RITA Bureau of Transportation Statistics

America's Container Ports: Linking Markets at Home and Abroad

January 2011

U.S. Department of Transportation
Research and Innovative Technology Administration

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Recommended citation

U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *America's Container Ports: Linking Markets at Home and Abroad.* Washington, DC: 2011.

Cover photo by Chutiporn Chaitachawon.

Acknowledgments

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Overview

The U.S. marine transportation system handles large volumes of domestic and international freight in support of the Nation's economic activities. As a vital part of that system, the Nation's container ports handle cargo and are sources of employment, revenue, and taxes for businesses or communities where they are located.

This report provides an overview of the movement of maritime freight handled by the Nation's container ports in 2009 through mid-2010, based on the most current available data through that time period. It summarizes trends in maritime freight movement since 1995, especially during the last 5 years. It also covers the impact of the recent U.S. and global economic downturn on container traffic; trends in container throughput; concentration of containerized cargo at the top U.S. ports; regional shifts in cargo handled, vessel calls, and port capacity; the rankings of U.S. ports among the world's top ports; and the number of maritime container entries into the United States relative to truck and rail containers. The report also includes spotlight summaries of landside access to container ports and maritime security initiatives.

The principal findings of the report are discussed below:

RECENT TRENDS

Peter Hellebrand

- In the first half of 2010, U.S. container ports handled a total of 110 million metric tons of containerized cargo, 17 percent higher than the 95 million metric tons handled in the same period in 2009, but down 8 percent from the 120 million metric tons handled in 2008.
- Both U.S. containerized exports and imports rose during the first half of 2010, as U.S. businesses replenished low inventories and production activities increased. Despite this upturn, maritime container exports for the first half of 2010 were down 6 percent from 2008 levels and container imports were down 9 percent.
- The growth in cargo activity at U.S. container ports during the beginning of 2010 followed a challenging year in 2009, when the tonnage of container cargo handled by the Nation's ports fell by 10 percent when compared to 2008.
- The growth in container traffic in early 2010 affected various sectors of the freight transportation sector. During the first half of 2010, active containership capacity worldwide reached 13 million TEUs (20-foot equivalent units—a measure for counting containers), up 15 percent from the previous 6 months, as the number of idled vessels fell and new vessels were delivered for service.
- The number of intermodal shipping containers and truck trailers transported nationwide on railcars by U.S. Class I railroads during January to June of 2010 was 5.2 million units, up 12 percent from 4.6 million moved by rail during the same period in 2009, but down 7 percent from 5.6 million in 2008.

- In 2009, the most recent period for which global data are available, worldwide container TEUs declined 15 percent, compared to 2008.
- Despite recent fluctuations, today 1 container in every 11 that is engaged in global trade is either bound for or originates in the United States, accounting for 9 percent of worldwide container traffic.
- U.S. container ports handle more TEUs of imports than exports, although the percentage of exports has increased during the most recent 3 years. In 2009, maritime container imports passing through U.S. seaports accounted for 58 percent of total container traffic, down from its peak of 67 percent in 2006.
- On a typical weekday in 2009, U.S. container ports handled an average of 68,000 TEUs of freight, up from 37,000 TEUs per day in 1995, but down from the peak of about 78,000 in 2007.
- In 2009, the top 10 U.S. container ports accounted for 85 percent of U.S. containerized TEU imports and exports, up from 78 percent in 1995.

West coast ports as a region grew the fastest of any port region between the mid-1980s and 2009, but since 2007 the region has experienced the sharpest decline in container traffic. Between 2007 and 2009, total TEUs handled by west coast ports declined 22 percent, compared with 13 percent decline for east coast ports and less than 1 percent increase for gulf coast ports.

VESSEL CALLS AT PORTS

- The majority of containership calls to the United States are made to a relative few ports. The top 10 U.S. container ports accounted for more than three quarters (77 percent) of containership calls.
- U.S. maritime ports also handled larger container vessels than in the past. The average size (per call) of container vessels calling at U.S. ports in 2009 was 50,000 deadweight tons (dwt), a 14 percent increase from 2004, when the average was 44,000 dwt.
- More of the vessels calling at U.S. ports are containerships. In 2009, containerships accounted for 33 percent of the total calls by all ships in U.S. ports, up from 31 percent in 2004.
- In 2009, containerships averaged 3,800 TEUs per port call, up 19 percent from 3,200 TEUs 5 years earlier.
- More of the larger container vessels are calling at U.S. ports. During the last 5 years, calls by post-Panamax containerships of 5,000 TEUs or greater rose by 156 percent (up from 1,700 calls in 2004 to 4,400 in 2009).[1] In 2009, these containerships accounted for 24 percent of all containership calls at U.S. seaports, up from 10 percent in 2004.

The containerships calling at U.S. ports are relatively newer than other vessel types that call at the Nation's ports. In 2009, the average age of containerships calling at U.S. ports was approximately 10 years, compared with about 12 years of age for all other vessels.

TRADING PARTNERS

- In 2009, only 2 U.S. ports—Los Angeles and Long Beach—ranked among the world's top 20 container ports as measured in TEUs, placing 16th and 18th respectively. In 2008, the Port of New York/New Jersey ranked 20th, but it fell to the 22nd position in 2009.

[1] Post-Panamax vessels are too large to pass through the Panama Canal. They can carry up to 6,500 TEUs and typically have widths exceeding 32.2 meters (105.6 feet). Recent designs of these vessels are able to carry more than 12,000 TEUs. The world's largest container vessel, the *Emma Maersk*, commissioned in 2006, is officially listed as an 11,000 TEU ship, but its cargo capacity is estimated to range from 13,000 to 15,000 TEUs (http://about.maersk.com/en/Fleet/Pages/Fleet.aspx).

- In 2009, container trade with the top 10 countries accounted for nearly three-quarters (71 percent) of imported container TEUs and over half (56 percent) of exported container TEUs. The top five U.S. containerized cargo trading partners in 2009 were all Asian countries. China was the leading containerized merchandise trading partner, accounting for nearly one-half (48 percent) of U.S. maritime imported TEUs, almost double from 25 percent in 2000.

On a typical weekday in 2009, an average of nearly 38,000 individual maritime containers (not TEUs) carrying imports entered the United States. This was down from about 43,000 in 2008, but up from 23,000 in 2000.

MAJOR COMMODITIES

- Containers carry a wide variety of commodities—from sweaters, blouses, and flat-screen televisions to computer equipment and wood and paper products. During the first half of 2010, America's container ports handled over $256 billion worth of containerized cargo imports weighing more than 62 million metric tons. They also handled exports worth over $100 billion and weighing 48 million metric tons.
- In 2009, U.S. ports handled $474 billion containerized imports, down 18 percent from 2008. By weight, imports also dropped 18 percent, from 137 million metric tons to 112 million metric tons. The top imported commodities by value in 2009 were print machinery, television and electronics, and motor vehicle parts and accessories. By weight, the leading imported commodities were furniture, bananas, and worked monumental or building stones.
- U.S. container ports handled $177 billion worth of containerized exports in 2009, down 19 percent from $220 billion in 2008. By weight, exports dropped by 10 percent, from 98 million metric tons to 88 million metric tons. The leading exported commodities by value in 2009 were motor cars and vehicles, ethylene polymers, and machinery. By weight, the leading exported commodities were paper waste and scrap, iron and steel waste and scrap, and chemical wood pulp.

America's Container Ports

INTRODUCTION

In the first half of 2010, container traffic at the Nation's leading seaports rebounded as U.S. production activities started to recover. During this period, U.S. container ports handled a total of 110 million metric tons of containerized cargo, 17 percent more than the 95 million metric tons they handled in the same period in 2009 (table 1).[2] The increase in volume was due mainly to a continued upturn in international trade during the first two quarters of 2010. Even with this rise, the 110 million metric tons handled in early 2010 was down 8 percent compared to the 120 million metric tons handled in early 2008 (table 1).

Container traffic rose nationwide and nearly all of the leading U.S. container ports experienced increased throughput. Nine of the top 10 U.S. ports saw increases in containerized tonnage, ranging from 11 percent at Houston to 51 percent at Seattle (table 1). Among the top 20 U.S. container ports, Wilmington, NC, had the largest increase, at 55 percent. Only three of the leading ports saw declines in traffic—Tacoma (down 19 percent), Philadelphia (down 9 percent), and Portland, OR (down 6 percent). By comparison, 12 of the top 20 ports saw declines in 2010 compared with 2008. In the same period, Wilmington, NC, again had the largest growth, at 46 percent (table 1). Tacoma, WA, experienced the sharpest decline, of 36 percent.

Both U.S. containerized exports and imports rose during the first half of 2010, as U.S. businesses replenished low inventories and production activities increased (USDOC BEA 2010a and USFRB 2010a and 2010b). By the end of the second quarter of 2010, U.S. container ports had handled over 48 million tons of maritime exports for the 6 months, 17 percent more than the 41 million tons they handled the same period of 2009 (figure 1). They also handled 62 million metric tons of imports, a 16-percent increase over the 54 million metric tons handled in 2009. Nationally, during the second quarter of 2010 alone, the flow of inbound container cargo jumped 24 percent over the same period in 2009 (34 million metric tons compared with 27 million metric tons). Although container traffic was up in early 2010, container ports handled less tonnage compared with early 2008. Maritime container exports for the first half of 2010 were down 6 percent from 2008 while container imports were down 9 percent.

The growth in freight activity at U.S. container ports during 2010 followed a less robust experience in 2009, when the tonnage of container cargo handled at the Nation's ports fell by 10 percent compared to 2008. That decline can be attributed partly to the slowdown in economic production, adjustments in business inventory, rising unemployment, and weak consumer spending (Alessandria et al. 2010). For most of 2009, U.S. businesses trimmed inventories, manufacturing and construction activities slowed, and Americans cut back on household spending as the financial markets tightened consumer credit.

During 2009, the total weight of maritime freight handled by America's container ports fell at 15 of the Nation's top 20 ports (table 1). All the top 5 ports saw a decline in 2009 compared with 2008. Eight of the Nation's leading container ports experienced year-on-year drops of more than 10 percent (and ranging as high as 26 percent).

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[2] A metric ton—a standard measure used globally—is a unit of weight equal to 2,205 pounds or 1,000 kilograms. By comparison, a "short ton," used in the United States and Canada, is equal to 2,000 pounds or 907 kilograms. Thus 1 metric ton equals 1.1 short tons. Yet another measure, the "long" ton, is sometimes used in the United Kingdom. A long ton is equivalent to 2,240 pounds, or 1,016 kilograms.

TABLE 1

U.S. Waterborne Foreign Containerized Trade Handled at Leading U.S. Container Ports: 2008–2009 and Q1–Q2 2008–2010

(Thousands of metric tons)

		Annual comparison, 2008 and 2009			Quarterly comparison, Q1–Q2 2008 to Q1–Q2 2010				
Rank in 2009	U.S. Customs port	2008	2009	Percent change 2008–2009	Q1–Q2 2008	Q1–Q2 2009	Q1–Q2 2010	Percent change 2008–2010	Percent change 2009–2010
1	Los Angeles, CA	41,134	37,262	-9.4	24,024	18,866	21,787	-9.3	15.5
2	New York/New Jersey, NY/NJ	31,309	29,060	-7.2	15,636	12,949	15,236	-2.6	17.7
3	Long Beach, CA	33,041	27,344	-17.2	11,511	7,860	9,820	-14.7	24.9
4	Savannah, GA	17,895	16,619	-7.1	9,195	7,199	9,498	3.3	31.9
5	Houston, TX	13,128	12,423	-5.4	8,522	7,104	7,869	-7.7	10.8
6	Oakland, CA	11,961	12,391	3.6	5,647	5,059	5,721	1.3	13.1
7	Norfolk, VA	13,444	11,858	-11.8	5,996	4,783	5,451	-9.1	14.0
8	Seattle, WA	8,995	9,080	0.9	4,823	3,594	5,434	12.7	51.2
9	Charleston, SC	11,034	8,149	-26.1	5,683	3,676	4,514	-20.6	22.8
10	Tacoma, WA	9,373	7,424	-20.8	4,605	3,606	2,934	-36.3	-18.6
11	Miami, FL	5,146	4,969	-3.4	2,217	1,961	2,177	-1.8	11.0
12	Baltimore, MD	4,461	4,331	-2.9	2,336	1,892	2,288	-2.1	21.0
13	Port Everglades, FL	5,282	4,261	-19.3	1,814	1,592	1,708	-5.8	7.2
14	New Orleans, LA	2,668	2,795	4.7	2,016	1,750	2,154	6.8	23.1
15	San Juan, PR	2,045	2,007	-1.9	888	869	905	1.9	4.2
16	Philadelphia, PA	2,255	2,005	-11.1	1,094	997	910	-16.8	-8.7
17	Jacksonville, FL	1,202	1,589	32.3	537	585	752	40.1	28.6
18	Wilmington, NC	1,152	1,555	35.0	797	747	1,160	45.6	55.3
19	Portland, OR	1,823	1,518	-16.7	1,390	974	913	-34.3	-6.2
20	Wilmington, DE	1,563	1,346	-13.9	601	538	618	2.9	14.9
	Total top 10 ports	191,315	171,610	-10.3	95,641	74,695	88,265	-7.7	18.2
	Total top 20 ports	218,911	197,986	-9.6	109,330	86,600	101,850	-6.8	17.6
	Total all U.S. ports[1]	228,041	206,129	-9.6	120,049	94,731	110,429	-8.0	16.6
	Top 10, percent of total	83.9	83.3		79.7	78.8	79.9		
	Top 20, percent of total	96.0	96.0		91.1	91.4	92.2		

NOTES: The data in this table include U.S. maritime imports and exports reported from U.S. international trade statistics. They exclude transshipments and military shipments. The port of New York/New Jersey covers U.S. Customs ports of New York, NY and Newark, NJ.

[1] Container ports in all U.S. coastal states and Puerto Rico.

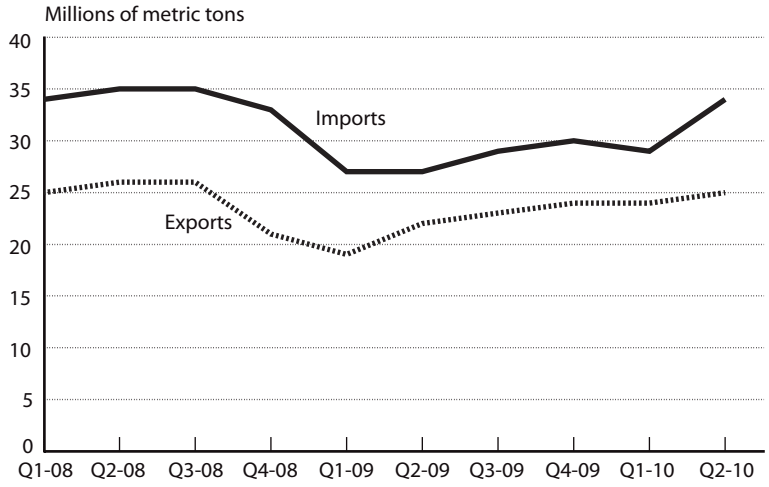
SOURCES: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from two sources. Annual: U.S. Department of Transportation, Maritime Administration, drawn from *The Journal of Commerce, Port Import Export Reporting Service* (PIERS), available at http://www.marad.dot.gov/library_landing_page/data_and_statistics/Data_and_Statistics.htm, as of Sept. 13, 2010. Quarterly: U.S. Department of Commerce, Census Bureau, Foreign Trade Division, *USA Trade Online*, available at http://data.usatradeonline.gov, as of Sept. 20, 2010.

Measured by TEUs, U.S. total maritime container traffic at all U.S. ports in 2009 was estimated at 24.9 million TEUs, a 12-percent drop from the 28.3 million TEUs in 2008 (USDOT MARAD 2010a).[3] During 2009, declines in container traffic at ports on the west coast and east coast averaged 12 percent; gulf coast ports declined by 5 percent. Oakland was the only port among the Nation's top 10 container ports that did not see a decline in its cargo throughput (figure 2). Its container throughput remained steady at about 1.4 million TEU's. The two largest declines were Charleston, SC, at 28 percent and Tacoma at 22 percent.

