U.S. port by weight and Los Angeles was the top container port (USDOT RITA BTS 2009b).

Figure 8. Worldwide and U.S. Maritime Industry Ton-Miles: 1995–2007

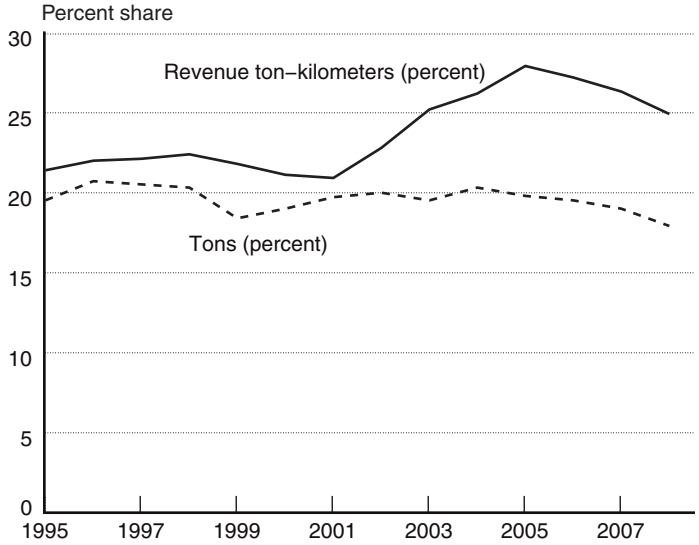


SOURCES: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from various sources. **World**—United Nations Conference on Trade and Development, Review of Maritime Transport, various issues, available at www.unctad.org/rmt as of Oct. 3, 2009. **United States**—U.S. Army Corps of Engineers, Waterborne Commerce of the United States 2007, Table 1-6, available at www.iwr.usace.army.mil/ndc/wcsc/wcsc.htm as of Oct. 2, 2009.

- During the past decade, the demand for maritime freight services, as measured by ton-miles, grew faster globally than for U.S. international freight. From 1995 to 2007, global maritime ton-miles grew at an average annual rate of 4 percent. Ton-miles grew less than 1 percent for the United States over the same period.

- Global ton-miles grew faster as China and other countries increased oil imports from places other than the Middle East (e.g., Angola) and increased purchases of dry bulk cargo (e.g., iron ore) from South America (UNCTAD 2008).

Figure 9. U.S. Air Carriers' Share of Worldwide International Tons and Revenue Ton-Kilometers: 1995-2008



NOTE: The U.S. data were converted from short ton-miles to ton-kilometers. To convert short ton-miles to metric ton-kilometers, first multiply by 1.61 (for kilometers) and then divide by 1.1 (for metric tons).

SOURCES: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from various sources. **World**—International Civil Aviation Organization (ICAO), special tabulations, Sept. 28, 2009. **United States**—USDOT, RITA, BTS, Office of Airline Information, TranStats–tonnage: T100-Segment data (U.S. carriers only); ton-kilometers: T2-U.S. Air Carrier Traffic and Capacity Statistics, available at www.bts.gov as of Sept. 29, 2009.

- In 2008, U.S. air carriers carried about 4.4 million tons of international air cargo, accounting for 18 percent of the 25 million tons transported globally in international service. U.S. air carriers' international cargo traffic generated 33 billion revenue ton-kilometers, accounting for 25 percent of about 131 billion revenue ton-kilometers of global international air cargo traffic.

- Since 2005, the U.S. share of world air cargo tonnage and ton-kilometers has declined as the annual growth rates of Asia's air cargo markets increased.

Worldwide Ports

E-Ternational

Seaports and airports are vital components of the freight system. They enable global trade and facilitate international economic activities.

In 2007, ports worldwide handled more than 8 billion tons of oceanborne exports and more than 25 million tons of international air cargo. This freight included raw materials, manufactured products, and everyday items found at businesses and homes, such as laptop computers, precision medical instruments, flat-panel televisions, bicycles, and furniture.

Table 9. Leading World Maritime Ports by Cargo Weight: 2007 (Thousands of metric tons)

Rank	Port name	Country	Tons
1	Shanghai	China	561,446
2	Singapore	Singapore	483,616
3	Ningbo-Zhoushan	China	471,630
4	Rotterdam	Netherlands	401,181
5	Guangzhou	China	341,363
6	Tianjin	China	309,465
7	Qingdao	China	265,020
8	Qinhuangdao	China	245,964
9	Hong Kong	China	245,433
10	Busan	South Korea	243,564
11	Dalian	China	222,859
12	Nagoya	Japan	215,602
13	South Louisiana	United States	207,785
14	Shenzhen	China	199,190
15	Kwangyang	South Korea	198,190
16	Houston	United States	196,014
17	Antwerp	Belgium	182,897
18	Chiba	Japan	169,202
19	Ulsan	South Korea	168,652
20	Kaohsiung	Taiwan	149,225
21	New York/New Jersey	United States	142,614
22	Yokohama	Japan	141,758
23	Hamburg	Germany	140,923
24	Incheon	South Korea	138,139
25	Port Kelang	Malaysia	135,514

NOTE: The original source of the data in this table, the American Association of Port Authorities, notes that the metric tons used for the rankings are estimates from various sources, including the individual seaports, and are based on cargo weights, volumes, and units. As such, the figures cannot be converted into a single standardized measure such as TEUs. Because of this, the estimates are also not directly comparable across all seaports.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from American Association of Port Authorities. Port Industry Statistics. World Port Rankings: 2007, available at www.aapa-ports.org as of Sept. 30, 2009.

- By weight, 7 of the world's top 10 seaports in 2007 were in China. Three U.S. ports—South Louisiana, Houston, and New York/New Jersey—ranked among the top 25.

Table 10. Top 20 World Container Ports by TEUs Handled: 2007 and 2008 (Thousands of loaded and unloaded TEUs)

Rank in 2008	Port name	Country	2007	2008	Percent change, 2007–2008
1	Singapore	Singapore	27,932	29,918	7.1
2	Shanghai	China	26,150	27,980	7.0
3	Hong Kong	China	23,881	24,248	1.5
4	Shenzhen	China	21,099	21,414	1.5
5	Busan	South Korea	13,270	13,425	1.2
6	Dubai	United Arab Emirates	10,653	11,828	11.0
7	Ningbo	China	9,360	11,226	19.9
8	Guangzhou	China	9,200	11,001	19.6
9	Rotterdam	Netherlands	10,791	10,800	0.1
10	Qingdao	China	9,462	10,320	9.1
11	Hamburg	Germany	9,900	9,700	-2.0
12	Kaohsiung	Taiwan	10,257	9,677	-5.7
13	Antwerp	Belgium	8,177	8,664	6.0
14	Tianjin	China	7,103	8,500	19.7
15	Port Klang	Malaysia	7,120	7,970	11.9
16	Los Angeles	United States	8,355	7,850	-6.0
17	Long Beach	United States	7,312	6,488	-11.3
18	Tanjung Pelepas	Malaysia	5,500	5,600	1.8
19	Bremen/Bremerhaven	Germany	4,892	5,501	12.4
20	New York/New Jersey	United States	5,400	5,265	-2.5

KEY: TEUs = twenty-foot equivalent units. One 20-foot container equals one TEU, and one 40-foot container equals two TEUs.

SOURCES: 2000 and 2007–U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on Maritime Administration, 2008— Containerisation International Online, www.ci-online.co.uk as of Mar. 17, 2009.

- In 2008, three U.S. ports—Los Angeles, Long Beach, and New York/New Jersey—ranked among the top 20 world container ports. Six of the top 10 were in China.

Table 11. Top World Airports for International Air Freight by Tons Handled: January to June 2009
(Thousands of metric tons)

Rank	Airport	City and country	January–June 2009
1	Hong Kong	Hong Kong, China	1,462
2	Incheon	Incheon, South Korea	1,031
3	Dubai	Dubai, United Arab Emirates	835
4	Narita	Tokyo, Japan	784
5	Frankfurt	Frankfurt, Germany	782
6	Changi	Singapore, Singapore	754
7	Pu Dong	Shanghai, China	723
8	Miami	Miami, United States	629
9	Schiphol	Amsterdam, The Netherlands	587
10	Heathrow	London, United Kingdom	583
11	Taiwan Taoyuan	Taipei, Taiwan	551
12	Ted Stevens Anchorage	Anchorage, United States	518
13	Bangkok	Bangkok, Thailand	444
14	John F. Kennedy	New York, United States	372
15	Los Angeles	Los Angeles, United States	360
16	O'Hare	Chicago, United States	313
17	Luxembourg-Findel	Luxembourg, Luxembourg	300
18	Beijing	Beijing, China	288
19	Koln Bonn	Cologne, Germany	254
20	Kuala Lumpur	Kuala Lumpur, Malaysia	238
21	Kansai	Osaka, Japan	235
22	Liege-Bierset	Liege, Belgium	213
23	Leipzig-Halle	Leipzig, Germany	204
24	Brussels	Brussels, Belgium	190
25	Sharjah	Sharjah, United Arab Emirates	185

NOTE: Total tons handled–loaded and unloaded freight and mail in metric tons.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from Airports Council International, available at www.aci.aero as of Sept. 29, 2009.