Containerized trade between the United States and the rest of the world fell in 2009 in the wake of both weak domestic consumer demand, which

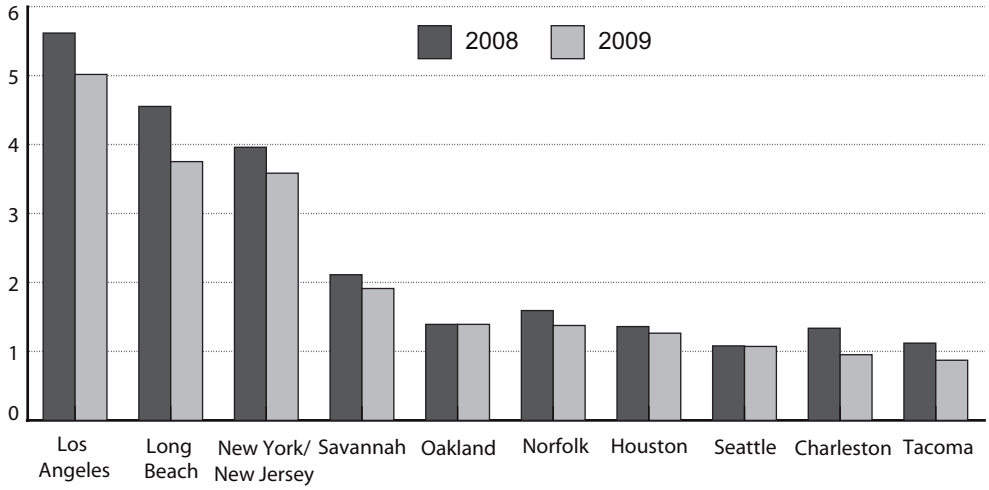
[3] The standard measure for counting containers is the 20-foot equivalent unit, or TEU. This measure is used as a common base to count containers of various lengths. A standard 40-foot container is 2 TEUs, and a 48-foot container equals 2.4 TEUs. This measure is also used to describe the capacities of containerships or ports.

Figure 1
Quarterly Tonnage of Container Cargo Handled at U.S. Container Ports: Q1–2008 to Q2–2010



SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from U.S. Department of Commerce, Census Bureau, Foreign Trade Division, USA Trade Online, available at http://data.usatradeonline.gov, as of Sept. 20, 2010.

Figure 2
U.S. Waterborne Foreign Containerized Trade Handled at Top 10 U.S. Container Ports: 2008 and 2009
(Millions of TEUs)



KEY: TEU = twenty-foot equivalent unit. One 20-foot container equals one TEU; one 40-foot container equals two TEUs.

NOTE: Data are reported for U.S. Customs ports. The port of New York/New Jersey covers U.S. Customs ports of New York, NY and Newark, NJ.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from U.S. Department of Transportation, Maritime Administration, which are drawn from *The Journal of Commerce*, Port Import Export Reporting Service (PIERS), as of Sept. 16, 2010.

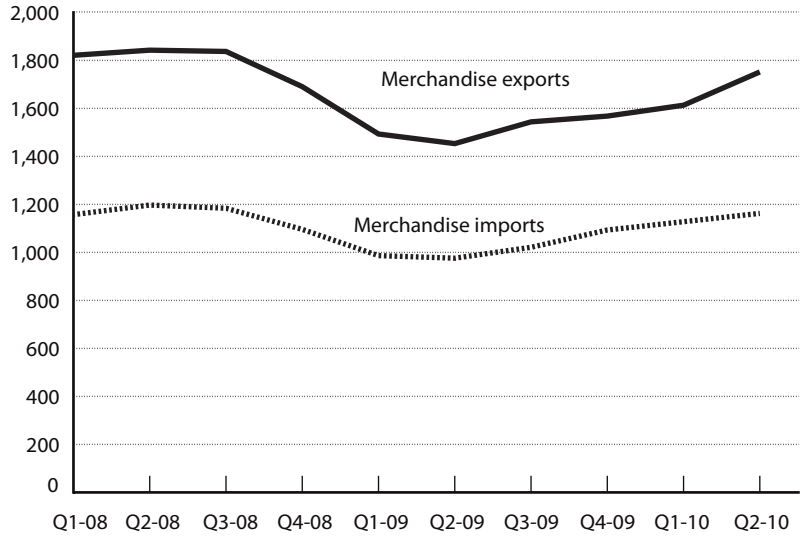
cut import levels, and the overall global economic slowdown, which cut foreign demand for U.S. exports. During late 2008 and early 2009, as the U.S. financial crisis lingered, Americans reduced spending on imported clothes, automobiles, and other consumer merchandise, such as toys and flat-panel televisions. In addition, as the domestic financial crisis deepened and the global recession widened, overseas trading partners' demand for U.S. goods started to tumble, further weakening the maritime container market. As a result, declines occurred in U.S. demand for maritime container transportation by ocean vessels, cargo-handling activity at the container ports, and the volume of intermodal freight moved to and from the ports by truck and rail.

The recent trends in maritime container traffic are similar to trends in overall U.S. international merchandise exports and imports transported by all modes of transportation since 2008. The trends also reflect changes in the national economy as a whole (figure 3 and figure 4).

According to the U.S. Department of Commerce, the trends in merchandise exports and imports in the first two quarters of 2010 were driven primarily by industrial supplies and materials; foods, feeds, and beverages; automotive vehicles, parts, and engines; and consumer goods (USDOC CB BEA 2010). When adjusted for inflation, the value of merchandise exports in the second quarter of 2010 rose 3 percent compared with the first quarter. The value of merchandise imports rose 9 percent (figure 3). Since mid-2009 there have been four straight quarters with positive quarter-on-quarter growth in merchandise exports and imports.

Trends in container shipping are directly related to patterns in overall international trade, which is a primary contributing factor in the Nation's economic growth. For example, real gross domestic product (GDP)—the output of goods and services produced by labor and property located in the United States—has hovered at approximately a 1 percent quarter-on-quarter increase since the second quarter of 2009. In the second quarter of 2010, real GDP rose by 1.7 percent. The upturn in real GDP primarily reflected positive contributions from rises in personal consumption expenditures, exports and imports, and Federal Government spending (USDOC BEA 2010b).

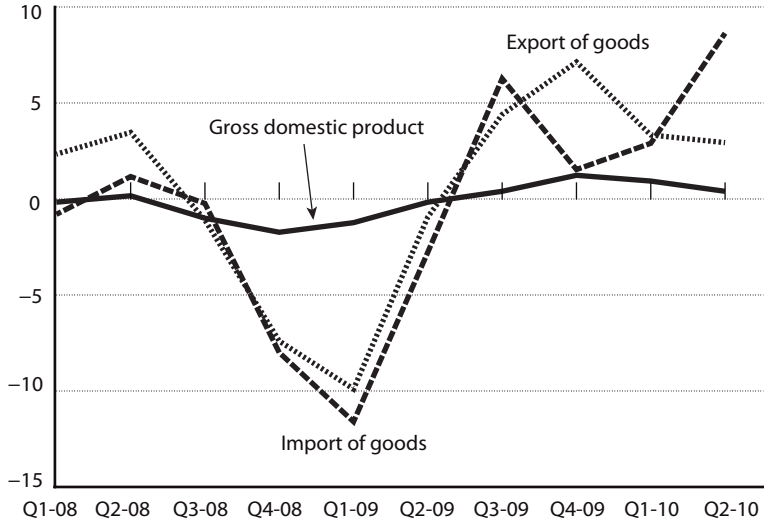
Figure 3
Quarterly Value of Total U.S. International Merchandise Trade: Q1–2008 to Q2–2010
(Billions of chained 2005 dollars)



NOTE: To compare economic changes over time, current or nominal values of currencies are adjusted for inflation. In the United States, the Bureau of Economic Analysis establishes indices to calculate changes between years. These are used to calculate real chained dollars. Annual changes in the indices are chained (multiplied) together to form a time series. Chained dollars, instead of merely reflecting inflation, capture the effect of relative changes in prices and in the composition of output. They also better reflect cyclical fluctuations in the economy.

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, National Economic Accounts, National Incomes and Products Account, Table 4.2.6., www.bea.gov/national/nipaweb/index.asp, as of Sept. 18, 2010.

Figure 4
Quarter-to-Quarter Percent Change in Real Gross Domestic Product and Merchandise Trade: Q1–2008 to Q2–2010
(Percent)



NOTE: Real GDP growth is measured at seasonally adjusted annual rates based on chained 2005 dollars.

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, National Economic Accounts, National Incomes and Products Account, Table 1.1.6., www.bea.gov/national/nipaweb/index.asp, as of Sept. 18, 2010.

Growth in economic activity and rises in exports and imports generally result in increased demand for freight transportation services by all modes of transportation. Because most U.S. overseas merchandise trade (over 66 percent by value and 99 percent by weight) moves by ocean vessel (USDOC CB 2010), the Nation's container ports are immediately impacted by swings in economic activity.[4] The effects of changes in production activity are not limited to seaports; they also affect other sectors of the freight transportation industry.

EFFECTS OF RECENT TRENDS IN CONTAINER THROUGHPUT

Changes in container throughput affect not just marine port and terminal operations, but also other transportation modes and transportation service providers. The rise in container cargo demand in early 2010 affected containership fleet capacity, railroads and commercial trucks that service the seaports, and the inland warehouses and distribution centers that provide logistical support for the entire multimodal freight supply chain.

First, due to an increase in the demand for containership services, estimated active containership capacity calling at seaports worldwide rose in June 2010 from the record lows experienced in 2009 (AXS-Alphaliner 2010). During the first half of 2010, active containership capacity climbed 15 percent over the previous 6 months, to 13 million TEU's, as the number of idled vessels fell and new vessels were delivered for service. Most of the surge in capacity was due to the reactivation of idle vessels. Because of rising demand for containership services, idle capacity dropped to 350,000 TEUs in June 2010, down from 1.5 million TEUs at the end of December 2009.

Second, changes in containerized export and import volumes also affect the number of intermodal shipping containers and truck trailers transported by rail.[5] For example, from January to June in 2010 the Nation's Class I railroads handled 5.2 million units, up 12 percent from 4.6 million during

[4] As used here, overseas trade excludes U.S. merchandise trade with Canada and Mexico.

[5] As used in this report, the term "intermodal" refers to the traditional rail and truck combination only. This involves using rail for the long-haul portion of the shipment and trucks for the shorter distances at both ends of the shipment. The term is also used to describe shipments transported by multiple modes, including ocean vessels.

the same months in 2009, but down 7 percent from 5.6 million in 2008 (AAR 2010a).[6]

About 60 percent of rail intermodal traffic consists of merchandise imports and exports that interchange between ship and rail at U.S. container ports—the remaining 40 percent of rail intermodal traffic is domestic (AAR 2009). The imports arrive on ocean vessels and are long-hauled by railcars to destinations across the country; the exports originate across the Nation and are shipped to destinations around the world. By June 2010, the number of international intermodal containers moved from seaports by rail totaled 3.4 million, an increase of 14 percent from 2.9 million during the same period in 2009, but down 14 percent from 3.9 million from the same period in 2008 (Intermodal Association of North America 2010). This growth was due partly to restocking by U.S. businesses that had reached record low inventories during the 2009 economic downturn (USDOC BEA 2010a and Alessandria et al. 2010).[7]

Demand for trucking services also moved in concert with the changes in container port throughput. In June 2010, according to the American Trucking Association, trucking activity nationwide was up 8 percent over June 2009, the seventh consecutive month-over-month increase. By June 2010, year-to-date trucking tonnage was up 7 percent compared with the same period in 2009, but down about 5 percent compared with same period in 2008 (ATA 2010).

Nationwide freight activity for all modes, measured by the Freight Transportation Services Index (TSI), declined 4.0 percent in 2009. However, according to the USDOT's Bureau of Transportation Statistics, the index rose 2.9 percent through the last 7 months of 2009, a trend that continued into early 2010 (USDOT RITA BTS 2010). The freight TSI measures changes in the output of services provided by the for-hire freight transportation industries and consists of data from the tracking of for-hire transportation via truck, rail, inland waterway, pipeline, and air freight.

[6] Class I railroads are line-haul freight railroads with 2009 operating revenues exceeding $401 million. The U.S. Class I railroads in 2009 were: BNSF Railway, CSX Transportation, Grand Trunk Corporation, Kansas City Southern Railway, Norfolk Southern Combined Railroad Subsidiaries, Soo Line Railroad, and Union Pacific Railroad.

[7] The upward trend in intermodal traffic continued in the third quarter of 2010. For the week ending September 25, 2010, intermodal taffic was up by nearly 20 percent compared to 2009, and was also up 6 percent from the 2008 levels (AAR 2010b).

Third, in addition to affecting the movement of freight throughout the United States, container volume also affects the warehousing and distribution of intermodal freight, and the industry investments in freight infrastructure. Logistics providers are developing massive integrated freight logistic distribution centers at inland locations such as Kansas City, Memphis, Columbus, and Chicago (Mongelluzzo 2010). Each day, thousands of imported containers are transported as far as 2,000 miles to these hubs—mostly by rail—on behalf of large-scale retailers and third-party logistics providers. These freight hubs serve both east coast and west coast container ports. To long-haul the steady stream of imported containers that arrive at the seaports into the interior of the country, the Nation's Class I railroads are developing mega hubs and renovating some of their rail tracks and tunnels for double-stack trains.[8] For example, in August 2010, Norfolk Southern opened its Heartland Corridor route to facilitate the movement of double-stack trains from the port of Norfolk, Virginia, to several hubs in the Midwest, including Columbus, Cincinnati, and Chicago. This newly expanded corridor and those developed by other railroads, including CSX Transportation, Union Pacific, and Burlington Northern Santa Fe, are likely to alter the domestic movement of international freight in coming years.

LONG-TERM TRENDS IN CONTAINER THROUGHPUT

Despite recent economic uncertainties and fluctuations in annual merchandise trade, the United States remains the world's largest trading Nation, with the world's biggest economy. Today, 1 container in every 11 that carries global trade is bound for or originates in the United States, accounting for 9 percent of worldwide container traffic.

In 2009, world maritime container traffic (loaded and empty) was estimated at over 432 million TEUs, down 15 percent from the 510 million TEUs transported in 2008 (table 2). This decline was the largest year-on-year percent drop in world container freight in more than a decade, making 2009 a difficult year for the global container industry.

Despite this recent decline, world container traffic more than tripled in volume between 1995 and 2009, from 137 million TEUs to 432 million TEUs,

[8] As the term suggests, doubled-stack trains permit containers to be stacked two-high, effectively doubling carrying capacity.

Table 2

U.S. v. World Maritime Container Traffic and Gross Domestic Product: 1995–2009

	Container traffic (total TEUs loaded and empty)				Gross Domestic Product (current U.S. dollars)			
	World (millions)	United States (millions)	U.S. share of world total (percent)	U.S. rank	World (billions)	United States (billions)	U.S. share of World GDP (percent)	U.S. rank
1995	137.2	22.3	16.3	1	29,649	7,415	25.0	1
1996	150.8	22.6	15.0	1	30,373	7,839	25.8	1
1997	160.7	24.5	15.3	1	30,245	8,332	27.5	1
1998	169.6	26.2	15.4	2	30,017	8,794	29.3	1
1999	184.6	28.0	15.2	2	31,180	9,354	30.0	1
2000	233.5	30.4	13.0	2	32,114	9,952	31.0	1
2001	245.1	30.7	12.5	2	31,903	10,286	32.2	1
2002	269.5	32.7	12.1	2	33,210	10,642	32.0	1
2003	307.4	36.3	11.8	2	37,332	11,142	29.8	1
2004	300.8	38.7	12.9	2	41,998	11,868	28.3	1
2005	306.0	42.0	13.7	2	45,431	12,638	27.8	1
2006	426.4	44.4	10.4	2	49,155	13,399	27.3	1
2007	436.6	45.0	10.3	2	55,392	14,062	25.4	1
2008	510.1	42.8	8.4	2	61,221	14,369	23.5	1
2009	432.0	37.2	8.6	2	57,937[a]	14,119	24.4	1
Percent change, 1995-2009	214.9	66.6						
Average annual rate (percent), 1995-2009	8.5	3.7						

[a] World 2009 GDP is an estimate that includes projections by the International Monetary Fund for some countries.

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

SOURCES: TEUs, world estimates, 1995–1999: Containerisation International Yearbook (London: Informa Group, Inc., 1997–2001); 2000–2009: U.S. Department of Transportation, Maritime Administration, based on Containerisation International Online, www.ci-online.co.uk, as of Oct. 5, 2010. TEUs, U.S. estimates, 1995–2009: American Association of Port Authorities, *Industry Statistics*; 1995–2009, www.aapa-ports.org/Industry, as of Sept. 16, 2010. GDP: World estimates from International Monetary Fund, World Economic Outlook Database, www.imf.org/external/pubs/ft/weo/2010/01/weodata/index.aspx, as of Sept. 16, 2010; U.S. estimates from U.S. Department of Commerce, Bureau of Economic Analysis, www.bea.gov/national, as of Sept. 16, 2010.