- By June 2009, five U.S. airports—Miami, Ted Stevens Anchorage, John F. Kennedy, Los Angeles, and O'Hare—ranked among the world's leading airports for international air cargo traffic as measured by tons handled.

Table 12. Top World Airports for International Air Freight by Tons Handled: 2007–2008 (Thousands of metric tons)

Rank in 2008	Airport	City and country	2007	2008	Percent change, 2007–2008
1	Hong Kong	Hong Kong, Hong Kong	3,742	3,627	-3.1
2	Incheon	Incheon, South Korea	2,524	2,386	-5.4
3	Narita	Tokyo, Japan	2,212	2,059	-6.9
4	Charles de Gaulle	Paris, France	1,994	2,010	0.8
5	Frankfurt Main	Frankfurt, Germany	2,030	1,963	-3.3
6	Pudong	Shanghai, China	1,826	1,916	4.9
7	Changi	Singapore, Singapore	1,895	1,857	-2.0
8	Dubai	Dubai, United Arab Emirates	1,591	1,741	9.4
9	Schiphol	Amsterdam, The Netherlands	1,610	1,568	-2.6
10	Miami	Miami, United States	1,611	1,544	-4.2
11	Taiwan Taoyuan	Taipei, Taiwan	1,593	1,480	-7.1
12	Ted Stevens Anchorage	Anchorage, United States	1,663	1,404	-15.5
13	Heathrow	London, United Kingdom	1,313	1,400	6.6
14	Bangkok	Bangkok, Thailand	1,178	1,140	-3.2
15	John F. Kennedy	New York, United States	1,179	1,054	-10.6
16	O'Hare	Chicago, United States	1,022	887	-13.2
17	Los Angeles	Los Angeles, United States	1,005	880	-12.4
18	Luxembourg-Findel	Luxembourg, Luxembourg	856	788	-8.0
19	Kansai	Osaka, Japan	764	753	-1.4
20	Beijing	Beijing, China	549	639	16.3
21	Brussels	Brussels, Belgium	738	604	-18.1
22	Kuala Lumpur	Kuala Lumpur, Malaysia	585	592	1.2
23	Koln Bonn	Cologne, Germany	672	557	-17.1
24	Liege-Bierset	Liege, Belgium	490	518	5.7
25	El Nuevo Dorado	Bogota, Columbia	433	429	-0.9

NOTE: Total tons handled–loaded and unloaded freight and mail in metric tons.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from Airports Council International, available at www.aci.aero as of Sept. 29, 2009.

- In 2008, most of the world's leading airports for handling international cargo experienced declines in freight traffic compared to the previous year.
- All 5 U.S. airports ranked among the world's top 25 air freight airports —Miami, Ted Stevens Anchorage, John F. Kennedy, O'Hare, and Los Angeles—shipped less freight in 2008 than in 2007.

Worldwide Freight Carriers

Nina Chantrasmi

Shipping lines, airlines, all-cargo air couriers, trucking firms, and railroads provide services that link shippers, ports, and consignees. Managing product supply chains and transporting goods globally involves considerable interaction across the carrier industry. During the past decade, businesses expanded sourcing of raw materials and finished goods from multiple locations around the world, and the air and ocean freight carrier industries that provide overseas services adapted their freight operations in response.

Globally, the leading all-cargo air carriers include FedEx, UPS, DHL, and TNT. Leading airlines that provide cargo services include Lufthansa, Korean Air Lines, Singapore Airlines, British Airways, and Air France (IATA 2009b). The air-freight carrier industry continued its heavy reliance on hub-and-spoke operations[6] that allow carriers to connect several origins with multiple destinations without having all the points connected directly.

[6] Hub-and-spoke operations describe a route structure in which airlines arrange flights like a wheel with all traffic moving along spokes to and from a central location—the hub. In the 1980s, most airlines changed their operations from a linear point-to-point network to a hub-and-spoke network (USDOT RITA BTS 1996).

Expanded use of hub networks allowed the airlines to control fleet size and capacity while serving many markets. It also allowed them to cut operating costs and offer improved integrated cargo delivery services. Airlines that carry commercial freight in aircraft cargo holds during passenger flights continued to expand their cargo services beyond their immediate networks by forming alliances. Examples of industry alliances among the leading airlines include United-Lufthansa, Northwest-KLM, Delta-China Airlines, and American Airlines-Mexicana Airlines.

Worldwide, the leading ocean container carriers include APM-Maersk Line, Mediterranean Shipping Company, CMA CGM, Evergreen Line, and American President Lines (APL) (AXS-Alphaliner 2009b). During the past decade, the ocean-shipping industry continued consolidations begun in the 1990s. Carriers engaged in vessel-sharing arrangements[7] that allowed them to serve multiple ports by connecting to larger hub seaports. These hub ports provide feeder vessel services to smaller ports and often use intermodal rail and truck carriers for deliveries to final destinations. Some of the major inter-carrier alliances, mergers, and acquisitions include Maersk and Sea-Land, Neptune Orient Line and APL, and Maersk and P&O Nedlloyd.

In April 2008, the world's three largest container lines—Danish carrier Maersk Line, Swiss carrier Mediterranean Shipping Company, and French-based CMA–CGM—started a significant vessel-sharing agreement in the Asia-North America trade lane that enables them to replace their own individual services with joint services (Maersk Line 2008). In September 2009, Maersk Line and CMA CGM merged services between the east coast of South America, Central America, and the Caribbean (Maersk Line 2009).

[7] An agreement between two or more carriers in which a number of container positions equal in space are reserved on particular vessels for each of the participant carriers. Such cooperation creates operational efficiencies that allow carriers to offer improved services.

Table 13. Leading World Maritime Container Carriers by Fleet Size: September 2009 (Ranked by TEUs)

Rank	Carrier	Company	Country of owner	Fleet size (TEUs in thousands)	Ships
1	APM-Maersk Line	A. P. Moller-Maersk Group	Denmark	2,035	539
2	Mediterranean Shiping Company	Mediterranean Shipping Company S.A.	Switzerland	1,509	406
3	CMA CGM	CMA CGM Group	France	1,021	359
4	Evergreen Line	Evergreen Marine	Taiwan	589	160
5	APL	American President Lines	Singapore	550	139
6	Hapag-Lloyd	Hapag-Lloyd	Germany	469	116
7	COSCO Container Line	China Ocean Shipping Company	China	466	144
8	CSCL	China Shipping Container Lines	China	461	140
9	NYK	Nippon Yusen Kaisha	Japan	413	109
10	Hanjin Shipping	Hanjin Shipping	South Korea	409	92
11	MOL	Mitsui O.S.K. Lines	Japan	343	93
12	K Line	Kawasaki Kisen Kaisha	Japan	331	90
13	OOCL	Orient Overseas Container Line	Hong Kong	329	71
14	Hamburg Süd Group	Wallenius Wilhelmsen Logistics	Sweden	326	108
15	Yang Ming Line	Mediterranean Shipping Company S.A.	Switzerland	314	78
16	CSAV Group	Compañía Sud Americana de Vapores	Chile	294	89
17	Zim	Zim Integrated Shipping Services	Israel	271	88
18	Hyundai M.M.	Hyundai Merchant Marine	South Korea	266	52
19	PIL	Pacific International Lines	Singapore	191	107
20	UASC	United Arab Shipping Company	Kuwait	171	45
21	Wan Hai Lines	Wan Hai Lines	Taiwan	130	68
22	IRIS Lines	Islamic Republic of Iran Shipping Lines	Iran	108	65
23	Orient Overseas International Line	Orient Overseas International Limited	Hong Kong	100	33
24	Sea Consortium	Sea Consortium	Singapore	57	52
25	RCL	Regional Container Lines	Thailand	51	39

KEY: TEUs = twenty-foot equivalent units. One 20-foot container equals one TEU, and one 40-foot container equals two TEUs.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from AXS-Alphaliner, available at www.axs-alphaliner.com/top100/index.php as of Sept. 28, 2009.