The global container shipping industry experienced a 15-percent decline in world TEUs in 2009

growing at an average annual rate of about 9 percent (table 2). That extended record of growth in maritime container freight shipments reflects relative expansion of U.S. and global economic activity. For example, U.S. total container traffic more than doubled in volume between 1995 and 2007, from 22 million TEUs to an estimated 45 million (although it fell to about 43 million in 2008 and to 37 million in 2009, the lowest level since 2004). From 1995 to 2009, U.S. total TEUs rose at an average annual rate of 4 percent (table 2). The primary factors underlying the long-term growth in U.S. maritime container traffic are rising trade with Asia-Pacific trading partners, particularly China; the increasing importance of merchandise trade to U.S. economic activity, and the proportion of merchandise trade transported in containers.[9] Table 2 also shows that between 1995 and 2009, U.S. share of worldwide container traffic dropped by about half, from 16 percent to 9 percent. This drop was due in part to faster growth in container trade between Asian and European countries and among Asian countries.

Looking ahead, the volume of containers that U.S. seaports will handle in the coming years will be determined mainly by how much the United States continues to rely on imported manufactured

[9] Asia-Pacific refers to Australia, Cambodia, China, Indonesia, Japan, Malaysia, New Zealand, Philippines, Singapore, South Korea, Taiwan, Thailand, Vietnam, and various Pacific islands.

goods, which countries it trades with the most, and which products it imports rather than produces domestically. Rising demand for foreign manufactured products would likely mean that even more post-Panamax container vessels would carry such products to the Nation's seaports, enabling continued growth in containerization.

Globally, the United States ranked second in container traffic in 2009, a position it has held since China took over the lead position in 1998. Nonetheless, the United States remains the world's leading trading nation, accounting for 11 percent of total world merchandise trade in 2009 (figure 5). U.S. total imports ranked first, accounting for over 13 percent of global imports in 2009. With 9 percent of total global exports, however, the United States lags both China, the new leading world exporter, and Germany (WTO 2010). In 2009, China became the top world exporter, with 10 percent of the value of traded merchandise. Overall, though, the United States remained the world's largest economy, accounting for 24 percent of world GDP in 2009 (table 2).

From 1995 to 2008, the volume of containerized cargo moving through U.S. seaports grew at a faster rate, 5 percent, than U.S. real GDP growth, which stood at 3 percent (figure 6). During most of the 1990s, strong growth of the U.S. economy, rising household wealth and income in the United States, and steady consumer demand at home spurred U.S. international goods trade, resulting in greater demand for containerized freight transportation services.

A comparison of the year-on-year percent change between U.S.-loaded container TEUs and real GDP shows a correlation between container maritime industry trends and general economic conditions (figure 7). This comparison shows the effect that economic cycles have on U.S. container trade, as evidenced by declines in TEUs during the 2001 and 2008–2009 recessions. As figure 7 shows, the container trade trend is more volatile than the GDP trend. However, assuming that the strong cyclical relationship continues, when the U.S. economy fully recovers and the volume of merchandise imports and exports rebounds to pre-recession levels, U.S. container ports are likely to see a continuation of the 2010 increase in container throughput.

GATEWAYS FOR INBOUND AND OUTBOUND TRAFFIC

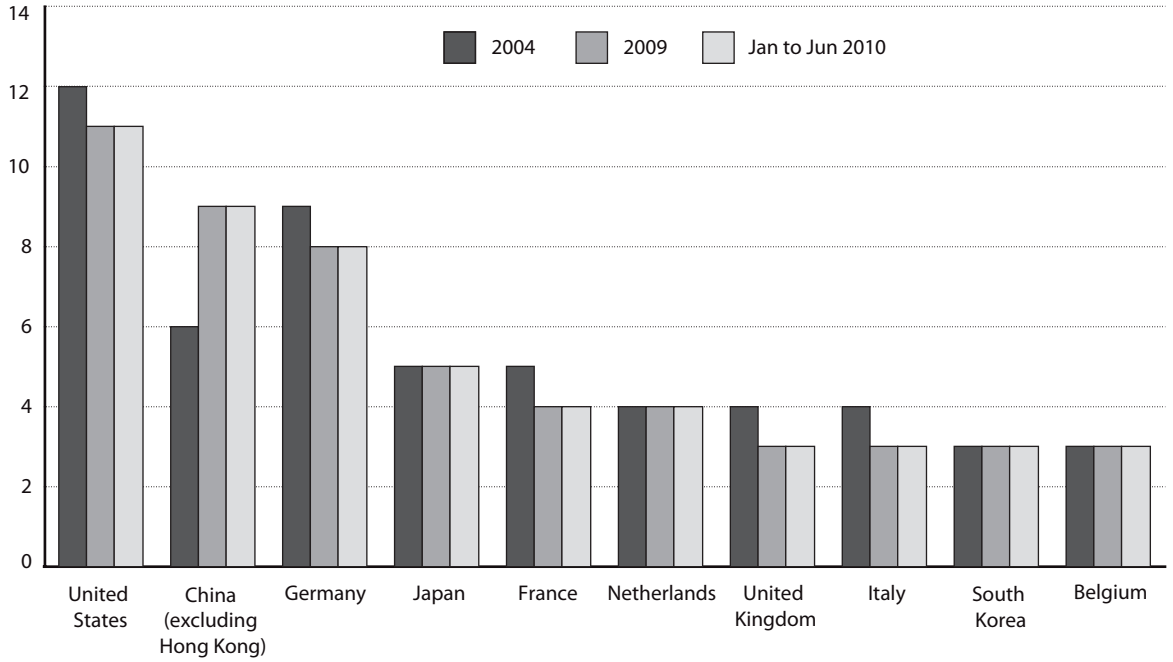
While America's container ports serve as gateways for both merchandise imports and exports, overall they handle more TEUs of imports than exports. In 2009, the U.S. deficit in maritime container traffic—the gap between exports and imports—narrowed to 4.1 million TEUs as maritime container imports fell 15 percent while exports fell 8 percent (figure 8). This marked the third year in a row that the deficit narrowed, following record high imports in 2006. Between 2007 and 2009, although the United States exported less merchandise than it imported, imports declined steeply because of the economic slowdown at home. Exports grew at a modest pace and did not decline as much as imports.

Before 1998, the difference between U.S. international container imports and exports was less than 1 million TEUs per year. By 2009, this gap was more than 4 million TEUs, with imports accounting for a larger share of total container traffic (figure 8). The gap had also reached more than 4 million earlier, in 2001, and grew to 10 million in 2006 before narrowing. In 2009, maritime container imports passing through U.S. seaports accounted for 58 percent of total container traffic. While this is a steady increase from 51 percent in 1995, it is down from the peak in 2006 when imports accounted for 67 percent of total container traffic. The decline in the relative share of imports reflects a relative rebound in container exports, likely due to the fall of the U.S. dollar relative to the European euro and other major currencies making American goods more affordable overseas. This contributed to the rise in maritime container exports. A stronger dollar provides Americans with greater purchasing power and results in more goods being imported, while a weaker dollar encourages foreign buyers to purchase more U.S. products.[10]

Figure 9 shows the location of the Nation's top 25 maritime container port gateways for U.S. international containerized exports and imports in 2009. The top three gateways were Los Angeles, Long Beach, and New York/New Jersey. Containerized

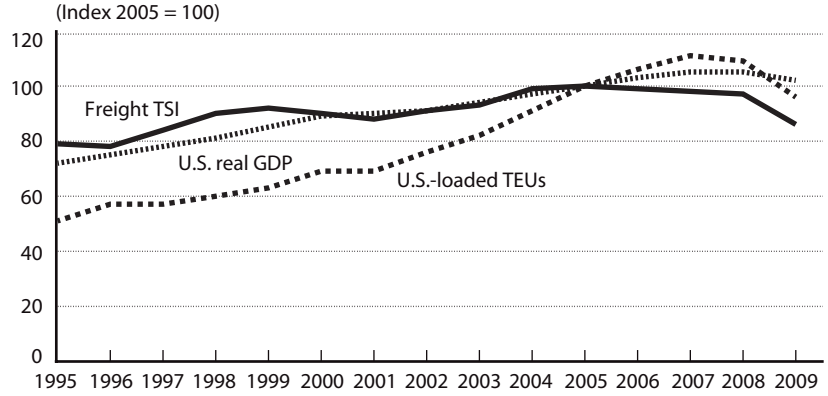
[10] Because the merchandise trade deficit is more complicated than simple changes in relative prices, a fall in the U.S. dollar is not always effective in closing the gap between exports and imports. Domestic recessions are often more effective in cutting demand for imports and therefore reducing the trade balance.

Figure 5
World's Top 10 Merchandise Trade Countries: 2004, 2009, and January to June 2010
(Percent of world total)



SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from World Trade Organization, World Trade Organization, Trade Statistics, at http://stat.wto.org/Home/WSDBHome.aspx, as of Sept. 18, 2010.

Figure 6
Growth in U.S. Waterborne Foreign Containerized Trade, Overall Freight, and Real GDP: 1995–2009

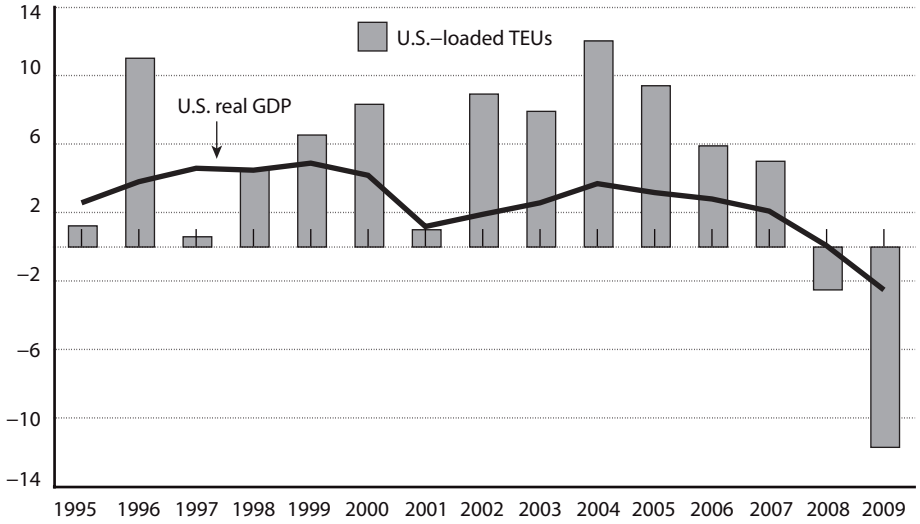


KEY: TEU = twenty-foot equivalent unit. One 20-foot container equals one TEU; one 40-foot container equals two TEUs.

NOTE: Real GDP growth is measured at seasonally adjusted annual rates based on chained 2005 dollars. TSI figures are annualized estimates based on the monthly published estimates.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on GDP data from U.S. Department of Commerce, Bureau of Economic Analysis, National Economic Accounts, National Incomes and Products Account, www.bea.gov/national/, as of Sept. 16, 2010. TEU data based on data from U.S. Department of Transportation, Maritime Administration, which are drawn from *The Journal of Commerce*, Port Import Export Reporting Service (PIERS). Freight TSI data based on monthly freight TSI estimates from U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics.

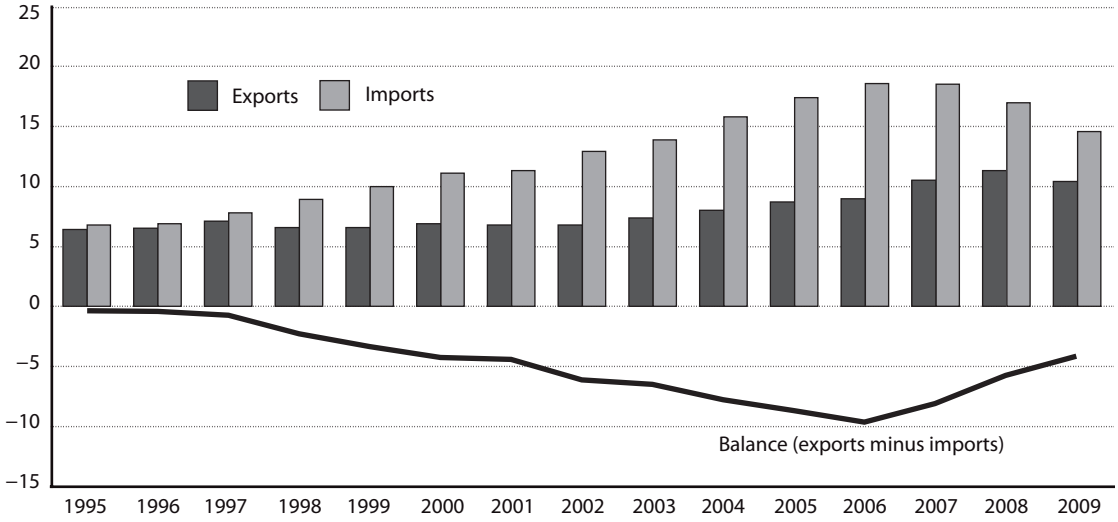
Figure 7
Year-on-Year Percent Change in U.S. Waterborne Foreign Containerized Trade and Real GDP: 1995–2009
(Percent)



NOTE: Real GDP growth is measured at seasonally adjusted annual rates based on chained 2005 dollars.

SOURCES: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from Department of Commerce, Bureau of Economic Analysis, National Economic Accounts, National Incomes and Products Account, www.bea.gov/national/, as of Sept. 16, 2010. TEU data based on data from U.S. Department of Transportation, Maritime Administration, which are drawn from *The Journal of Commerce*, Port Import Export Reporting Service (PIERS).

Figure 8
U.S. Waterborne Foreign Containerized Exports and Imports: 1995–2009
(Millions of TEU)



KEY: TEU = twenty-foot equivalent unit. One 20-foot container equals one TEU; one 40-foot container equals two TEUs.

SOURCES: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from U.S. Department of Transportation, Maritime Administration, which are drawn from *The Journal of Commerce*, Port Import and Export Reporting Service (PIERS), available at www.marad.dot.gov/data_statistics, as of Sept. 18, 2010.

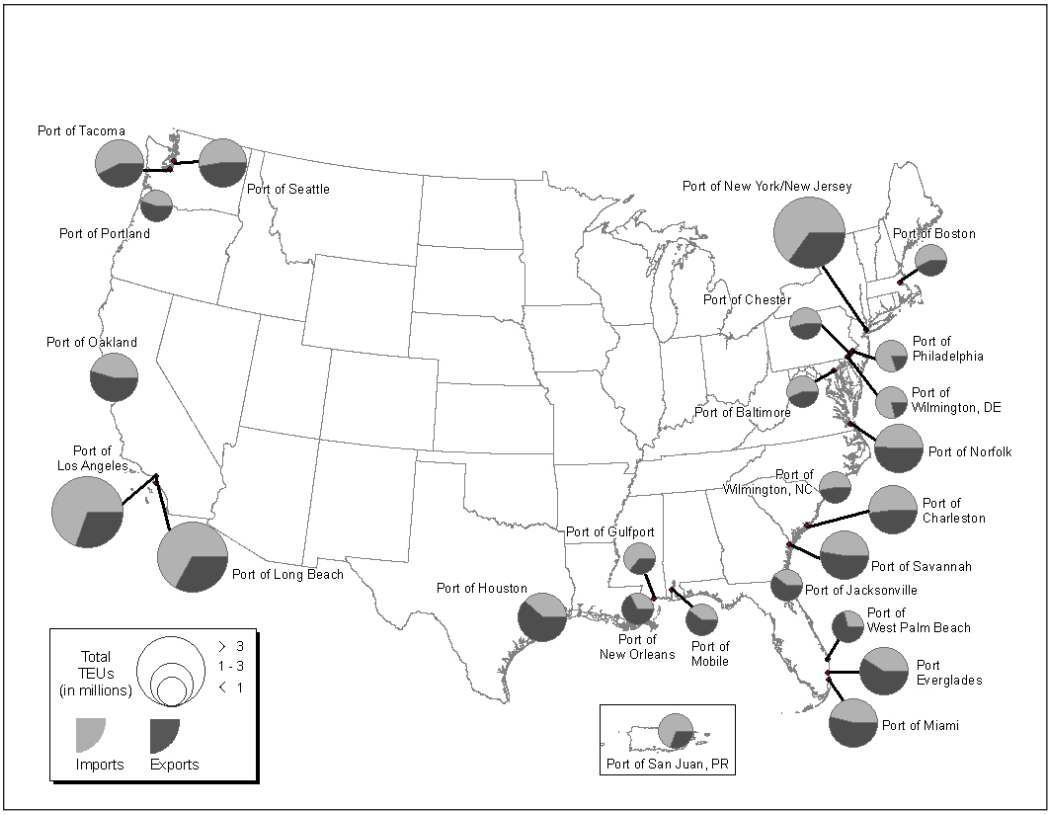
goods handled by these leading ports serve the international trade needs of coastal states with seaports as well as landlocked states that depend on seaports to export and import merchandise. The containerized cargo arrives at and leaves the seaports mostly by rail or truck, carried by either a single transportation mode or via an intermodal truck-rail combination.