Table 14. Leading World Air Carriers by Weight of International Cargo Handled: 2008

Rank	Airline	Thousands of tons
1	FedEx	1,891
2	UPS	1,603
3	Korean Air	1,438
4	Emirates	1,382
5	Cathay Pacific Airways	1,339
6	Singapore Airlines	1,274
7	United Airlines	1,257
8	Lufthansa	1,157
9	China Airlines	1,086
10	Cargolux	794
11	Air France	786
12	European Air Transport (EAT)	733
13	British Airways	708
14	EVA Air	681
15	Japan Airlines	679
16	Asiana Airlines	672
17	KLM–Royal Dutch Airlines	604
18	Thai Airways	536
19	LAN	503
20	Malaysia Airlines	468
21	Air China	429
22	China Eastern Airlines	421
23	Qatar Airways	402
24	Northwest Airlines	345
25	American Airlines	336

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from International Air Transport Association, *World Air Transport Statistics, 53rd Edition*, www.iata.org as of Oct. 16, 2009.

- The top world air carriers, FedEx and UPS, also own and operate a fleet of trucks and use rail service to provide multimodal shipping services to shippers.
- United, Northwest, and American, ranked here among the top 25 global carriers for international cargo, are best known for passenger service.

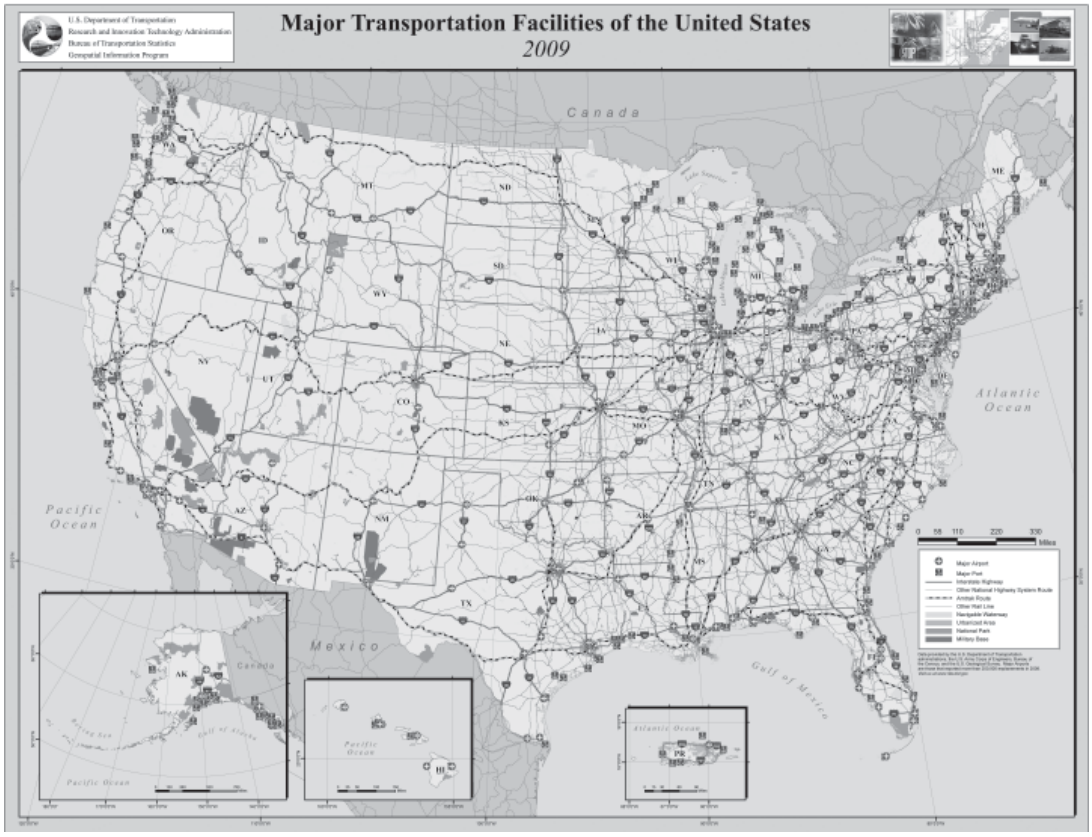
Table 15. Selected Leading U.S. Air All-Cargo, Rail, and Trucking Freight Carriers by Operating Revenues: 2005-2008
(Millions of $)

Rank in 2008	Carrier	Mode	2005	2006	2007	2008
1	UPS	All-cargo	42,581	47,547	49,692	51,486
2	FedEx	All-cargo	32,294	35,241	37,953	35,497
3	BNSF Railway	Rail	12,987	14,985	15,802	18,018
4	Union Pacific Railroad	Rail	13,578	15,578	16,283	17,970
5	DHL USA[1]	All-cargo	9,991	16,384	14,322	14,994
6	CSX Transportation	Rail	8,618	9,566	10,030	11,255
7	Norfolk Southern	Rail	8,527	9,407	9,432	10,661
8	YRC Worldwide	Trucking	8,742	9,919	9,621	8,940
9	Ryder System	Trucking	5,741	6,307	6,566	6,204
10	Con-way	Trucking	4,116	4,221	4,387	5,037
11	Penske Truck Leasing	Trucking	4,000	4,000	4,100	4,000
12	J.B. Hunt Transport	Trucking	3,128	3,328	3,490	3,732
13	Schneider National	Trucking	3,400	3,700	3,400	3,700
14	Swift Transportation	Trucking	3,197	3,173	3,265	3,400
15	CEVA Logistics	Trucking	972	916	1,737	2,810
16	Sirva	Trucking	1,096	1,044	3,970	2,747
17	Landstar System	Trucking	2,518	2,514	2,487	2,643
18	Werner	Trucking	1,972	2,081	2,071	2,166
19	TransForce	Trucking	1,227	1,328	1,806	2,120
20	Pacer International	Trucking	1,860	1,888	1,969	2,088
21	UniGroup	Trucking	2,209	2,300	2,200	2,000
22	Kansas City Southern Railway	Rail	1,352	1,660	1,743	1,852
23	Arkansas Best	Trucking	1,860	1,860	1,837	1,833
24	U.S. Xpress	Trucking	1,164	1,472	1,598	1,826
25	Old Dominion Freight Line	Trucking	1,061	1,279	1,402	1,538
26	Estes Express Lines	Trucking	1,388	1,477	1,395	1,480
27	Purolator Courier	Trucking	1,036	997	1,349	1,464
28	Greatwide Logistics	Trucking	811	1,140	1,240	1,200
29	Crete Carrier	Trucking	926	1,004	995	1,110
30	Saia	Trucking	754	875	976	1,030

NOTE: Generally, detailed operating financial data for freight carriers are not available, particularly for privately owned companies.
[1] DHL USA ended its U.S. domestic services on Jan. 30, 2009 and focused its U.S. business on international services.

SOURCES: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from Transport Topics Online, available at ttnews.com/tt100 as of Sept. 25, 2009.
Association of American Railroads, available at www.aar.org as of Sept. 25, 2009.

U.S. Trends



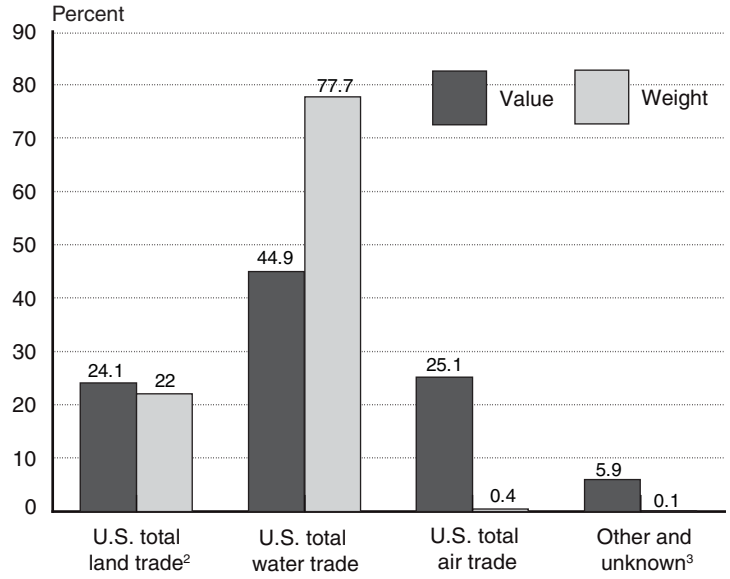
USDOT, RITA, BTS

In 2008, U.S. freight gateways handled more than $3.4 trillion (in current dollars) of international merchandise trade. From 2007 to 2008, merchandise exports rose 12 percent, and imports rose 7 percent. Since 1990, the leading U.S. freight gateways have handled increasing volumes of freight as the movement of traded goods to and from the United States has expanded.