Container traffic gap varied for the major seaports in 2009 (figure 10). At Los Angeles, the Nation's largest container port, the volume of imported TEUs exceeded exports by nearly 2 million, reflecting inbound trade with Asia, particularly China. At the port of Houston, on the other hand, exported TEUs were 292,000 more than imports. This difference reflects variation in each port's foreign trading partners, primary commodities handled, and services provided by ocean-shipping carriers that call at the ports.

Overall U.S. international maritime container traffic nearly doubled between 1995 and 2009 (figure 11). In 2009, about 25 million loaded TEUs of U.S. international oceanborne trade moved through U.S. container ports, up from 13 million in 1995 (JOC PIERS 2010a). If the current rebound follows the pattern experienced after 2001, long-term growth is likely to resume after the U.S. and global economies recover. The upturn experienced during the first half of 2010 may be evidence of the beginning of that turnaround.

In 2009, U.S. container ports handled a daily average of 68,000 TEUs, up from 37,000 TEUs per day in 1995, but down from the peak of 78,000

Figure 9
Top 25 Container Ports for U.S. Waterborne Foreign Containerized Trade: 2009



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

NOTE: The data in this figure include only loaded containers in U.S. international maritime activity and cover U.S. imports, exports, and transshipments. Therefore, the trade levels will be greater than those reported from U.S. international trade statistics, which exclude transshipments. The data also exclude military shipments.

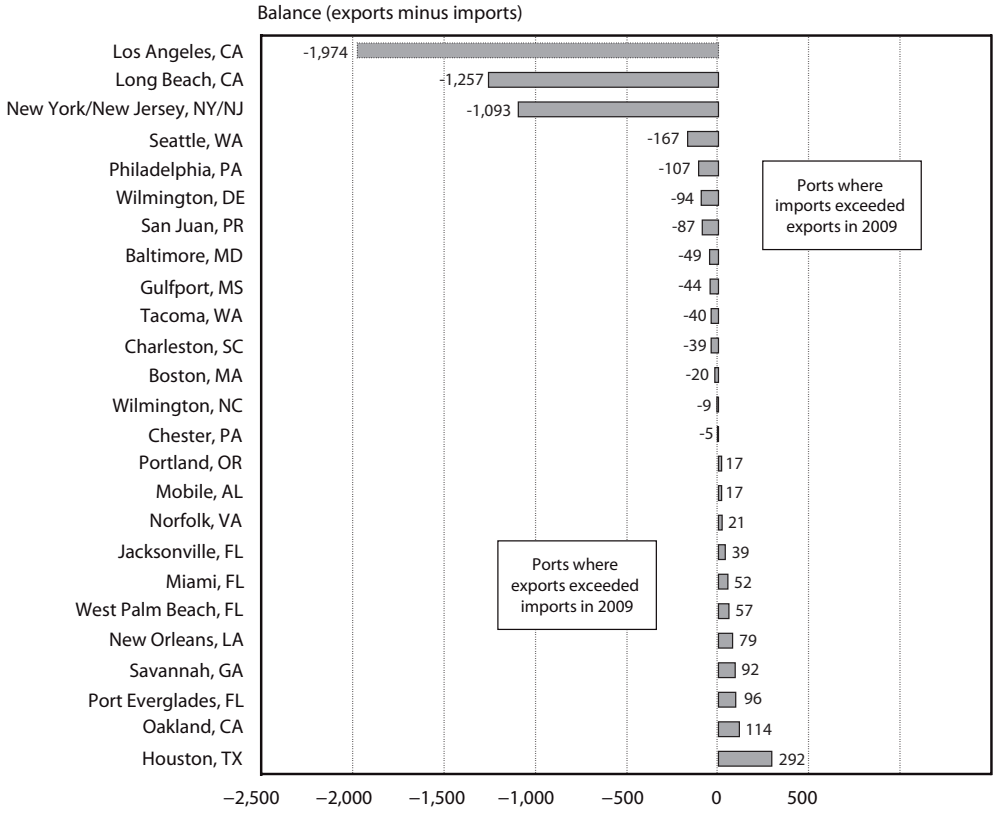
SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from U.S. Department of Transportation, Maritime Administration, which are drawn from The Journal of Commerce, Port Import Export Reporting Service (PIERS), available at www.marad.dot.gov, as of Sept. 18, 2010.

in 2008 (table 3). The large number of containers moving through the Nation's seaports highlights the significance of container traffic and its potential impacts on the economy, local communities, national security, and the natural environment. It also underscores the challenges of handling this cargo efficiently, and addressing such challenges as alleviating highway congestion around the seaports, improving landside access to ports, and removing freight bottlenecks at intermodal transfer locations where trucks and railroads connect to marine terminals.

Greater use of containers will require growth in the intermodal capacity needed to handle the increased flow of goods. For example, in 2009, loaded container throughput for the port of New York/New Jersey, the Nation's third largest container port, was 3.6 million TEUs (PANYNJ 2010). Assuming a typical line-haul truck carries an equivalent of two TEUs, this annual throughput translates into 1.8 million one-way truck trips per year.[11] This is equivalent to nearly 7,000 truck trips each weekday resulting from containerized cargo. Assuming that each trailer is approximately 40 feet long, the trailers would stretch about 53 miles on a typical work day if lined up end to end. By comparison, the estimate was 46 miles in 2004 and 30 miles in 1999.

[11] A line-haul truck is usually a tractor-trailer combination of three or more axles. A typical line-haul trailer is approximately 40 to 48 feet long and in most States is permitted to move a maximum of 80,000 pounds gross weight.

Figure 10
Top 25 Container Ports for U.S. Waterborne Foreign Containerized Trade, Exports Minus Imports: 2009
(Thousands of TEUs)

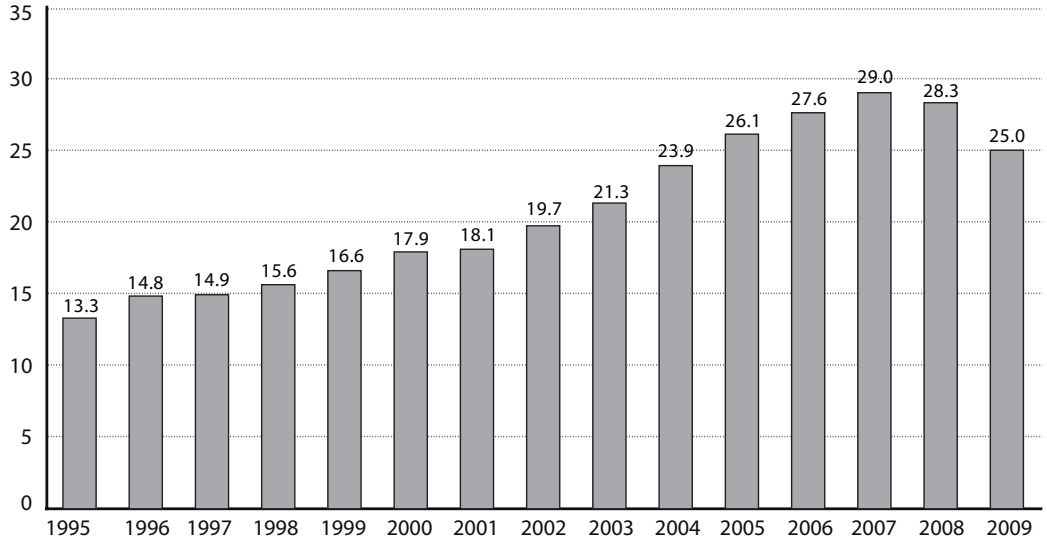


KEY: TEU = twenty-foot equivalent unit. One 20-foot container equals one TEU; one 40-foot container equals two TEUs.

NOTE: The data in this figure include only loaded containers in U.S. international maritime activity and cover U.S. imports, exports, and transshipments. Therefore, the trade levels will be greater than those reported from U.S. international trade statistics, which exclude transshipments. The data also exclude military shipments. The port of New York/New Jersey covers U.S. Customs ports of New York, NY and Newark, NJ.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from U.S. Department of Transportation, Maritime Administration, which are drawn from *The Journal of Commerce*, Port Import Export Reporting Service (PIERS), available at www.marad.dot.gov, as of Sept. 18, 2010.

Figure 11
U.S. Waterborne Foreign Containerized Trade: 1995–2009
(Millions of loaded TEUs)



KEY: TEU = twenty-foot equivalent unit. One 20-foot container equals one TEU; one 40-foot container equals two TEUs.

NOTES: Totals are for all container ports in all 50 states and Puerto Rico. The data in this figure include only loaded containers in U.S. international maritime activity and cover U.S. imports, exports, and transshipments.

SOURCES: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from U.S. Department of Transportation, Maritime Administration, which are drawn from *The Journal of Commerce*, Port Import and Export Reporting Service (PIERS), available at www.marad.dot.gov/data_statistics, as of Sept. 18, 2010.

Table 3

Top 10 Ports for U.S. Waterborne Foreign Containerized Trade by Loaded TEUs: 1995, 2000, 2008, and 2009

	Annual traffic (thousands)				Daily average				Trend		
U.S. Customs port	1995	2000	2008	2009	1995	2000	2008	2009	Percent change, 2008–2009	Percent change, 1995–2009	Average annual growth rate, 1995–2009 (percent)
Los Angeles, CA	1,849	3,228	5,611	5,011	5,066	8,843	15,373	13,730	-10.7	171.0	7.4
Long Beach, CA	2,137	3,204	4,553	3,748	5,855	8,777	12,474	10,268	-17.7	75.4	4.1
New York/New Jersey, NY/NJ	1,537	2,200	3,956	3,577	4,211	6,028	10,838	9,799	-9.6	132.7	6.2
Savannah, GA	445	720	2,106	1,907	1,219	1,973	5,771	5,226	-9.4	328.6	11.0
Oakland, CA	919	989	1,388	1,392	2,518	2,709	3,803	3,814	0.3	51.5	3.0
Norfolk, VA	647	850	1,585	1,372	1,773	2,330	4,341	3,759	-13.4	112.1	5.5
Houston, TX	489	733	1,363	1,255	1,340	2,009	3,733	3,437	-7.9	156.6	7.0
Seattle, WA	993	960	1,080	1,068	2,721	2,630	2,958	2,927	-1.0	7.6	0.5
Charleston, SC	758	1,246	1,326	951	2,077	3,414	3,632	2,605	-28.3	25.4	1.6
Tacoma, WA	604	647	1,118	870	1,654	1,773	3,063	2,384	-22.1	44.2	2.6
Total top 10 ports	10,378	14,777	24,085	21,152	28,432	40,486	65,985	57,949	-12.2	103.8	5.2
Total all ports[1]	13,328	17,938	28,309	24,989	36,515	49,144	77,558	68,463	-11.7	87.5	4.6
Top 10, percent of total	77.9	82.4	85.1	84.6	77.9	82.4	85.1	84.6			

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

NOTE: The data in this table include only loaded containers in U.S. international maritime activity and cover U.S. imports, exports, and transshipments. Therefore, the trade levels will be greater than those reported from U.S. international trade statistics, which exclude transshipments. The data also exclude military shipments.
[1] Container ports in all U.S. coastal states and Puerto Rico.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from U.S. Department of Transportation, Maritime Administration, which are drawn from *The Journal of Commerce*, Port Import Export Reporting Service (PIERS), as of Sept. 16, 2010.

PORT CONCENTRATION

Since 1995, container activity at U.S. seaports has shown a greater concentration of vessel calls and cargo traffic in a few leading ports because of increased use of larger, faster, and more specialized vessels. Modern post-Panamax vessels are longer than two football fields and can carry up to 12,500 TEUs. Currently, few west coast ports can accommodate these vessels.

In 2009, the top 10 U.S. container ports accounted for 85 percent of containerized imports and exports (measured in TEUs), up from 78 percent in 1995. Five of the top 10 container ports in the United States are on the west coast, four are on the east coast, and one is on the gulf coast (table 3).

From 1995 to 2009, the port of Los Angeles grew the most in terms of absolute TEUs handled, reflecting increased U.S. trade with Asia-Pacific countries, particularly China, and the transportation of higher-value-per-ton Asian manufactured goods into the United States. New York/New Jersey was second, showing significant growth in U.S. trade with Europe. The ports of Savannah, Los Angeles, and Houston had the largest average annual growth rates (table 3). The growth rates for Savannah and Houston reflect the expansion in U.S. container trade with Latin American countries and changes in the location of freight logistics hubs and distribution service centers. The growth in Savannah's containerized traffic also underscores the increase in retail import distribution centers in the Savannah area—several national retailers have established large distribution centers there.

REGIONAL SHIFTS IN PORT MARKET SHARE

The increased use of oceanborne containers in transporting U.S. international trade continues to affect port operations and the distribution of total maritime trade among U.S. ports. Before the mid-1980s, east coast ports handled the majority of U.S. international maritime trade. As U.S. trade with Asia-Pacific countries grew, the east coast ports' share of international maritime trade declined and west coast ports' share increased (figure 12). In 1986, west coast ports surpassed east coast ports in maritime cargo handled. This trend has continued, although the gap between the two regions has narrowed.

As measured in TEUs, over half of U.S. containerized merchandise trade passes through west coast ports. In 2009, 51 percent of U.S. containerized imports and exports passed through these ports, down slightly from 56 percent in 2006 (figure 12). West coast ports as a region grew the fastest beginning in the mid-1980s, but they suffered the sharpest decline in container traffic since 2007 (figure 13). Between 2007 and 2009, total TEUs handled by west coast ports declined 22 percent, compared with 13 percent decline for east coast ports and less than 1 percent increase for gulf coast ports.

West coast ports handle the most container trade today, but they have also had a larger share of the oceanborne containerized trade deficit since 2007 than ports in other regions. Today, west coast ports serve more as import gateways to the United States than as export gateways while east coast ports handle more exports than imports, despite the decline in the east coast's regional market share.

Since 1980, changes in industrial activity in the Midwest United States have affected the volume and type of cargo moving through Great Lakes ports. For example, the relocation of automobile final-assembly plants and companies that produce auto parts had an impact on manufacturing activities in the Midwest. With the emergence of automakers and parts producers in other locations of the United States, maritime cargo originating in the Midwest and cargo transport via the Great Lakes dwindled. In 2008, according to the U.S. Army Corps of Engineers, Great Lakes ports handled nearly 3 million short tons of maritime exports and imports, compared with about 10 million short tons in 1980. They handled 1 million short tons of exports in 2008, down from 8 million in 1980 (USACE NDC 2008). The volume of containerized cargo handled by Gulf of Mexico ports more than quadrupled during this period, although their relative share remained steady as volume at west coast ports rose.

Changes in container trade also affect the pattern of freight movement within the United States. For example, some east coast ports are expecting an increase in their container traffic after completion of the Panama Canal expansion that is currently underway. Additional traffic through these ports will increase cargo movements on east coast rail and truck freight corridors. Some ports use marine highways as an alternative to transport

goods shorter distances.[12] The growth in U.S. containerized cargo shipping places pressure on the Nation's transportation network, affecting local traffic congestion and contributing to traffic delays in urban areas surrounding the major U.S. container ports. (See Spotlight 1 on landside access to the seaports.)

VESSEL CALLS AND CAPACITY

Between 2004 and 2009, the number of containership calls at U.S. ports has remained fairly steady, averaging about 18,000 per year. By contrast, container capacity of the calling vessels grew by 19 percent during this same period, from 59 million to 70 million TEUs.

In 2009, there were more than 18,200 containership calls at U.S. seaports, down 3 percent from 2008. These vessel calls accounted for 33 percent of the total calls made by all oceangoing vessel types at U.S. ports in 2009 (table 4).[13] Calls at U.S. container ports in 2009 accounted for 6 percent of global containership calls at world ports, ranking third behind calls in China and Japan (USDOT MARAD 2010a).[14]

Container vessel calls as a share of total vessel calls at U.S. ports continue to rise (figure 14). In 2009, these vessels accounted for 33 percent of the total calls by all ships, up from 31 percent in 2004 (table 5). The average size of these vessels per call has also increased, by more than 19 percent, from 3,200 TEUs in 2004 to more than 3,800 TEUs in 2009 (table 5 and figure 15, left axis).