From 1990 to 2008, the value of U.S. international merchandise trade grew from $889 billion to $3.4 trillion, increasing at an average annual rate of 8 percent. In inflation-adjusted terms (using chained 2000 dollars), this trade grew about 7 percent per year, from $837 billion to more than $2.6 trillion. During this period, the growth in merchandise trade spurred the development of marine, air-cargo, and border-crossing facilities to connect domestic U.S. origins and destinations to markets abroad.

MODAL VIEW

Figure 10. Modal Shares of U.S. Merchandise Trade Handled by Land, Water, and Air Gateways by Value and Weight: 2007[1]



[1] BTS estimated the export weight for truck, rail, pipeline, and other and unknown based on value-to-weight ratios from the import data. This estimation procedure was used because U.S. exporters are not currently required to report the export weight for land modes. Weight for water and air exports and imports are from U.S. Department of Commerce, U.S. Census Bureau.
[2] Includes truck, rail, and pipeline modes.
[3] Includes purchased vehicles such as aircraft or boats moving from manufacturer to customer where the vehicle itself is the shipment, pedestrians carrying freight, and miscellaneous.

SOURCES: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from various sources. **Value data—Water and air**: U.S. Department of Commerce, U.S. Census Bureau, Foreign Trade Division, FT920 U.S. Merchandise Trade: Selected Highlights, December 2007, available at www.census.gov/foreign-trade/Press-Release/ft920_index.html as of October 2008. **Truck, rail, pipeline, and other and unknown**: USDOT, RITA, BTS, Transborder Freight Data, October 2008. **Weight data—Water and air**: U.S. Department of Commerce, U.S. Census Bureau, Foreign Trade Division, FT920 U.S. Merchandise Trade: Selected Highlights, December 2007, available at www.census.gov/foreign-trade/Press-Release/ft920_index.html as of October 2008. **Truck, rail, pipeline, and other and unknown**: USDOT, RITA, BTS, TransBorder Freight Data; and special calculation, October 2008.

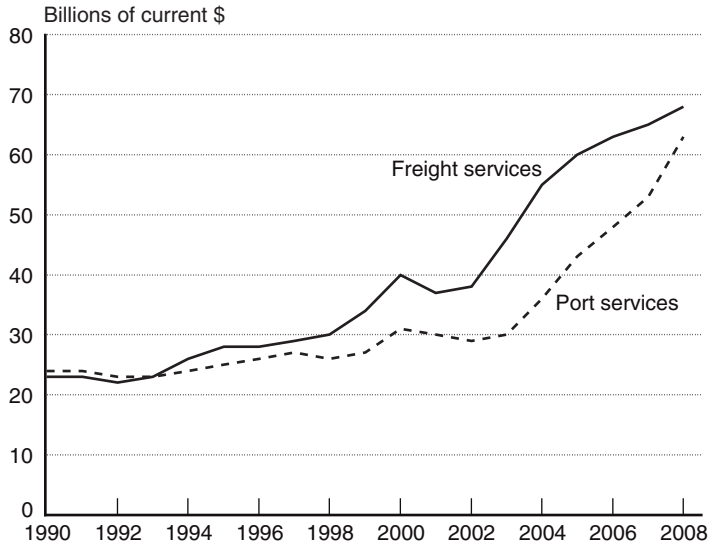
- Nearly all shipments require the use of more than one mode of transportation to reach their final destinations. For example, a shipment of imported goods arriving at a maritime port is transferred to rail or truck to continue its journey. Railroads tend to carry commodities long distances at low prices, while trucks often carry commodities shorter distances and more quickly.

- Waterborne vessels account for more U.S. international trade, both in terms of tonnage and value, than any other mode—78 percent of the weight and 45 percent of the value of U.S. merchandise trade in 2007. Water transportation is less dominant in terms of value because high value-per-ton commodities often move by air and truck, particularly in U.S. trade with Canada and Mexico.

- Intermodal rail traffic—the transport of containers or truck trailers by rail—has significantly increased during the past two decades.

FREIGHT CARRIER AND PORT SERVICES

Figure 11. U.S. International Freight and Port Services Trade: 1990–2008



NOTE: Data cover total payments and receipts. Payments consist of money paid by domestic consumers to foreign carriers or service providers. Receipts consist of money received by domestic carriers or service providers from foreign sources.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from U.S. Department of Commerce, Bureau of Economic Analysis, U.S. International Transactions Accounts Data, available at www.bea.gov/international/bp_web/simple.cfm?anon=104324&table_id=22&area_id=3 as of Sept. 10, 2009.

- Freight carriers transport international cargo between the United States and its trading partners around the world. In addition to trade in merchandise, the United States buys (imports) and sells (exports) freight services via the various transportation modes. The freight and port services sector includes several industries, including carriers, ports, terminal operators, and third-party logistics providers, such as freight forwarders and consolidators.

- In 2008, U.S. trade in freight and port services was $131 billion. Receipts for exports were $59 billion, and payments for imports were $72 billion. Of the $131 billion, 52 percent ($68 billion) was for freight services and the remainder was for port services.

Table 16. U.S. International Freight and Port Services Trade: 1990–2008
(Billions of current $)

	Total		Freight services		Port services	
Year	Freight services	Port services	Receipts (exports)	Payments (imports)	Receipts (exports)	Payments (imports)
1990	23.4	23.6	8.4	15.0	13.7	9.9
1991	23.2	24.4	8.7	14.6	14.0	10.4
1992	22.0	23.3	8.4	13.6	13.1	10.2
1993	23.1	23.4	8.6	14.5	13.4	10.0
1994	25.6	24.2	9.6	16.0	14.2	10.0
1995	27.7	25.4	11.3	16.5	14.8	10.6
1996	27.7	25.8	11.1	16.5	14.9	10.9
1997	29.4	26.5	11.8	17.7	15.2	11.3
1998	30.5	25.5	11.0	19.4	14.6	11.0
1999	33.8	27.3	11.6	22.2	15.4	11.9
2000	39.9	31.3	12.5	27.4	17.3	14.0
2001	37.5	29.7	11.7	25.7	16.7	12.9
2002	38.3	29.3	12.3	26.0	16.9	12.4
2003	45.7	30.4	13.9	31.8	17.5	12.9
2004	54.7	36.4	15.5	39.2	21.5	14.9
2005	60.4	42.8	16.5	43.9	24.8	18.0
2006	63.2	48.4	17.4	45.7	28.8	19.6
2007	65.4	53.2	19.8	45.6	31.7	21.5
2008	67.7	63.4	22.4	45.2	36.5	26.9

NOTE: Payments consist of money paid by domestic consumers to foreign carriers or service providers. Receipts consist of money received by domestic carriers or service providers from foreign sources.

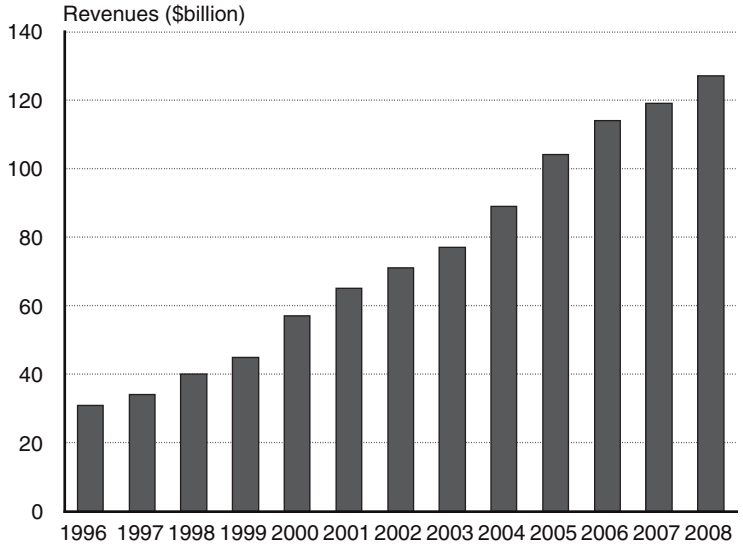
SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from U.S. Department of Commerce, Bureau of Economic Analysis, U.S. International Transactions Accounts Data, available at www.bea.gov as of Sept. 10, 2009.

- In 2008, U.S. receipts for freight transportation services totaled $22 billion, double the amount in 1998. Payments for freight services were $45 billion, more than twice the amount in 1998.
- From 1998 to 2008, receipts and payments for port services more than doubled, to $37 billion and $27 billion respectively.