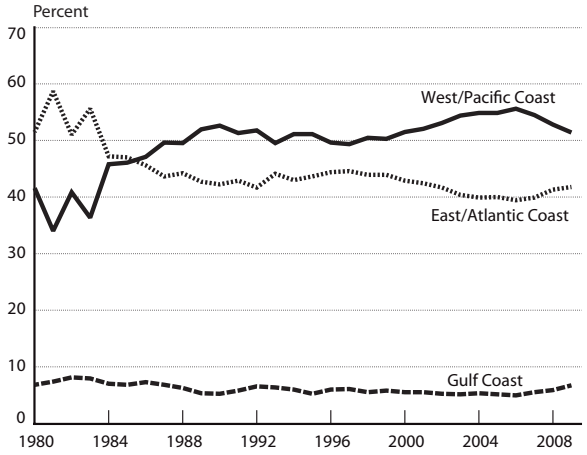
U.S. maritime ports are handling larger container vessels than in the past. The average size per call of container vessels that docked at U.S. ports in

[12] The term "marine highway" refers to coastal waterways that are used to move freight (e.g., from Long Beach to Portland or from New York/New Jersey to Savannah). It includes the movement of containers and wet and dry bulk cargoes.

[13] Of the remainder, 35 percent were by tankers, 15 percent by dry-bulk vessels, 9 percent by roll-on/roll-off ships, and 8 percent by general cargo ships and other types.

[14] In 2009, there were 293,755 global containership calls. China had 43,690 (15 percent), Japan had 22,094 (8 percent) and the United States had 18,206 (6 percent) (USDOT MARAD 2010a).

Figure 12
Coastal Port Region's Market Share of U.S. Waterborne Foreign Containerized TEUs: 1980–2009
(Percent)

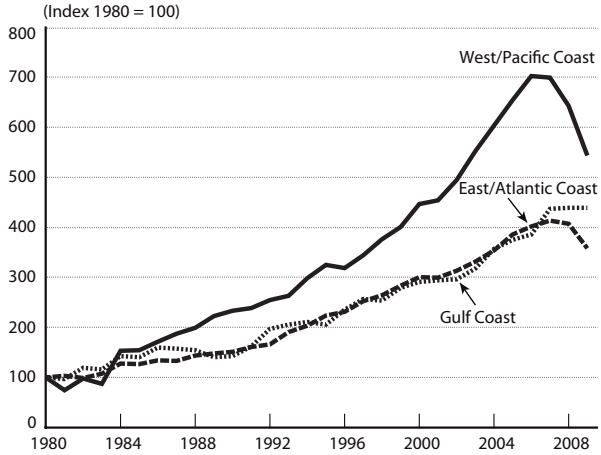


KEY: TEU = twenty-foot equivalent unit. One 20-foot container equals one TEU; one 40-foot container equals two TEUs.

NOTES: Totals are for all container ports in all 50 states and Puerto Rico. The data in this figure include both loaded and unloaded containers in U.S. international maritime activity and cover U.S. imports, exports, and transshipments.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from the American Association of Port Authorities, available at www.aapa.org, as of Sept. 18, 2010.

Figure 13
Trend in U.S. Waterborne Foreign Containerized Export and Import TEUs by Coastal Port Region: 1980–2009



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

NOTES: Totals are for all container ports in all 50 states and Puerto Rico. The data in this figure include both loaded and unloaded containers in U.S. international maritime activity and cover U.S. imports, exports, and transshipments.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from the American Association of Port Authorities, available at www.aapa.org, as of Sept. 18, 2010.

Table 4

Top 25 U.S. Container Ports by Port Calls and Vessel Type: 2009

Ranked by container capacity	Port/State	All vessel types		Containership		Containerships as percent of port's total vessels		Average vessel size per call (dwt)	
		Calls (total vessels)	Capacity (dwt, thousands)	Calls (total vessels)	Capacity (dwt, thousands)	Calls	Capacity	All vessel types	Container ships
1	Los Angeles/ Long Beach, CA	4,312	285,194	2,442	147,347	56.6	51.7	66,140	60,339
2	New York/ New Jersey, NY/NJ	4,430	220,616	2,319	124,997	52.3	56.7	49,800	53,901
3	San Francisco, CA	3,275	190,668	1,859	111,546	56.8	58.5	58,219	60,003
4	Savannah, GA	2,219	112,557	1,714	95,709	77.2	85.0	50,724	55,840
5	Virginia Ports, VA	2,502	134,680	1,615	84,943	64.5	63.1	53,829	52,596
6	Charleston, SC	1,865	85,748	1,312	68,035	70.3	79.3	45,978	51,856
7	Seattle, WA	920	53,190	676	39,029	73.5	73.4	57,816	57,736
8	Houston, TX	6,153	277,117	931	38,380	15.1	13.8	45,038	41,224
9	Tacoma, WA	1,149	55,253	576	30,284	50.1	54.8	48,088	52,577
10	Miami, FL	893	30,463	591	26,589	66.2	87.3	34,113	44,989
11	Baltimore, MD	1,562	57,596	397	19,536	25.4	33.9	36,874	49,209
12	Port Everglades, FL	1,055	34,427	597	17,961	56.6	52.2	32,633	30,085
13	Jacksonville, FL	1,487	48,036	434	16,346	29.2	34.0	32,304	37,664
14	New Orleans, LA	4,226	210,844	331	13,992	7.8	6.6	49,892	42,273
15	Honolulu, HI	596	20,552	392	13,530	65.8	65.8	34,482	34,515
16	Philadelphia, PA	2,171	131,734	340	10,887	15.7	8.3	60,679	32,019
17	San Juan, PR	927	20,973	455	10,174	49.1	48.5	22,625	22,359
18	Wilmington, NC	514	19,301	174	7,272	33.9	37.7	37,551	41,794
19	Boston, MA	520	24,300	133	7,084	25.6	29.2	46,732	53,262
20	Mobile, AL	901	45,517	171	6,960	19.0	15.3	50,518	40,700
21	Dutch Harbor, AK	156	7,206	141	6,864	90.4	95.2	46,194	48,677
22	Columbia River, OR	1,925	80,291	98	5,256	5.1	6.5	41,710	53,637
23	Tampa, FL	889	33,247	53	2,292	6.0	6.9	37,398	43,249
24	Kodiak, AK	95	2,024	95	2,024	100.0	100.0	21,309	21,309
25	Freeport, TX	740	40,101	106	1,852	14.3	4.6	54,190	17,474
	Total top 5 ports	16,738	943,714	9,949	564,542	59.4	59.8	56,382	56,744
	Total top 10 ports	27,718	1,445,486	14,035	766,860	50.6	53.1	52,150	54,639
	Total top 25 ports	45,482	2,221,636	17,952	908,889	39.5	40.9	48,846	50,629
	Total all U.S. ports[1]	55,560	2,968,567	18,206	913,978	32.8	30.8	53,430	50,202
	Top 5, percent of U.S. total	30.1	31.8	54.6	61.8				
	Top 10, percent of U.S. total	49.9	48.7	77.1	83.9				
	Top 25, percent of U.S. total	81.9	74.8	98.6	99.4				

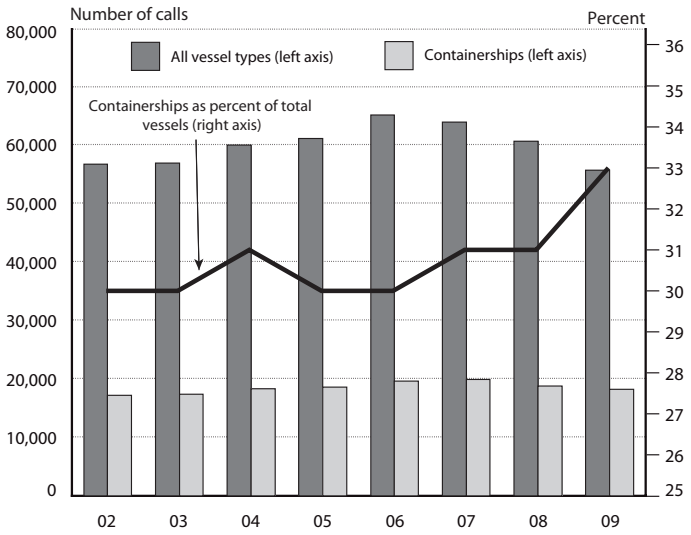
KEY: dwt = deadweight ton.

NOTES: Data include oceangoing vessels 10,000 deadweight tons and greater. Capacity equals dwt multiplied by calls. San Francisco includes Oakland, San Francisco, and other ports. Virginia ports include all Hampton Roads area ports (e.g., Norfolk, Newport News, Portsmouth). Los Angeles and Long Beach are counted as one port in this table.

[1] All seaports in all 50 states and Puerto Rico. The data in this table include only loaded containers in U.S. international maritime activity and cover U.S. imports, exports, and transshipments. Therefore, the trade levels will be greater than those reported from U.S. international trade statistics, which exclude transshipments. The data also exclude military shipments.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from U.S. Department of Transportation, Maritime Administration, which are drawn from the *Lloyd's Maritime Intelligence Unit, Vessel Movement Data File,* and are available at www.marad.dot.gov, as of Sept. 17, 2010.

Figure 14
Vessel Calls at U.S. Seaports: 2002-2009



SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from U.S. Department of Transportation, Maritime Administration, as of Sept. 18, 2010.

2009 was 50,000 deadweight tons (table 4). This is a 15 percent jump from about 44,000 dwt in 2004 (table 5).

The larger vessels now operating in the worldwide fleets are increasingly calling at U.S. ports (figure 16). During the last 5 years, calls by containerships of 5,000 TEUs or greater increased by 156 percent, from 1,700 calls in 2004 to 4,400 calls in 2009 (table 5). In 2009, these very large containerships accounted for 24 percent of all containership calls at U.S. seaports, an increase from 10 percent in 2004 (USDOT MARAD 2010a). Increases in vessel calls and containership capacity, and the introduction of large post-Panamax vessels, affect port operation, port productivity, and infrastructure requirements. They also affect environmental considerations and community-impact issues.

Newer vessels are calling at U.S. ports, and the containerships that call have been in service for a shorter time than other vessel types that call at the Nation's ports (figure 17). While the average age of all vessels calling at U.S. seaports was 10.3 years in 2009, down from 11.8 years in 2004, the average age of containerships calling at U.S. seaports during the past 5 years has been 10 years (table 5). This trend reflects the replacements of older vessels with newer ones built in the late 1990s.

The majority of containership calls in the United States are concentrated at a handful of U.S. container ports. In 2009, the top five U.S. container ports handled over half (55 percent) of container vessel calls and 62 percent of container cargo capacity. The top 10 container ports accounted for 77 percent of containership calls. In 2004, the top five container ports handled 58 percent of container vessel calls and 62 percent of the cargo capacity.

RANKING OF U.S. PORTS AMONG WORLD'S TOP PORTS

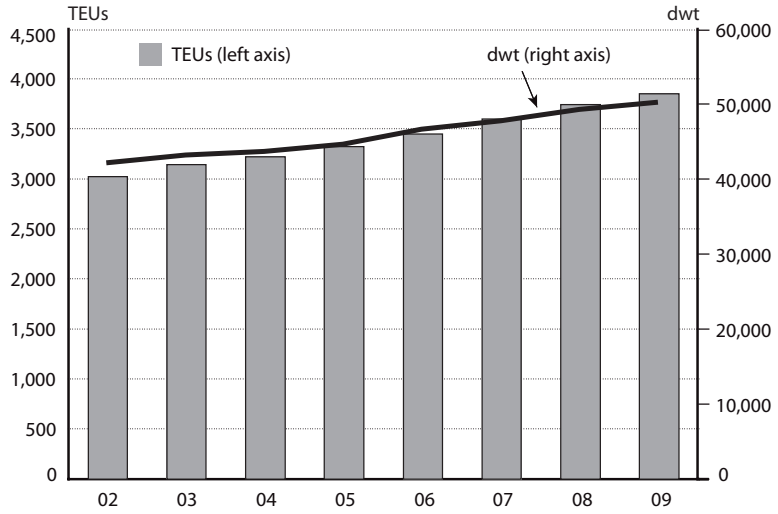
Based on preliminary data for 2009, only 2 U.S. ports—Los Angeles and Long Beach—ranked among the world's top 20 container ports when measured by TEUs, placing 16th and 18th respectively (table 6). In 2008, the Port of New York/New Jersey ranked 20th, but it subsequently dropped to the 22nd in 2009. Since 2000, both Los Angeles and Long Beach have dropped in the rankings of the world's top 20 ports, not due to declining volume but because container traffic at Asian ports grew at a faster rate. Chinese seaports have become more dominant since 2000, and today 6 of the top 10 world ports are in China. In 2000, 4 of these Chinese ports were not in the top 10 (table 6). Figure 18 shows the locations of the top 20 world container ports in 2009, the 2009 ranking by TEUs of cargo handled, and the cargo increases since 2000.

TRADING PARTNERS

The United States exports and imports maritime goods to and from more than 170 countries, but the vast majority of its trade is with relatively few trading partners. In 2009, the top 10 countries accounted for nearly three-quarters (71 percent) of inbound container TEUs, while more than half (56 percent) of the outbound container TEUs were to 10 countries. The top five U.S. containerized cargo trading partners in 2009 were all in Asia: China, Japan, Hong Kong (China), South Korea, and Taiwan.[15] China was the leading containerized merchandise trading partner, accounting for nearly one-half (48 percent) of U.S. maritime imported TEUs, almost double the 25 percent of such trade in 2000. China accounted for 22 percent of U.S. exported TEUs in 2009, more than double the 9 percent it received in 2000 (figure 19 and figure 20).

[15] For the analysis in this report, U.S. merchandise trade with China and Hong Kong are considered separate. As used here, China refers to China alone.

Figure 15
Average Containership Size Per Call at U.S. Ports: 2002–2009



KEY: dwt = deadweight ton. TEU = twenty-foot equivalent unit. One 20-foot container equals one TEU; 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 U.S. Department of Transportation, Maritime Administration, which are drawn from the Lloyd's Maritime Intelligence Unit, Vessel Movement Data File, and are available at www.marad.dot.gov, as of Sept. 17, 2010.

Table 5

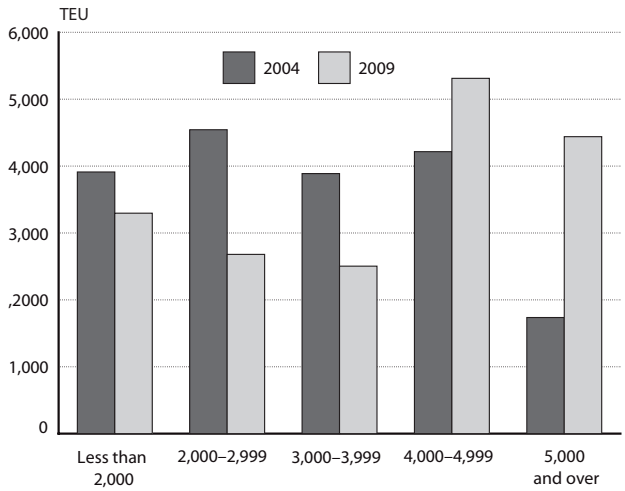
Number and Average Size and Age of Vessels Calling at U.S. Ports: 2004 and 2009

	2004	2009	Percent change, 2004–2009
Calls by all vessel types	59,885	55,560	-7.2
Calls by container vessels	18,279	18,206	-0.4
Calls by containerships 5,000 TEUs and over	1,734	4,434	155.7
Containerships as percent of total vessel calls	30.5	32.8	
Containerships 5,000 TEUs and over as percent of total vessel calls	9.5	24.4	
Average containership vessel size per call (TEUs)	3,221	3,848	19.5
Average containership vessel size per call (dwt)	43,610	50,202	15.1
Average age all vessel types	11.8	10.3	-12.7
Average age container vessels	10.5	10.1	-3.8

KEY: dwt = deadweight ton. TEU = twenty-foot equivalent unit. One 20-foot container equals one TEU, and one 40-foot container equals two TEUs.

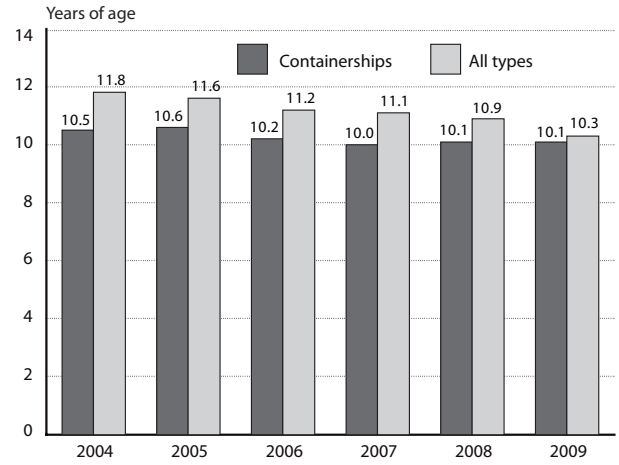
SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from U.S. Department of Transportation, Maritime Administration, which are drawn from the *Lloyd's Maritime Intelligence Unit, Vessel Movement Data File*, and Vessel Calls Snapshot 2009, August 2010, available at www.marad.dot.gov, as of Sept. 17, 2010.

Figure 16
Containership Calls at U.S. Ports by Vessel Size: 2004 and 2009



SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from U.S. Department of Transportation, Maritime Administration, Vessel Calls Snapshot 2009, August 2010, available at www.marad.dot.gov, as of Sept. 17, 2010.

Figure 17
Average Age of Vessels Per Call at U.S. Ports: 2004 and 2009



SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from U.S. Department of Transportation, Maritime Administration, *Vessel Calls Snapshot 2009*, August 2010, available at www.marad.dot.gov, as of Sept. 17, 2010.

While China's share of the total U.S. container trade grew between 2000 and 2009, the other top five trading partners saw declines in their total maritime containerized cargo trade with the United States. Japan is now the second largest trading partner for U.S. oceanborne containerized exports, having been overtaken by China in 2003. Japan's share of U.S. container cargo continues to decrease, and now accounts for 3 percent of U.S. imports and 7 percent of U.S. exports. In 2009, U.S. maritime container imports from China alone were larger than those from more than 160 countries combined (i.e., those countries grouped into the "others" category in figure 19).

The types of goods that the U.S. exports and imports to and from major trading partners affects the types of vessels in which the goods are shipped (container, dry bulk, general cargo, or tanker), the number of port calls that are made, and the seaports the vessels use. For instance, while most U.S.-Canada maritime trade involves agricultural products, lumber, and petroleum products, most U.S.-Germany maritime trade involves

manufactured products, such as automobiles and machinery; shipping those products requires different types of vessels—such as dry bulk, tanker, and container.

Differences in exports and imports are also reflected in the value of the goods. For example, in 2008, U.S. maritime imports from Japan were valued at over $7,000 per ton, but U.S. exports to Japan were valued at $800 per ton, reflecting differences in the types of goods and the growth in high-value containerized imports to U.S. ports (USDOC CB 2010). Major U.S. maritime imports from Japan include passenger cars, car parts, and electronic equipment; major U.S. maritime exports to Japan include agricultural products, industrial machinery, and chemicals.

ENTRIES OF OCEANBORNE CONTAINER UNITS

The data in this section, the following section, figure 21 and table 7 are from U.S. Customs and Border Protection (CBP). The CBP data on containers entering the country are expressed in actual individual container counts and differ from TEUs, which count one 20-foot container as one TEU and one 40-foot container as two TEUs. Because containers come in different lengths (for

Table 6

Top 20 World Container Ports: 2000, 2008, and 2009

(Thousands of loaded and unloaded TEUs)

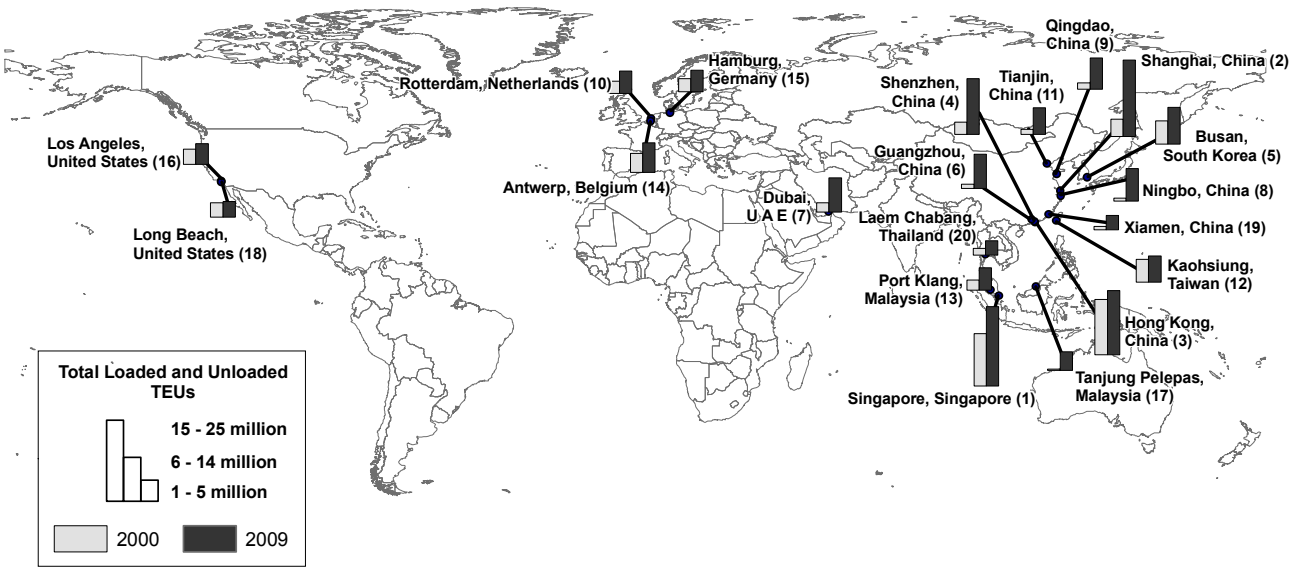
Rank in 2000	Rank in 2008	Rank in 2009	Port name	Country	2000	2008	2009	Percent change, 2008–2009	Percent change, 2000–2009	Average annual rate (percent), 2000–2009
2	1	1	Singapore	Singapore	17,040	29,918	25,866	-13.5	52	4.7
6	2	2	Shanghai	China	5,613	27,980	25,002	-10.6	345	18.1
1	3	3	Hong Kong	China	18,098	24,248	20,983	-13.5	16	1.7
11	4	4	Shenzhen	China	3,994	21,414	18,250	-14.8	357	18.4
3	5	5	Busan	South Korea	7,540	13,425	11,955	-11.0	59	5.3
38	8	6	Guangzhou	China	1,430	11,001	11,190	1.7	683	25.7
13	6	7	Dubai	United Arab Emirates	3,059	11,828	11,124	-6.0	264	15.4
65	7	8	Ningbo	China	902	11,226	10,503	-6.4	1,064	31.4
24	10	9	Qingdao	China	2,120	10,320	10,260	-0.6	384	19.1
5	9	10	Rotterdam	Netherlands	6,280	10,800	9,743	-9.8	55	5.0
32	14	11	Tianjin	China	1,708	8,500	8,700	2.4	409	19.8
4	12	12	Kaohsiung	Taiwan	7,426	9,677	8,581	-11.3	16	1.6
12	15	13	Port Klang	Malaysia	3,207	7,970	7,310	-8.3	128	9.6
10	13	14	Antwerp	Belgium	4,082	8,664	7,310	-15.6	79	6.7
9	11	15	Hamburg	Germany	4,248	9,700	7,010	-27.7	65	5.7
7	16	16	Los Angeles	United States	4,879	7,850	6,749	-14.0	38	3.7
113	18	17	Tanjung Pelepas	Malaysia	418	5,600	6,000	7.1	1,335	34.4
8	17	18	Long Beach	United States	4,601	6,488	5,068	-21.9	10	1.1
49	22	19	Xiamen	China	1,085	5,035	4,680	-7.0	331	17.6
25	21	20	Laem Chabang	Thailand	2,105	5,128	4,622	-9.9	120	9.1

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

NOTE: The 2009 data in this table from Containerization International are preliminary.

SOURCES: 2000: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from various sources. 2008 and 2009: Maritime Administration, special tabulations, and Containerisation International Online, www.ci-online.co.uk, as of Sept. 17, 2010.

Figure 18
Top 20 World Container Ports: 2000 and 2009



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

NOTE: Numbers in parenthesis are the 2009 port rankings.

SOURCES: 2000: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from various sources. 2009: Maritime Administration, special tabulations and Containerisation International Online, www.ci-online.co.uk, as of Sept. 17, 2010.

example, 20 feet, 40 feet, and 48 feet), the CBP figures on individual units differ from the TEU figures, which convert the tonnage of goods moved in the containers into TEUs.

In 2009, there were about 10 million oceanborne container entries into the United States, down slightly from a peak of 12 million in 2006, but still higher than in 2000 (figure 21). On a typical weekday in 2009, an average of nearly 38,000 individual maritime containers carrying imports entered the United States, up from about 23,000 in 2000. The challenge of handling large volumes of containerized imports from U.S. trading partners can also be seen in the number of individual container entries processed by CBP.

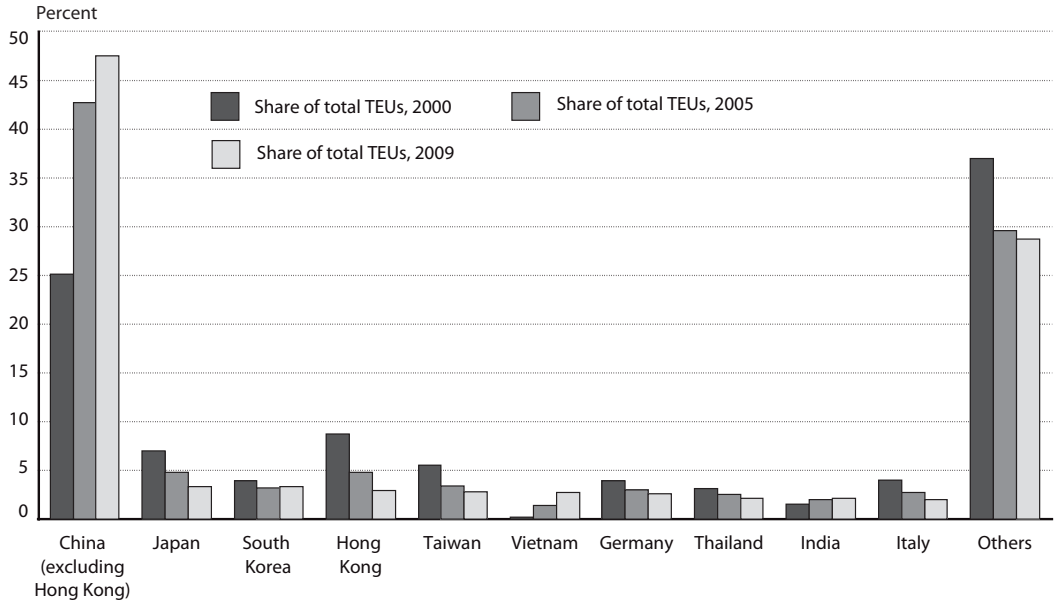
CONTAINER ENTRIES BY ALL MODES FROM ALL COUNTRIES

On a typical weekday in 2009, a total of more than 81,000 individual container units entered the United States by ocean vessel, truck, and rail. In 2000, the figure was about 71,000 units per day.

Oceanborne containers represent less than half the container traffic entering the United States. Overall in 2009, there were more than 21 million container entries into the United States by all modes of transportation, down 14 percent from nearly 25 million in 2008. Of those containers, over 11 million entered the Nation by truck and rail from Canada and Mexico, compared to 10 million by water (table 7). Between 2008 and 2009, the number of both maritime and truck container units (loaded and unloaded) crossing into the United States declined by 13 percent, while rail container units declined by 21 percent. Irrespective of these declines, the large number of containers crossing by land into the United States reflects the importance of U.S. trade with two of its top three trading partners.[16]

[16] In 2009, the top 3 U.S. trading partners were Canada, China, and Mexico.

Figure 19
Top 10 Trading Partners for U.S. Waterborne Foreign Containerized Imports: 2000, 2005, and 2009

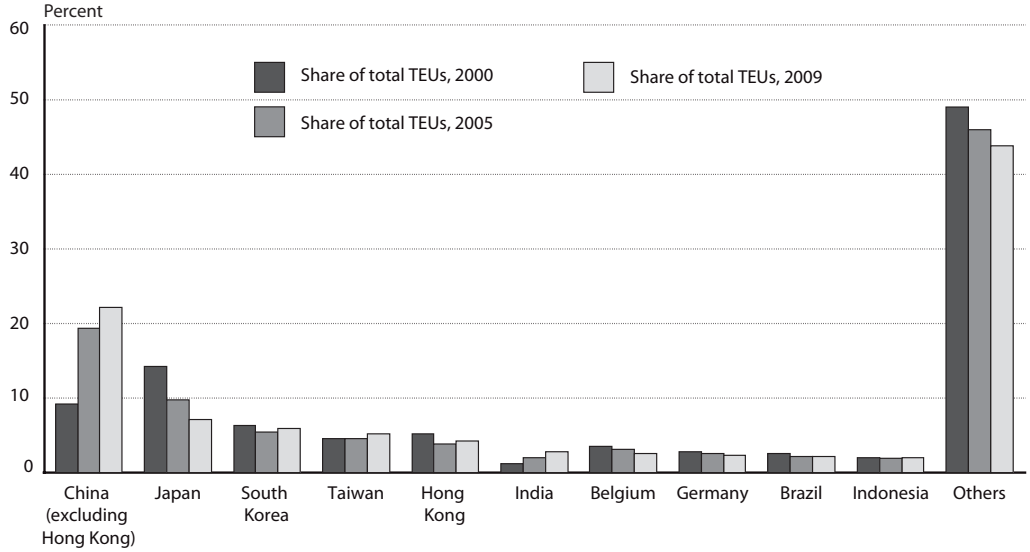


KEY: TEU = twenty-foot equivalent unit. One 20-foot container equals one TEU; one 40-foot container equals two TEUs.

NOTE: For the analysis in this report, U.S. merchandise trade with China and Hong Kong (which is a special administrative region of China) are considered separately. As used here, China excludes Hong Kong.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from U.S. Department of Transportation, Maritime Administration, as of Sept. 18, 2010.

Figure 20
Top 10 U.S. Partners for U.S. Waterborne Foreign Containerized Exports, 2000, 2005, and 2009

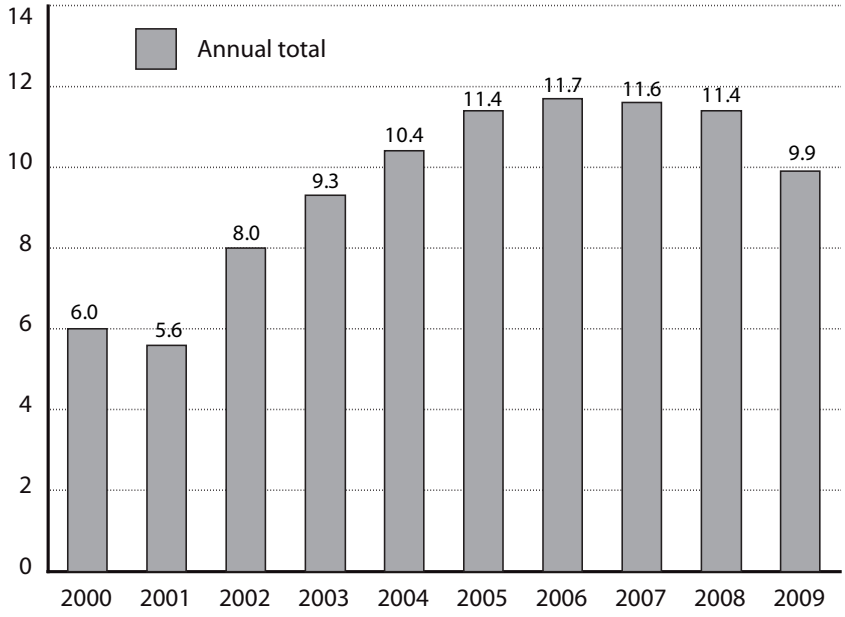


KEY: TEU = twenty-foot equivalent unit. One 20-foot container equals one TEU; one 40-foot container equals two TEUs.

NOTE: For the analysis in this report, U.S. merchandise trade with China and Hong Kong (which is a special administrative region of China) are considered separately. As used here, China excludes Hong Kong.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from U.S. Department of Transportation, Maritime Administration, as of Sept. 18, 2010.

Figure 21
Maritime Container Entries into the United States: 2000–2009
(Millions of container units of all sizes)



NOTE: Data for vessel container entries for years 2008 and 2009 are based on "fiscal year" numbers.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from U.S. Department of Homeland Security, Customs and Border Protection, Mission Support Services, Operations Management Database.