BOX A
U.S. THIRD-PARTY LOGISTICS PROVIDERS INDUSTRY

An important segment of the movement of U.S. international freight is the third-party logistics providers industry. The Council of Supply Chain Management Professionals defines third-party logistics (3PL) as the "outsourcing all or much of a company's logistics operations to a specialized company." Such outsourcing, allows shippers to focus on their core business activities while entrusting transportation, warehousing, customs-related, and other value-added activities to specialists able provide such services. In the United States, the use of 3PL providers by both large and small businesses has increased over time. Figure 12 shows the gross revenues of the U.S. 3PL industry from 1996 to 2008.

Figure 12. Gross Revenues of the U.S. Third-Party Logistics Providers Industry: 1996–2008



SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from Armstrong & Associates, Inc. 2009. U.S. and Global Third-Party Logistics Market Analysis. Available at http://3plogistics.com/PR_3PL_Financial-2009.htm as of Nov. 1, 2009.

Classification of 3PLs. The third-party logistics providers (3PL) industry could be categorized into asset-based and nonasset-based companies. Asset-based 3PLs own their own trucks and distribution centers. They are more suitable for large corporations requiring long-term contracts and value-added international transportation management services (Cain 2007). Asset-based 3PLs often work in conjunction with freight forwarders. Nonasset-based 3PLs do not own the vehicles or equipment used in providing their services. These firms are the majority of 3PLs. They contract with trucking companies, other carriers, and distribution centers for whatever they need to fulfill their services. This provides them more flexibility than the asset-based firms and they are able to offer expedited and customizable supply chain solutions. Nonasset-based

operators include air freight forwarders, truck freight brokers, intermodal marketing companies, and distribution entities (Cain 2007).

Outsourcing to 3PLs. Over the past decade, many companies have turned to outsourcing services not core to their line of business (Capgemini et. Al. 2009). Transportation and warehousing are the two most frequently outsourced activities. Table 17 summarizes the most common outsourced operations. Table 18 shows the leading global 3PL providers in 2008.

Table 17. Outsourced Logistics Services: 2008
(Percent of outsourced operations)

Logistics activity	All regions	North America	Europe	Asia Pacific	Latin America
Domestic transportation	86	75	92	95	80
International transportation	84	70	91	91	88
Customs brokerage	71	73	61	78	74
Warehousing	68	71	72	65	52
Forwarding	65	61	57	82	66
Cross-Docking	39	40	42	42	20
Product labeling, packaging, assembly, and kitting	38	33	42	40	34
Reverse logistics (defective, repair, return)	38	31	43	47	26
Freight bill auditing and payment	33	53	24	26	28
Transportation planning and management	32	32	33	34	20
Information technology services	30	28	34	30	26
Fleet management	22	14	26	28	15
Supply chain consultancy services provided by 3PLs	21	21	19	25	20
Customer service	13	10	13	15	14
Order entry, processing and fulfillment	13	12	8	20	15
LLP/4PL services	12	10	12	17	6

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on Capgemini, Georgia Institute of Technology, Oracle, and Panalpina, The State of Logistics Outsourcing, Results and Findings of the 14th Annual Study, 2009, available at 3plstudy.com as of Nov. 1, 2009.

Table 18. Top 15 Global Third-Party Logistics Providers: 2008

Providers	Gross revenues (millions)
DHL Supply Chain & Global Forwarding	37,100
DB Schenker Logistics	21,000
Kuehne & Nagel	20,087
Nippon Express	19,014
Panalpina	9,855
CEVA Logistics	9,304
UPS Supply Chain Solutions	9,055
C.H. Robinson Worldwide	8,579
DSV Solutions Holding A/S	7,094
Geodis	7,000
Agility	6,474
SDV International Logistics	5,851
Sinotrans	5,743
Expeditors Int'l of Washington	5,634
DACHSER GmbH & KG	5,292

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on Armstrong & Associates, Inc. A&A's Top 50 Global Third-Party Logistics Provider (3PL) List, available at 3plogistics.com as of Nov. 1, 2009.

Summary. Third-party logistics (3PL) providers are an important class of logistics intermediaries operating in the freight industry. These firms receive more than $100 billion in revenues and make more than $50 billion in payments to transportation carriers. While 3PLs are important to the freight industry, there is little information about the commodities they help transport and the value and tonnage of those commodities.

References

Cain, R. 2007. Are You Ready for a Third Party Logistics Provider?" *Multichannel Merchant*, Sept 26, 2007. Available at http://multichannelmerchant.com/opsandfulfillment/3PL_outsource/index.html.

Capgemini, Georgia Institute of Technology, Oracle, and Panalpina, The State of Logistics Outsourcing, Results and Findings of the 14th Annual Study, 2009. Available at http://3plstudy.com/index.php?p=2009-3pl-study as of Nov. 1, 2009.

Summary

There are dynamic industry-wide changes that continue to influence and shape the global freight industry as worldwide international trade is transformed by the global economy. The principal forces that are likely to affect future international merchandise trade and freight movements include the following:

- changes in U.S. reliance on imported consumer products,
- China's expanded role in the world economy and global trade,
- fluctuations in fuel prices and transportation costs,
- environmental concerns, and
- a rise in Internet shopping and on-demand deliveries.

These global forces and the pace of U.S. reliance on imported consumer products may affect the movement of freight from, to, and within the United States. Increased freight movements resulting from future resumption of growth in worldwide merchandise trade could affect U.S. freight gateways and the relative dominance of particular seaports, airports, and land border crossings.

PRINCIPAL FORCES OF CHANGE

Changes in U.S. reliance on imported consumer products. Like other leading world economies, the United States has seen its domestic economy shift from manufacturing and agriculture to an emphasis on service and information industries (USDOT FHWA 2007a). As the output of the U.S. information and service sectors expanded, American demand for consumer goods continued to increase steadily over the last two decades (Moran and McCully 2001). At the same time, U.S. businesses outsourced more parts and finished products from trading partners around the world. Together, those trends led the United States to rely more significantly on imports of consumer goods to meet growing domestic demand for manufactured products. A resumption of growth in U.S. demand for foreign consumer goods would spur an increase in international freight handled by U.S. gateways.

China's expanded role in the world economy and global trade. As the world's largest developing economy, China has emerged as a significant force in global trade. Since China opened its markets, its economic impact in the world has expanded rapidly. During the past two decades, China increased its industrial output and became the world's top manufacturer (CRS 2007). In 2008, China was the United States' second leading trading partner. China was also a top trading partner for the world's other developed economies, including Japan and the European Union. Continued growth in China's economic position, coupled with its continuing demand for raw materials and parts from around the world, will significantly fuel growth in global merchandise trade and freight movements.

Fluctuations in fuel prices and transportation costs. In 2007 and 2008, concerns about increased fuel prices and transportation costs emerged as oil price fluctuations seriously impacted freight carriers. When fuel prices rise, transportation costs become more important relative to the cost of inventory or shipping (Hummels 2009). If wide fluctuations in fuel prices continue in coming years, they could have the effect of reconfiguring global production, distribution, and freight transportation services. Significant fluctuations in world fuel prices could seriously affect the financial performance of freight carriers engaged in international trade, and could also change industry alliances and recent patterns of carrier cooperation.

Environmental concerns. While freight transportation is essential to continued economic growth, like other industrial activities it can have an unintended and negative impact on environmental quality (USDOT RITA BTS 2008). Some of the most prominent environmental concerns surrounding freight transportation include the following:

- *Climate change.* Transportation is the second-largest source of greenhouse gases, accounting for a significant proportion of the world's carbon dioxide emissions.

- *Pollution, water, and air quality.* Pollutants produced through the operation of the freight trucks—such as carbon monoxide, ozone, nitrogen oxide, and sulfur dioxide—contribute to climate change and harm human health. The use of larger maritime vessels increases the need for harbor dredging and increases the amount of ballast water produced, a factor that can help introduce nonindigenous aquatic species into waterways.

- *Land-use compatibility around maritime ports*. Increased port traffic exacerbates congestion on landside transportation systems, increasing vehicle delays and emissions.

Global and national actions aimed at mitigating these environmental impacts could potentially affect the worldwide freight industry in terms of future technology adoption, performance, and growth.

Rise in Internet shopping and on-demand deliveries. The continued popularity and acceptance of Internet shopping, coupled with increased adoption of just-in-time inventory management by shippers globally, has had an impact on how freight moves. Internet shopping requires carriers to deliver goods to end users rather than to intermediaries, resulting in overall growth in direct shipments to customers (USDOT FHWA 2007b). Together, these trends have increased the number of shipments, particularly small shipments, that carriers handle, and expanded the number of links in the freight supply chain that are needed to deliver goods to their final destination.

SUMMARY AND CONCLUSION

Globally, more than 8 billion tons of freight moved in international maritime and air transportation in 2008. A vast number of vessels, aircraft, and vehicles operated by several freight carriers moved these goods around the world. The major highlights of this report include the following:

- The majority of international freight transported worldwide comes from a few countries. In 2008, more than three-quarters of exported freight were from only 25 countries.