Table 7

Container Entries into the United States from All Countries and by All Modes: 2000–2009

(Thousands of entries)

Year	Maritime containers full	Maritime containers empty	Truck containers full	Truck containers empty	Rail containers full	Rail containers empty	Overall total
2000	5,353	635	7,685	2,748	1,482	685	18,587
2005	10,933	481	8,850	2,603	1,794	875	25,536
2006	11,238	480	8,721	2,689	1,792	935	25,855
2007	11,038	578	8,428	2,791	1,748	1,005	25,588
2008	10,638	719	7,680	2,947	1,645	1,029	24,659
2009	9,048	806	6,626	2,607	1,262	866	21,215
Modal shares (percent)							
2000	28.8	3.4	41.3	14.8	8.0	3.7	100.0
2005	42.8	1.9	34.7	10.2	7.0	3.4	100.0
2006	43.5	1.9	33.7	10.4	6.9	3.6	100.0
2007	43.1	2.3	32.9	10.9	6.8	3.9	100.0
2008	43.1	2.9	31.1	12.0	6.7	4.2	100.0
2009	42.7	3.8	31.2	12.3	5.9	4.1	100.0

KEY: NA = Not available.

NOTE: Data for vessel container full and vessel container empty for years 2008 and 2009 are based on fiscal year numbers.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from U.S. Department of Homeland Security, Customs and Border Protection, Mission Support Services, Operations Management Database.

WHAT'S IN THE BOX?

Modern containers carry numerous commodities, from sweaters, blouses, and flat-screen televisions to computer equipment, wood, and paper products. Containers have reduced the cost of safely transporting such goods as children's toys, clothing, and electronics from factories halfway across the globe to neighborhood discount stores across America, and cut the time it takes to load and unload the large vessels used in transporting these goods. Similarly, tons of frozen meats and manufactured machinery and parts from all across the United States are regularly shipped in containers to markets abroad.

During the first half of 2010, America's container ports handled over $256 billion worth of containerized cargo imports weighing more than 62 million metric tons. They also handled exports worth over $100 billion and weighing 48 million metric tons (table 8 and table 9).

In 2009, U.S. ports handled $474 billion worth of containerized imports, down 18 percent from 2008. By weight, imports dropped 18 percent, from 137 million metric tons to 112 million metric tons. The leading imported commodities by value in 2009 were print machinery, televisions and electronics, and motor vehicle parts and accessories. By weight, the leading imported commodities were furniture, bananas, and worked monumental or building stones (table 8).

U.S. container ports handled $177 billion worth of containerized exports in 2009, down 19 percent from $220 billion in 2008. By weight, exports dropped by 10 percent, from 98 million metric tons to 88 million metric tons (table 9). The leading exported commodities by value in 2009 were automobiles and other vehicles, ethylene polymers, and machinery. By weight, the leading exported commodities were paper waste and scrap, iron and steel waste and scrap, and chemical wood pulp. The value of containerized exports declined more than the weight in part because of changes in the value per ton of the commodities and the mix of commodities, as well as the drop in the value of the U.S. dollar relative to currencies of the Nation's leading trading partners in 2009.

Table 8

Value and Weight of U.S. Containerized Imports by 4-Digit Commodity Code: 2008 to Jan–Jul 2010

(Rank in 2009)

Commodity code	Commodity description	2008	2009	Jan-Jun 2010	Percent change 2008-2009
Value					
		(Millions of current U.S. dollars)			
8443	Print machinery, including ink-jet, copy, and parts	16,613	14,277	6,752	-14.1
8528	TV receivers, including video monitors and projectors	17,059	13,465	6,259	-21.1
8708	Parts and accessories for motor vehicles	17,346	13,293	8,704	-23.4
6110	Sweaters, pullovers, vests, knitted or crocheted	11,072	10,080	3,963	-9.0
9403	Furniture and parts	11,909	9,499	5,373	-20.2
9504	Articles for arcade, table or parlor games, and parts	11,125	9,354	3,137	-15.9
3004	Medicaments, mixed or not, in dosage	7,175	9,246	5,560	28.8
8471	Automatic data process machines and magnetic readers	9,321	8,442	6,273	-9.4
9503	Toys, scale models, puzzles, and parts	8,974	8,354	3,301	-6.9
6403	Footwear, outer sole, rubber, plastic, or leather	9,251	8,016	3,904	-13.4
	All other commodities	460,895	370,055	203,119	-19.7
	Top 10 commodities	119,846	104,025	53,227	-13.2
	Top 10, percentage of all commodities	20.6	21.9	20.8	
	Total, all commodities	580,740	474,080	256,346	-18.4
Weight					
		(Thousands of metic tons)			
9403	Furniture and parts	5,035	4,082	2,383	-18.9
0803	Bananas and plantains, fresh or dried	2,842	2,876	1,566	1.2
6802	Worked monument, stone, art, granule	3,918	2,557	1,439	-34.7
8708	Parts and accessories for motor vehicles	3,009	2,289	1,470	-23.9
2701	Coal, briquettes, and ovoids from coal	2,791	2,199	731	-21.2
2203	Beer made from malt	2,364	2,024	1,023	-14.4
2710	Oil, not crude, from petroleum and bitum mineral	1,474	1,769	1,199	20.1
4011	New pneumatic tires or rubber	2,121	1,745	987	-17.7
9401	Seats (except barber, dental, etc.) and parts	2,110	1,732	1,165	-17.9
6908	Glazed ceramic flags and paving and hearth tiles	1,944	1,466	777	-24.6
	All other commodities	109,585	89,580	49,618	-18.3
	Top 10 commodities	27,606	22,739	12,740	-17.6
	Top 10, percentage of all commodities	20.1	20.2	20.4	
	Total, all commodities	137,191	112,319	62,358	-18.1

NOTE: Commodity code is the 4-digit harmonized tariff schedule (HTS) for internationally traded goods.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from U.S. Department of Commerce, Foreign Trade Division, *USA Trade Online*, available at http://data.usatradeonline.gov, as of Sept. 20, 2010.

Table 9

Value and Weight of U.S. Containerized Exports by 4-Digit Commodity Code: 2008 to Jan–Jul 2010

(Rank in 2009)

Commodity code	Commodity code and description	2008	2009	Jan-Jun 2010	Percent change 2008-2009
Value					
		(Millions of current U.S. dollars)			
8703	Motor cars and vehicles for transporting persons	8,605	4,535	2,137	-47.3
3901	Polymers of ethylene in primary forms	4,191	3,859	1,379	-7.9
8431	Parts for machinery of headings	4,797	3,377	1,775	-29.6
8708	Parts and accessories for motor wehicles	4,121	2,695	2,273	-34.6
5201	Cotton, not carded or combed	3,886	2,660	1,249	-31.5
7204	Ferrous waste and scrap; remelt iron and steel ingot	3,626	2,302	1,078	-36.5
0802	Nuts, fresh or dried	1,938	2,253	1,143	16.2
0203	Meat of swine (pork), fresh, chilled or frozen	2,662	2,101	1,093	-21.1
4703	Chemical woodpulp, soda or sulfate, not dissolving grades	1,986	1,904	921	-4.1
8421	Centrifuges, filter machinery for liquid or gases	2,107	1,788	935	-15.2
	All other commodities	181,849	149,707	87,414	-17.7
	Top 10 commodities	37,919	27,472	13,984	-27.6
	Top 10, percentage of all commodities	17.3	15.5	13.8	
	Total, all commodities	219,769	177,179	101,398	-19.4
Weight					
		(Thousands of metic tons)			
4707	Waste and scrap of paper or paperboard	7,631	8,780	3,860	15.1
7204	Ferrous waste and scrap; remelt iron and steel ingot	7,103	5,278	2,436	-25.7
4703	Chemical woodpulp, soda or sulfate, not dissolving grades	2,992	3,324	1,631	11.1
3901	Polymers of ethylene in primary forms	2,507	3,187	1,469	27.1
1214	Rutabagas, hay, clover and other forage products	2,282	2,557	1,246	12.0
4804	Kraft paper and paperboard, uncoat and rolls	2,529	2,310	1,295	-8.7
5201	Cotton, not carded or combed	2,462	2,088	1,313	-15.2
2303	Residues of starch, or sugar, or brewing	1,574	1,939	1,547	23.2
1201	Soybeans, whether or not broken	2,226	1,851	943	-16.9
0207	Meat and edible offal of poultry, fresh, chill or frozen	1,924	1,805	843	-6.2
	All other commodities	64,727	55,193	31,488	-14.7
	Top 10 commodities	33,231	33,119	16,583	-0.3
	Top 10, percentage of all commodities	33.9	37.5	34.5	
	Total, all commodities	97,958	88,312	48,071	-9.8

NOTE: Commodity code is the 4-digit harmonized tariff schedule (HTS) for internationally traded goods.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from U.S. Department of Commerce, Foreign Trade Division, *USA Trade Online*, available at http://data.usatradeonline.gov, as of Sept. 20, 2010.

SPOTLIGHT 1: LANDSIDE ACCESS TO SEAPORTS

Throughput at U.S. container ports is expected to return to pre-recession levels as the economy rebounds from the economic downturn and the associated drop in container traffic that took place between December 2007 and June 2009 (JOC 2010b). As U.S. seaports modernize and expand to accommodate larger ships and more complex intermodal operations, however, their opportunities for growth and operational efficiency are often constrained by landside congestion and capacity challenges. Several key factors constrain the ability of the Nation's container ports to reduce landside congestion and increase access and freight traffic capacity. These factors include location in urban areas, land-use challenges, and funding.

Location in Major Metropolitan Areas

Most U.S. seaports are sited in or near major metropolitan areas that have infrastructure challenges and roads that need upgrades to allow them to accommodate large and heavy commercial trucks. Container ports produce significant traffic on local roads, adding to the levels of traffic and congestion already present in major metropolitan areas (table 10). This conflict between freight vehicular traffic and private automobile traffic can be mitigated when landside improvements to container ports are designed for both freight and passenger vehicles. For example, a large number of at-grade rail crossings coupled with an increasing amount of freight leaving container ports via rail can add to road congestion. In many of these cases new grade separations could alleviate that congestion, but constructing grade separations requires significant investment (NRC TRB NCHRP 2003). A recent major example of a grade separation project is the Alameda Corridor in southern California. This 20-mile rail cargo expressway links the ports of Long Beach and Los Angeles to the Nation's rail network near downtown Los Angeles (ACTA 2010). Construction began in 1997 and operations began in April 2002, bypassing over 200 at-grade railroad crossings where cars and trucks used to wait for long freight trains to pass.

Land Values and Competing Uses

The growth in container traffic and containership size has made it necessary for container ports to expand and increase berth lengths, crane sizes, and railway and highway access. Often, however, expansion plans have conflicted with local community concerns. Container port operations are not always in line with local land-use policies, and often waterfront land is desired for higher value residential and commercial uses not compatible with the industrial operations of a seaport. These factors are often compounded by environmental concerns. It now takes about 10 years to bring a new marine terminal from the conceptual stages into operation (USDOT MARAD 2009). Beyond the port facility itself, a true systemwide intermodal strategy to address container port-related freight traffic movements requires the collaboration of all neighboring jurisdictions as well as private-sector partners to achieve a framework for balancing competing transportation and land development needs (NRC TRB NCHRP 2003).

Funding Challenges

As with the rest of the U.S. transportation system, funding for the expansion of container ports and port technology and efficiency improvements is a challenge. Historically, many ports and marine terminals have been financed by local taxes or private sector investment. However, in recent years not all ports or terminal operators have been able to finance the container port expansions and improvements necessary to accommodate today's larger container ships. Today, port efficiency improvements are typically implemented through public-private partnerships. A mix of grants and tax credits may be needed to support these improvements. Despite the challenging funding environment, many U.S. container ports continue to pursue port capacity expansion and intermodal improvements. The Nation's ports are expected to add approximately 12 million TEUs of capacity in the next several years (USDOT MARAD 2009).

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Congestion Mitigation and Land-Use Initiatives at U.S. Seaports

In recent years many ports have begun to consider how local land access, port authorities, private sector freight partners, and local and regional governments can address land use and congestion mitigation issues collaboratively.

For example, in 2007 Washington State announced a container ports project to improve coordination and investment in rail and container port freight mobility. The initiative intends to examine current land-use regulations and their impacts on the effective functioning of container ports, and to provide recommendations for improvements on how to better accommodate both urban and industrial growth (Washington State 2009).

The Southern California Association of Governments (SCAG) Goods Movement Program is working on a comprehensive regional goods movement plan and implementation strategy, scheduled for completion in 2011 (SCAG 2010). This plan will include an extensive analysis of current goods movement patterns, warehouse location and capacity levels, future intermodal freight system demand and technologies, and financing strategies that will allow the southern California region to develop infrastructure to meet future freight demand at an intermodal, systemwide level (SCAG, et al. 2008).

Landside congestion is also being mitigated through increased use of America's waterways as an extension or alternative to use of surface transportation modes. In August 2010, for example, the USDOT's Maritime Administration (MARAD) launched its America's Marine Highway Program to officially designate 18 marine corridors and other initiatives for further development to increase waterborne freight movements (figure 22). MARAD will distribute grants to sponsors of designated marine highway projects (USDOT MARAD 2010b). One of the projects selected for further development in the Marine Highway Program is the East Coast Marine Highway Initiative, a partnership between Port Canaveral, FL, the Port of New Bedford, MA, and the Port of Baltimore, MD. This initiative aims to develop marine highway service along the East Coast that could transport both domestic and international containers, trucks, and trailers, removing freight from the congested, 1,000-mile-long Interstate 95 corridor (JOC 2010c).

Similarly, the Gulf Coast Strategic Highway Initiative, supported by Texas, Louisiana, and Mississippi, is a proposed upgrade of existing east-west highway and noncoastal connections to the ports of Corpus Christi and Beaumont. This project aims to provide less congested, more reliable routes for the movement of commercial freight and equipment for national security and emergency response. The highway is envisioned as having a dedicated freight element in some places, and if constructed could provide additional capacity and access to the ports via routes that do not travel through air quality non-attainment areas (Gulf Coast Strategic Highway Initiative, 2010).[17]

During the past few years, while U.S. container ports have been tackling these infrastructure challenges in response to increased demand for their services, they have also had to face rising competition from Mexican and Canadian ports. Mexico is currently planning new container port facilities that could potentially attract cargo otherwise bound for U.S. ports on the west coast. In 2005, Canada established a Pacific Gateway Strategy program, providing increased funding for infrastructure for its west coast ports to improve landside access and intermodal marine connections (USDOT MARAD 2009). To ensure that U.S. container ports remain competitive, ports and their partners (including shipping lines, truck and rail carriers, and other private and public entities) must continue to collaborate to address landside access and intermodal transportation system issues.

[17] The U.S. Environmental Protection Agency (USEPA) designates areas of the country where air pollution levels persistently exceed national ambient air quality standards as air quality "nonattainment" areas. An area can be in nonattainment status for any of a number of "criteria" air pollutants, including carbon monoxide, nitrogen dioxide, sulfur dioxide particulate matter, lead, ozone, or particulate matter. More information about ambient air quality standards can be accessed on the EPA's website: http://epa.gov/airquality/greenbk/.

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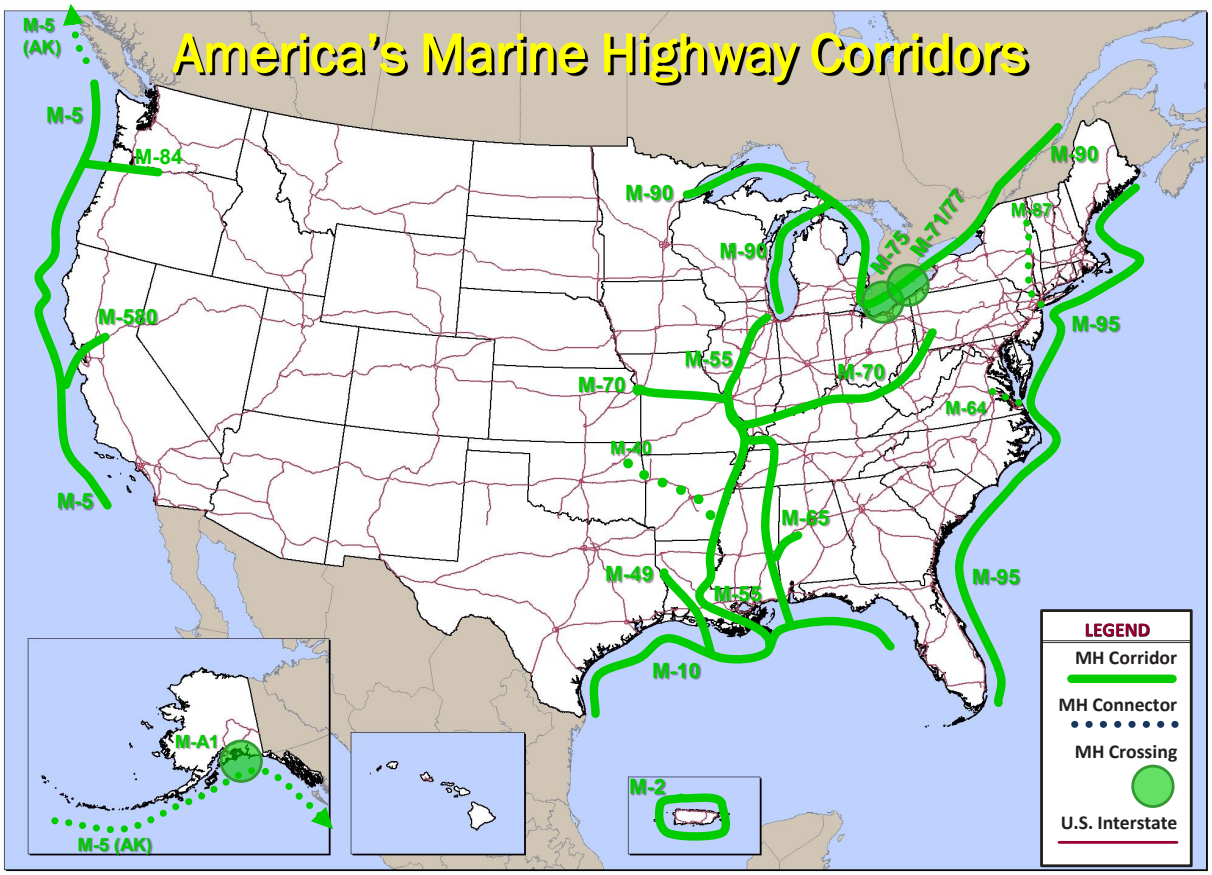
Figure 22
America's Marine Highway Corridors



SOURCE: U.S. Department of Transportation, Maritime Administration, America's Marine Highway Program, available at http://www.marad.dot.gov/ships_shipping_landing_page/mhi_home/mhi_home.htm, as of Jan. 3, 2011.