- From mid-2008 to mid-2009, as global economic activities slowed, goods transported worldwide by ocean carriers and airlines fell.
- Since 2001, U.S. shares of world GDP and exports have fallen as the share of developing Asian countries, particularly China, increased.
- Ocean carriers continue to transport the majority of internationally traded goods. During the past decade, worldwide containerized cargo grew faster than air cargo.
- In 2008, three U.S. seaports—South Louisiana, Houston, and New York/New Jersey—ranked 13th, 16th, and 21st, respectively among the world's top ports.
- Among the world's top container ports, Los Angeles, Long Beach, and New York/New Jersey ranked 16th, 17, and 20th, respectively.
- Among the world's top airports, Miami, Ted Stevens Anchorage, and John F. Kennedy ranked 10th, 12th, and 15th, respectively.

Changes in the global economic situation as well as trade between nations will continue to affect the choices of transportation modes used in transporting traded goods around the world and in the United States. Resumption of growth in worldwide merchandise trade is likely to create more demand for intermodal freight services. Continued integration of global economic activities and resumption of growth in oceanborne and air cargo would increase demand for freight transportation services.

Global economic activities will continue to shape where and how goods are produced and distributed. Expanded trade among countries will ultimately affect the movement of freight internationally as well as into and out of the United States. Fuel costs, changes in logistics supply chains, out-sourcing, just-in-time inventory management systems, and online shopping could impact the demand for freight transportation.

Appendix: Supplemental Tables

Table A-1. World's Leading Economies by Gross Domestic Product: 1995, 2000, and 2008

				(Billions of current U.S. $)			Share of global GDP (percent)		
Rank in 1995	Rank in 2000	Rank in 2008	Country	1995	2000	2008	1995	2000	2008
NA	NA	NA	World	29,633	31,972	60,863	100.0	100.0	100.0
1	1	1	United States	7,398	9,817	14,265	25.0	30.7	23.4
2	2	2	Japan	5,278	4,669	4,924	17.8	14.6	8.1
8	6	3	China	728	1,198	4,402	2.5	3.7	7.2
3	3	4	Germany	2,525	1,906	3,668	8.5	6.0	6.0
4	5	5	France	1,572	1,333	2,866	5.3	4.2	4.7
5	4	6	United Kingdom	1,157	1,481	2,674	3.9	4.6	4.4
6	7	7	Italy	1,127	1,101	2,314	3.8	3.4	3.8
17	19	8	Russia	313	260	1,677	1.1	0.8	2.8
9	11	9	Spain	597	582	1,612	2.0	1.8	2.6
7	9	10	Brazil	770	644	1,573	2.6	2.0	2.6
10	8	11	Canada	591	725	1,511	2.0	2.3	2.5
14	13	12	India	354	462	1,210	1.2	1.4	2.0
16	10	13	Mexico	314	629	1,088	1.1	2.0	1.8
13	14	14	Australia	371	390	1,011	1.3	1.2	1.7
11	12	15	South Korea	539	534	947	1.8	1.7	1.6
12	15	16	The Netherlands	419	386	869	1.4	1.2	1.4
23	18	17	Turkey	228	266	729	0.8	0.8	1.2
31	25	18	Poland	139	171	526	0.5	0.5	0.9
24	28	19	Indonesia	223	166	512	0.8	0.5	0.8
18	22	20	Belgium	276	233	506	0.9	0.7	0.8
15	20	21	Switzerland	316	250	493	1.1	0.8	0.8
21	21	22	Sweden	254	246	485	0.9	0.8	0.8
30	24	23	Saudi Arabia	142	189	482	0.5	0.6	0.8
28	27	24	Norway	149	169	456	0.5	0.5	0.7
22	23	25	Austria	239	192	415	0.8	0.6	0.7
19	16	26	Taiwan	274	321	393	0.9	1.0	0.6
33	31	27	Greece	129	128	358	0.4	0.4	0.6
37	39	28	Iran	91	96	345	0.3	0.3	0.6
25	29	29	Denmark	182	161	343	0.6	0.5	0.6
20	17	30	Argentina	258	284	326	0.9	0.9	0.5
40	35	31	Venezuela	77	117	319	0.3	0.4	0.5
27	30	32	South Africa	151	133	277	0.5	0.4	0.5
32	34	33	Finland	131	122	274	0.4	0.4	0.5
44	38	34	Ireland	67	97	273	0.2	0.3	0.4
26	33	35	Thailand	168	123	273	0.6	0.4	0.4
51	46	36	United Arab Emirates	41	70	260	0.1	0.2	0.4
34	36	37	Portugal	113	113	244	0.4	0.4	0.4
35	40	38	Colombia	104	94	241	0.4	0.3	0.4
38	41	39	Malaysia	90	94	222	0.3	0.3	0.4
47	47	40	Czech Republic	55	57	217	0.2	0.2	0.4
29	26	41	Hong Kong	144	169	216	0.5	0.5	0.4
54	53	42	Nigeria	37	46	214	0.1	0.1	0.4
36	32	43	Israel	96	124	202	0.3	0.4	0.3
56	56	44	Romania	35	37	200	0.1	0.1	0.3
39	42	45	Singapore	84	93	182	0.3	0.3	0.3
53	58	46	Ukraine	37	31	180	0.1	0.1	0.3
43	44	47	Chile	71	75	170	0.2	0.2	0.3
41	43	48	Philippines	76	76	169	0.3	0.2	0.3
42	45	49	Pakistan	74	74	168	0.2	0.2	0.3
46	37	50	Egypt	60	99	162	0.2	0.3	0.3

KEY: NA = Not applicable.

NOTE: Hong Kong is a special administrative region of China, but is separate from China in U.S. Foreign Trade Statistics.

SOURCES: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from International Monetary Fund, World Economic Outlook Database, April 2009, available at www.imf.org as of Sept. 14, 2009.

Table A-2. World's Top Merchandise Exporting Countries and their Exports to the United States: 2008 (Millions of U.S. $)

Rank in 2008	Country	Total exports	Share of world total exports (percent)	Exports to United States	Exports to U.S. as share of country's total (percent)
	World	16,044,000	100.0	2,063,720	12.9
1	China	1,469,280	9.2	273,129	18.6
2	Germany	1,465,200	9.1	104,728	7.1
3	United States	1,300,190	8.1	NA	NA
4	Japan	783,149	4.9	139,022	17.8
5	The Netherlands	633,842	4.0	24,837	3.9
6	France	606,623	3.8	35,013	5.8
7	Italy	539,933	3.4	33,905	6.3
8	Belgium	477,159	3.0	23,095	4.8
9	United Kingdom	460,693	2.9	63,765	13.8
10	Canada	456,485	2.8	354,687	77.7
11	Russia	456,075	2.8	15,285	3.4
12	South Korea	426,763	2.7	46,501	10.9
13	Hong Kong	362,985	2.3	46,290	12.8
14	Singapore	339,414	2.1	24,196	7.1
15	Mexico	291,343	1.8	233,523	80.2
16	Saudi Arabia	285,928	1.8	51,823	18.1
17	Spain	267,581	1.7	11,229	4.2
18	Malaysia	224,490	1.4	28,321	12.6
19	Switzerland	200,065	1.2	19,221	9.6
20	Brazil	197,067	1.2	28,558	14.5
21	India	191,926	1.2	24,483	12.8
22	Australia	185,693	1.2	10,290	5.5
23	Sweden	184,000	1.1	12,091	6.6
24	Austria	181,737	1.1	7,802	4.3
25	Thailand	173,235	1.1	19,754	11.4
26	United Arab Emirates	170,126	1.1	1,225	0.7
27	Poland	169,074	1.1	2,481	1.5
28	Norway	167,976	1.0	7,499	4.5
29	Czech Republic	146,767	0.9	2,580	1.8
30	Indonesia	137,022	0.9	13,080	9.5
31	Turkey	132,311	0.8	4,398	3.3
32	Ireland	124,468	0.8	23,005	18.5
33	Denmark	116,974	0.7	6,223	5.3
34	Venezuela	115,648	0.7	47,828	41.4
35	Hungary	108,017	0.7	2,499	2.3
36	Iran	107,413	0.7	96	0.1
37	Finland	96,837	0.6	6,199	6.4
38	Nigeria	77,380	0.5	35,652	46.1
39	Algeria	76,642	0.5	18,211	23.8
40	Argentina	73,372	0.5	5,616	7.7
41	South Africa	73,005	0.5	8,083	11.1
42	Slovakia	71,047	0.4	1,212	1.7
43	Chile	71,011	0.4	7,856	11.1
44	Kuwait	67,382	0.4	6,727	10.0
45	Ukraine	66,884	0.4	1,949	2.9
46	Qatar	62,396	0.4	473	0.8
47	Angola	62,160	0.4	17,725	28.5
48	Israel	61,372	0.4	19,972	32.5
49	Vietnam	60,813	0.4	12,594	20.7
50	Libya	60,645	0.4	3,954	6.5
	Rest of the world	1,406,403	8.8	175,031	12.4

KEY: NA = Not applicable.

NOTE: Hong Kong is a special administrative region of China, but is separate from China in U.S. Foreign Trade Statistics.

SOURCES: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from various sources. **United States**—U.S. Department of Commerce, U.S. Census Bureau, Foreign Trade Division, available at www.census.gov, as of May 12, 2009. **World**—International Monetary Fund, Direction of Trade Statistics, available at www.imfstatistics.org as of Sept. 14, 2009.

Table A-3. World's Top Merchandise Importing Countries and Their Imports from the United States: 2008 (Millions of U.S. $)

Rank in 2008	Country	Total imports	Share of world total imports (percent)	Imports from United States	Imports from U.S. as share of country's total (percent)
	World	16,708,900	100.0	1,340,520	8.0
1	United States	2,166,020	13.0	NA	NA
2	Germany	1,204,750	7.2	50,399	4.2
3	China	1,196,750	7.2	80,723	6.7
4	Japan	761,803	4.6	78,974	10.4
5	France	706,670	4.2	30,274	4.3
6	United Kingdom	634,542	3.8	55,192	8.7
7	The Netherlands	573,758	3.4	43,368	7.6
8	Italy	556,328	3.3	17,355	3.1
9	Belgium	470,194	2.8	26,112	5.6
10	Canada	449,077	2.7	235,479	52.4
11	South Korea	435,275	2.6	38,556	8.9
12	Spain	403,045	2.4	13,893	3.4
13	Hong Kong	388,947	2.3	19,541	5.0
14	Mexico	339,464	2.0	166,468	49.0
15	Singapore	319,779	1.9	37,853	11.8
16	India	304,166	1.8	20,533	6.8
17	Russia	274,284	1.6	12,204	4.4
18	Brazil	229,877	1.4	34,233	14.9
19	Australia	211,111	1.3	25,346	12.0
20	Poland	205,148	1.2	2,973	1.4
21	Turkey	201,964	1.2	11,977	5.9
22	United Arab Emirates	190,203	1.1	17,324	9.1
23	Austria	184,501	1.1	3,306	1.8
24	Switzerland	183,002	1.1	10,612	5.8
25	Malaysia	181,851	1.1	14,543	8.0
26	Thailand	178,526	1.1	11,375	6.4
27	Sweden	167,686	1.0	5,290	3.2
28	Czech Republic	141,703	0.8	1,709	1.2
29	Indonesia	129,274	0.8	7,898	6.1
30	Saudi Arabia	111,274	0.7	13,726	12.3
31	Denmark	111,199	0.7	3,355	3.0
32	Hungary	108,241	0.6	1,531	1.4
33	South Africa	99,561	0.6	7,817	7.9
34	Finland	92,108	0.6	1,849	2.0
35	Portugal	90,191	0.5	1,522	1.7
36	Norway	89,078	0.5	4,818	5.4
37	Ukraine	85,533	0.5	2,813	3.3
38	Vietnam	84,196	0.5	3,069	3.6
39	Ireland	83,758	0.5	9,689	11.6
40	Romania	82,995	0.5	1,207	1.5
41	Philippines	79,471	0.5	9,145	11.5
42	Greece	79,348	0.5	2,325	2.9
43	Slovakia	73,442	0.4	459	0.6
44	Iran	69,374	0.4	752	1.1
45	Israel	65,155	0.4	8,034	12.3
46	Egypt	63,431	0.4	6,634	10.5
47	Venezuela	56,984	0.3	13,872	24.3
48	Chile	55,960	0.3	10,689	19.1
49	Nigeria	54,519	0.3	4,512	8.3
50	Argentina	54,033	0.3	8,292	15.3
	Rest of the world	1,629,351	9.8	150,900	9.3

KEY: NA = Not applicable.

NOTE: Hong Kong is a special administrative region of China, but is separate from China in U.S. Foreign Trade Statistics.

SOURCES: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from various sources. **United States**—U.S. Department of Commerce, U.S. Census Bureau, Foreign Trade Division, available at www.census.gov as of May 12, 2009. **World**—International Monetary Fund, Direction of Trade Statistics, available at www.imfstatistics.org as of Sept. 14, 2009.

Table A-4. Value and Modal Shares of U.S. International Merchandise Exports by Major Trading Partners: 2008

Country	Millions of current U.S. $				Modal shares (percent)		
	Total	Vessel	Air	Land, other, and unknown	Vessel	Air	Land, other, and unknown
World total	1,300,532	471,331	388,922	427,189	36.2	29.9	32.8
Canada	261,150	7,708	18,356	235,086	3.0	7.0	90.0
Mexico	151,220	14,919	7,007	129,294	9.9	4.6	85.5
China	69,733	44,735	21,170	3,828	64.2	30.4	5.5
Japan	65,142	33,328	27,918	3,896	51.2	42.9	6.0
Germany	54,505	21,930	28,124	4,452	40.2	51.6	8.2
United Kingdom	53,599	14,421	33,813	5,365	26.9	63.1	10.0
The Netherlands	39,719	19,745	18,070	1,905	49.7	45.5	4.8
South Korea	34,669	19,288	13,468	1,913	55.6	38.8	5.5
Brazil	32,299	17,596	12,955	1,748	54.5	40.1	5.4
Belgium	28,903	15,777	11,276	1,850	54.6	39.0	6.4
France	28,840	7,529	18,702	2,609	26.1	64.8	9.0
Singapore	27,854	10,167	15,739	1,947	36.5	56.5	7.0
Taiwan	24,926	11,070	12,852	1,005	44.4	51.6	4.0
Australia	22,219	12,547	7,982	1,689	56.5	35.9	7.6
Switzerland	22,024	1,319	19,409	1,296	6.0	88.1	5.9
Hong Kong	21,499	6,570	13,669	1,260	30.6	63.6	5.9
India	17,682	9,232	6,724	1,726	52.2	38.0	9.8
Italy	15,461	6,975	7,696	790	45.1	49.8	5.1
Israel	14,487	3,903	9,419	1,165	26.9	65.0	8.0
United Arab Emirates	14,417	7,423	4,350	2,644	51.5	30.2	18.3
Malaysia	12,949	3,084	9,481	384	23.8	73.2	3.0
Venezuela	12,610	9,764	2,402	444	77.4	19.0	3.5
Saudi Arabia	12,484	9,608	2,565	311	77.0	20.5	2.5
Spain	12,190	6,338	4,863	989	52.0	39.9	8.1
Chile	11,857	9,015	1,978	864	76.0	16.7	7.3
Colombia	11,437	7,945	3,164	328	69.5	27.7	2.9
Turkey	9,959	7,261	1,696	1,001	72.9	17.0	10.1
Russia	9,335	7,124	1,525	686	76.3	16.3	7.3
Thailand	9,067	4,489	4,336	241	49.5	47.8	2.7
Philippines	8,295	2,978	5,098	219	35.9	61.5	2.6
Ireland	7,611	1,451	4,635	1,525	19.1	60.9	20.0
Argentina	7,536	5,095	2,167	273	67.6	28.8	3.6
Dominican Republic	6,594	5,399	1,052	143	81.9	16.0	2.2
South Africa	6,490	4,099	1,997	394	63.1	30.8	6.1
Peru	6,183	4,854	1,162	166	78.5	18.8	2.7
Egypt	6,002	5,141	650	211	85.7	10.8	3.5
Costa Rica	5,680	3,225	2,165	290	56.8	38.1	5.1
Indonesia	5,644	4,433	720	492	78.5	12.8	8.7
Sweden	5,018	2,038	2,382	599	40.6	47.5	11.9
Panama	4,887	4,049	518	321	82.9	10.6	6.6
Honduras	4,846	4,295	248	304	88.6	5.1	6.3
Guatemala	4,718	3,996	457	265	84.7	9.7	5.6
Poland	4,131	1,912	941	1,277	46.3	22.8	30.9
Nigeria	4,102	3,542	490	70	86.3	11.9	1.7
Finland	3,761	2,537	898	326	67.5	23.9	8.7
Ecuador	3,450	2,651	684	115	76.8	19.8	3.3
Norway	3,292	1,103	1,573	616	33.5	47.8	18.7
The Netherlands Antilles	2,952	2,020	599	332	68.4	20.3	11.3
Vietnam	2,789	2,167	576	47	77.7	20.7	1.7
Bahamas	2,760	2,360	95	304	85.5	3.5	11.0

NOTE: Hong Kong is a special administrative region of China, but is separate from China in U.S. Foreign Trade Statistics.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from U.S. Department of Commerce, U.S. Census Bureau, Foreign Trade Division, special tabulation, Sept. 14, 2009.

Table A-5. Value and Modal Shares of U.S. International Merchandise Imports by Major Trading Partners: 2008

Country	Millions of current U.S. $				Modal shares (percent)		
	Total	Vessel	Air	Land, other, and unknown	Vessel	Air	Land, other, and unknown
World total	2,100,129	1,152,481	416,688	530,961	54.9	19.8	25.3
Canada	339,491	24,326	10,099	305,066	7.2	3.0	89.9
China	337,773	250,796	74,102	12,874	74.2	21.9	3.8
Mexico	215,942	46,504	5,952	163,486	21.5	2.8	75.7
Japan	139,262	102,928	32,944	3,390	73.9	23.7	2.4
Germany	97,497	57,163	31,821	8,512	58.6	32.6	8.7
United Kingdom	58,587	26,415	27,484	4,689	45.1	46.9	8.0
Saudi Arabia	54,747	54,124	48	576	98.9	0.1	1.1
Venezuela	51,424	51,118	74	232	99.4	0.1	0.5
South Korea	48,069	30,358	16,431	1,281	63.2	34.2	2.7
France	44,049	18,168	19,500	6,382	41.2	44.3	14.5
Nigeria	38,068	37,774	16	278	99.2	0.0	0.7
Taiwan	36,326	21,975	12,838	1,514	60.5	35.3	4.2
Italy	36,135	20,541	12,833	2,761	56.8	35.5	7.6
Ireland	31,346	4,606	25,503	1,237	14.7	81.4	3.9
Malaysia	30,736	10,072	19,000	1,664	32.8	61.8	5.4
Brazil	30,453	25,976	1,884	2,593	85.3	6.2	8.5
Russia	26,783	24,459	2,049	275	91.3	7.6	1.0
India	25,704	16,029	9,274	402	62.4	36.1	1.6
Thailand	23,538	13,750	8,651	1,137	58.4	36.8	4.8
Israel	22,336	4,232	16,773	1,330	18.9	75.1	6.0
Iraq	22,080	21,167	159	754	95.9	0.7	3.4
The Netherlands	21,123	13,154	6,758	1,211	62.3	32.0	5.7
Algeria	19,355	19,226	12	116	99.3	0.1	0.6
Angola	18,911	18,875	37	0	99.8	0.2	0.0
Switzerland	17,782	3,856	12,730	1,195	21.7	71.6	6.7
Belgium	17,308	7,485	9,163	661	43.2	52.9	3.8
Singapore	15,885	3,957	10,798	1,130	24.9	68.0	7.1
Indonesia	15,799	13,755	1,858	187	87.1	11.8	1.2
Colombia	13,093	10,768	1,480	845	82.2	11.3	6.5
Vietnam	12,901	11,661	991	248	90.4	7.7	1.9
Sweden	12,498	6,856	4,789	853	54.9	38.3	6.8
Spain	11,094	7,939	2,607	547	71.6	23.5	4.9
Australia	10,589	7,987	2,225	377	75.4	21.0	3.6
South Africa	9,948	5,415	4,425	108	54.4	44.5	1.1
Ecuador	9,048	8,555	267	226	94.5	3.0	2.5
Trinidad and Tobago	9,030	8,934	53	43	98.9	0.6	0.5
Philippines	8,713	4,822	3,634	257	55.3	41.7	2.9
Austria	8,457	5,039	2,755	663	59.6	32.6	7.8
Chile	8,196	6,725	1,392	80	82.0	17.0	1.0
Norway	7,315	5,808	1,326	181	79.4	18.1	2.5
Kuwait	7,093	7,057	21	14	99.5	0.3	0.2
Hong Kong	6,483	3,398	2,641	444	52.4	40.7	6.9
Denmark	6,446	3,361	2,429	657	52.1	37.7	10.2
Finland	5,903	4,354	1,148	402	73.7	19.4	6.8
Argentina	5,822	5,453	312	58	93.7	5.4	1.0
Peru	5,812	4,567	1,209	37	78.6	20.8	0.6
Republic of Congo	5,074	5,060	12	2	99.7	0.2	0.0
Turkey	4,642	3,685	816	141	79.4	17.6	3.0
Azerbaijan	4,361	4,329	3	29	99.3	0.1	0.7
Libya	4,179	4,094	2	83	98.0	0.1	2.0

NOTE: Hong Kong is a special administrative region of China, but is separate from China in U.S. Foreign Trade Statistics.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from U.S. Department of Commerce, U.S. Census Bureau, Foreign Trade Division, special tabulation, Sept. 14, 2009.

Table A-6. World and United States International Merchandise Trade: 1990–2008

	World (billions of current U.S. $)		United States (billions of current U.S. $)	
Year	Exports	Imports	Exports	Imports
1990	3,383	3,517	394	495
1991	3,494	3,636	422	488
1992	3,749	3,895	448	533
1993	3,723	3,796	465	581
1994	4,258	4,321	513	663
1995	5,083	5,146	585	744
1996	5,305	5,391	625	795
1997	5,530	5,598	689	870
1998	5,400	5,526	682	912
1999	5,667	5,821	696	1,025
2000	6,388	6,593	782	1,218
2001	6,141	6,381	729	1,141
2002	6,435	6,629	693	1,161
2003	7,518	7,748	725	1,257
2004	9,133	9,486	819	1,470
2005	10,363	10,759	906	1,673
2006	11,969	12,364	1,037	1,854
2007	13,849	14,342	1,162	1,957
2008	16,044	16,709	1,301	2,100
Percent change, 1990–2008	374.2	375.0	230.4	324.0
Average annual growth rate, 1990–2008	9.0	9.0	6.9	8.4

SOURCES: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from various sources.
United States—U.S. Department of Commerce, U.S. Census Bureau, Foreign Trade Division, available at www.census.gov, as of May 12, 2009.
World—International Monetary Fund, Direction of Trade Statistics, available at www.imfstatistics.org as of Sept. 14, 2009.

Table A-7. Trends in World and U.S. Air Revenue Freight for Total and International Services: 1995–2008

	World carriers' freight		U.S. carriers' freight	
Year	Tons (thousands)	Revenue ton-kilometers (millions)	Tons (thousands)	Revenue ton-kilometers (millions)
Total air cargo				
1995	22,189	83,130	4,352	30,228
1996	23,234	89,200	4,575	32,171
1997	26,360	102,880	5,072	35,521
1998	26,496	101,820	4,995	36,322
1999	28,103	108,660	4,936	37,462
2000	30,370	118,080	5,360	38,867
2001	28,829	110,800	7,634	38,661
2002	31,420	119,840	10,218	41,245
2003	33,522	125,760	16,257	46,593
2004	36,661	139,040	17,507	53,038
2005	37,638	142,520	17,274	54,991
2006	39,822	151,230	17,375	55,653
2007	41,774	158,280	17,369	55,975
2008	40,505	156,310	15,837	51,897
International segment air cargo				
1995	12,994	70 340	2,662	15,080
1996	13,587	75 510	2,974	16,603
1997	15,690	87 740	3,476	19,430
1998	16,005	87 050	3,498	19,542
1999	17,262	93 280	3,443	20,305
2000	18,800	101 560	3,746	21,383
2001	18,014	95 950	3,511	20,034
2002	18,808	101 590	3,769	23,122
2003	19,678	103 130	3,665	26,021
2004	21,796	115 120	4,114	30,188
2005	22,630	118,440	4,453	33,085
2006	23,900	125,700	4,647	34,221
2007	25,200	132,140	4,752	34,690
2008	25,000	130,890	4,398	32,635

NOTE: The U.S. data were converted from short ton-miles to ton-kilometers. To convert short ton-miles to metric ton-kilometers, first multiply by 1.61 (for kilometers) and then divide by 1.1 (for metric tons).

SOURCES: U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration (RITA), Bureau of Transportation Statistics (BTS), based on data from various sources. **World**—International Civil Aviation Organization (ICAO), special tabulations, Sept. 28, 2009. **United States**—USDOT, RITA, BTS, Office of Airline Information, TranStats. Tonnage— T100-Segment data (U.S. carriers only). Ton-kilometers—T2-U.S. Air Carrier Traffic and Capacity Statistics, available at www.bts.gov as of Sept. 29, 2009.

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