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Table 10
U.S. Maritime Port Activity and Landside Traffic Delay per Traveler in Surrounding Urban Area

		Port calls and capacity by all vessel types (2009)		Overall maritime cargo tonnage—domestic and international (2008)		Landside annual traffic delay per traveler in surrounding urban area (2007)[1]	
Ranked by port calls by all vessel types	U.S. Customs port	Calls	Capacity (dwt, millions)	Total short tons (millions)	Rank by tonnage	Hours of delay	Rank
1	Houston, TX	6,153	277	212	2	56	4
2	New York/New Jersey, NY/NJ	4,430	221	153	3	44	14
3	Los Angeles/Long Beach, CA	4,312	285	60	11	70	1
4	New Orleans, LA	4,226	211	73	6	20	61
5	San Francisco Bay Area ports, CA[2]	3,275	191	1	127	55	5
6	Virginia ports, VA[3]	2,502	135	45	16	29	41
7	Savannah, GA	2,219	113	35	22	NA	NA
8	Philadelphia, PA	2,171	132	32	24	38	29
9	Columbia River ports, OR[4]	1,925	80	27	29	37	34
10	Charleston, SC	1,865	86	21	39	38	29
11	Baltimore, MD	1,562	58	43	17	44	14
12	Jacksonville, FL	1,487	48	21	37	39	24
13	Port Arthur, TX	1,270	80	32	25	11	79
14	Tacoma, WA	1,149	55	27	28	43	19
15	Port Everglades, FL	1,055	34	22	36	NA	NA
16	Texas City, TX	1,011	66	53	13	56	4
17	Corpus Christi, TX	972	65	77	5	9	85
18	San Juan, PR	927	21	11	49	NA	NA
19	Seattle, WA	920	53	26	31	43	19
20	Mobile, AL	901	46	68	9	NA	NA
21	Miami, FL	893	30	7	66	47	11
22	Tampa, FL	889	33	40	19	47	11
23	Freeport, TX	740	40	30	26	NA	NA
24	Lake Charles, LA	662	48	54	12	NA	NA
25	Honolulu, HI	596	21	14	43	26	47

KEY: dwt = deadweight tons. NA = Not available in the Texas Transportation Institute 2009 Annual Urban Mobility Study.

NOTES: [1] The most recent year for which data on landside annual traffic delay are available is 2007. These data cover metropolitan areas not just the port area. Annual delay per traveler equals extra travel time for peak-period travel during the year divided by the number of travelers who begin a trip during the peak period (6 to 9 a.m. and 4 to 7 p.m.). These peak-period travel times are compared with times for free-flow speeds (60 mph on freeways and 35 mph on principal arterials).
[2] San Francisco Bay Area ports: Oakland, Redwood City, Richmond, San Francisco, and Stockton.
[3] Virginia ports: Norfolk, Richmond, Newport News, and Portsmouth.
[4] Columbia–Snake River ports: Portland, Longview, Vancouver, and Kalama.

SOURCES: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from three sources. Port calls data: Maritime Administration, Ports Calls Data, at www.marad.dot.gov, as of Sept. 30, 2010. Cargo weight data: U.S. Army Corps of Engineers, Waterborne Commerce Statistics Center, Waterborne Commerce of the United States, Calendar Year 2008, Part 5–National Summaries 2008, at www.iwr.usace.army.mil/ndc/wcsc/wcsc.htm, as of Oct. 7, 2010. Traffic delay data: Texas Transportation Institute, 2009 Annual Urban Mobility Study, Table 1, available at mobility.tamu.edu/ums, as of Oct. 7, 2010.

SPOTLIGHT 2: MARITIME SECURITY

Containerships present unique and particularly complex security challenges, including securing cargo against tampering and theft, monitoring containers through the international supply chain, and protecting against piracy. During its journey through the supply chain, a single container passes through a number of facilities, vessels, and ports, and potentially could be compromised at any of these points by people seeking to transport illicit materials of all kinds. Containers have been used, for example, to transport illicit drugs, people, and illegal weapons (GAO 2009b). While notable progress has been made in increasing port and container security over the past decade, major challenges still remain.

Securing the Port Environment

In 2010, the Government Accountability Office (GAO) reported that the U.S. Coast Guard (USCG) has made progress in implementing risk management practices at U.S. ports, particularly in conducting risk assessments and evaluating individual threats (GAO 2010). At the port level, the implementation of the Transportation Workers Identification Card (TWIC) by the USCG and the Transportation Security Administration (TSA) in the past 2 years is one of the most significant security developments. The TWIC program requires that all maritime workers undergo background checks and obtain a biometric identification card that allows them unescorted access to secure facilities and vessels. Despite some implementation challenges, TSA reported enrolling 1.1 million workers in the TWIC program, or over 93 percent of the estimated 1.2 million users, by the April 15, 2009 statutory deadline (GAO 2009a). By December 2010, TSA reported that 1.7 million workers have enrolled in the TWIC program and 1.6 million of the printed identification cards were activated (DHS TSA 2010).

Protecting Containers on the Seas

Piracy on the seas remains a significant international maritime security concern that impacts all types of cargo ships, including containerships. The United States established a Combined Task Force in 2001 to conduct maritime security operations in the Gulf of Aden, Gulf of Oman, Arabian Sea, Red Sea, and Indian Ocean. This is part of a global effort designated as the Combined Maritime Forces Mission. More than 25 nations contribute naval forces to the global effort against piracy (USDOD, U.S. Navy 2010). The Combined Maritime Forces patrol more than 2.5 million square miles of international waters. The task force's activities focus on piracy deterrence and apprehension of pirates and, on occasion, involve rescuing hijacked ships. On September 9, 2010, for example, U.S. marines boarded a German-owned cargo ship that had been taken hostage by pirates in the Gulf of Aden, successfully rescuing the ship's 11-man crew and capturing 9 pirates (Whitlock 2010). In 2009 and 2010, hundreds of pirates were captured in the Gulf of Aden alone.

Monitoring Containers in Transit

In 2009, the U.S. Department of Homeland Security (USDHS) Customs and Border Patrol (CBP) implemented its newest maritime security practice, the Importer Security Filing (commonly known as "10+2"), which requires that importers provide 12 shipping data elements 24 hours before a ship arrives (see box 1). The Importer Security Filing requirement is designed to provide additional data to help CBP identify containers that may pose a risk for terrorism (GAO 2009b).

The 10+2 requirements are just the latest in a series of initiatives to secure U.S.–bound freight traveling in containers while in transit. Following the terrorist attacks in the United States on September 11, 2001, the U.S. Congress enacted several critical pieces of legislation designed to reduce the vulnerability of the maritime transportation system to terrorist attack.

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Box 1
Data Elements for Importer Security Filing (commonly called "10+2")

Importers are required to provide the following 10 data elements:

1. Seller or owner name and address
2. Buyer or consignee name and address
3. Importer of record number/ foreign trade zone applicant identification number
4. Consignee number(s)
5. Manufacturer (or supplier) name and address
6. Ship-to party name and address
7. Country of origin
8. Commodity Harmonized Tariff Schedule U.S. number
9. Container stuffing location
10. Consolidator (stuffer) name and address

Carriers are required to provide the following 2 additional data elements:

1. Vessel stow plan
2. Container status messages regarding loaded containers destined for the United States

SOURCE: Department of Homeland Security (DHS) U.S. Customs and Border Protection (CBP), 2008. 73 Federal Register 71730 (Nov. 25, 2008). Importer Security Filing and Additional Carrier Requirements, Final Rule.

Post 9-11 Maritime Security Initiatives

The 2002 Maritime Transportation Security Act (MTSA) tasked the U.S. Coast Guard with coordinating all Federal maritime and port-level security planning and incidence response operations. The Security and Accountability for Every Port Act, or SAFE Port Act (2006), required that USDHS work with relevant public and private sector partners domestically and internationally to develop and implement a strategic plan to "enhance the security of the international supply chain" (USDHS 2007). CBP is responsible for ensuring the security of containerized cargo through a number of initiatives (table 11). Through these initiatives, CBP has taken the lead internationally in organizing customs agencies' efforts to develop uniform and enhanced security practices, and has implemented new container evaluation, scanning, and risk management procedures.

The Secure Freight Initiative (SFI) was developed in response to the SAFE Port Act, but the implementation of its goal of using advanced noninvasive scanning technology to scan 100 percent of U.S. bound containers for radiological and nuclear materials has been a challenge. Three foreign ports have participated in the SFI from its operational start in 2007 and two additional ports have since joined the program, but no participating port has achieved 100-percent scanning. Two SFI pilot program ports have ceased participating in the program, citing concerns about the safety of the scanning technology, their inability to allocate port personnel to the SFI program, and negative impacts of container scanning on port efficiency. CBP now plans to implement SFI only at select ports where the risk of terrorism may be higher, complementing the scanning component with efforts to gather additional container information to increase container security. DHS officials recognize the difficulty of scanning 100 percent of U.S.-bound containers by July 2012 as required by law. The feasibility of scanning 100 percent of containers at more than 600 foreign ports remains daunting (GAO 2009b).

In addition to programs by the CBP and Department of Energy at foreign ports, the U.S. Coast Guard also operates a foreign port security program known as the International Port Security Program. Under this initiative, established in 2004, the Coast Guard works with foreign ports to improve overall port security practices to meet the standards of the International Maritime Organization's ISPS (International Ship and Port Facility Security) Code. Through this program, USCG officers visit foreign ports to assess their security practices and assist them in the implementation of best practices for optimal security. However, some foreign ports have resisted USCG's efforts to visit—insisting that they also be allowed to visit and assess the security practices of U.S. ports, which the USCG has allowed (GAO 2010).

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Table 11

U.S. Maritime Security Initiatives

Initiative	Year Implemented	Responsible Agency	Description	Progress to Date
Automated Targeting System (ATS)	1999	CBP	ATS is a mathematical model that uses weighted rules to assign a risk score to arriving cargo shipments based on shipping information.	In use.
Container Security Initiative (CSI)	2002	CBP	CBP staff work with participating foreign ports to target and examine high-risk container cargo abroad.	58 foreign ports now participate in CSI, comprising the origin for 86 percent of all imported containerized cargo (USDHS CBP 2010).
Customs-Trade Partnership Against Terrorism (C-TPAT)	2001	CBP	DHS CBP works on a voluntary basis with private firms, contract logistics carriers and others to improve the security of their firm's supply chains in exchange for various benefits, including a reduced likelihood that the containers of participating firms will be examined.	As of March 2008, C-TPAT had more than 8,200 certified members, accounting for 80 percent of the value of imported goods (USDHS CBP 2008). In a 2007 survey firms reported that prior to joining C-TPAT nearly half did not have security plans in place for their supply chains (USDHS CBP 2007).
Megaports Initiative	2003	U.S. Department of Energy (USDOE)	Radiation detection equipment has been installed at key foreign ports, for foreign governmental personnel to use in scanning containers bound for the U.S. and our allies.	As of October 2010, implemented at 27 ports, 16 others are in the implementation process (USDOE, NNSA 2010).
Standards to Secure and Facilitate Global Trade (SAFE) Framework of Standards	2005	CBP	CBP, along with international partners, developed the SAFE Framework, a set of cargo security practice principles based on CBP's C-TPAT and CSI programs.	Including the United States, 157 countries have signed letters of intent for implementing the SAFE Framework.
Secure Freight Initiative (SFI)	2006	USDOE, CBP	Program at select ports to scan 100 percent of U.S.-bound container cargo for nuclear and radiological materials.	As of April 2010, SFI was operational at 5 ports, and had ceased operating at 2 (GAO 2010).
Domestic Port Radiation	2007	USDHS	Program to scan 100 percent of containers arriving in the United States with radiation detection equipment prior to leaving a domestic port.	As of April 2009, CBP had 409 radiation portal monitors deployed at domestic ports, through which approximately 98 percent of all arriving containers passed through.
Importer Security Filing and Additional Carrier Requirements (10+2)	2009	CBP	The importer is responsible for supplying CBP with 10 shipping data elements 24 hours prior to lading while the vessel carrier is required to provide 2 data elements in addition to those previously required.	In place since 2009.

SOURCES: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based mostly on Government Accountability Office (GAO). 2009B. Feasibility and Cost- Benefit Analysis Would, assist DHS and Congress in, assessing and Implementing the Requirement to Scan 100 Percent of U.S.-Bound Containers, October 30. Available at www.gao.gov/products/GAO-10-12, as of Sept. 24, 2010; except where noted.

References

Alameda Corridor Transportation Authority (ACTA). 2010. Fact Sheet. Available at www.acta.org/projects/projects_completed_alameda_factsheet.asp, as of Nov. 18, 2010.

Alessandria, G., J. P. Kaboski, and V. Midrigan. 2010. The Great Trade Collapse of 2008-09: An Inventory Adjustment? National Bureau of Economic Research. Working Paper No. 16059, June 2010. Available at www.nber.org/papers/w16059, as of Oct. 20, 2010.

American Trucking Association (ATA). 2010. ATA Truck Tonnage Index. Monthly Press Releases, from Feb. 24, 2010 to Jul. 27, 2010. Available at www.truckline.com/Newsroom/Pages/pressreleases.aspx, as of Oct. 2, 2010. Historical Trucking Index Database, as of Mar. 25, 2009. Personal communication.

Association of American Railroads (AAR). 2009. Class I Railroad Statistics 2009. Available at www.aar.org/Resources/Resources%20Landing.aspx, as of Mar. 20, 2009.

Association of American Railroads (AAR). 2010a. Weekly Railroad Traffic July 1, 2010. Available at www.aar.org/NewsAndEvents/Freight-Rail-Traffic/2010/07/2010-07-01_railtraffic.aspx, as of Oct. 2, 2010.

Association of American Railroads (AAR). 2010b. Weekly Railroad Traffic September 30, 2010. Available at www.aar.org/NewsAndEvents/Freight-Rail-Traffic/2010/09/2010-09-30-railtraffic.aspx, as of Oct. 2, 2010.

AXS-Alphaliner. 2010. AXS-Alphaliner Newsletter, no. 2010/26. Available at www.alphaliner.com, as of Oct. 1, 2010.

Government Accountability Office (GAO). 2009a. DHS's Progress and Challenges in Key Areas of Maritime, Aviation, and Cybersecurity, December 2. Available at www.gao.gov/products/GAO-10-106, as of Sept. 24, 2010.

Government Accountability Office (GAO). 2009b. Feasibility and Cost-Benefit Analysis Would Assist DHS and Congress in Assessing and Implementing the Requirement to Scan 100 Percent of U.S.-Bound Containers, October 30. Available at www.gao.gov/products/GAO-10-12, as of Sept. 24, 2010.

Government Accountability Office (GAO). 2010. DHS Progress and Challenges in Key Areas of Port Security, July 21. Available at www.gao.gov/products/GAO-10-940T, as of Sept. 24, 2010.

Gulf Coast Strategic Highway Initiative. 2010. A Strategic Transportation System Linking Military Facilities to Deployment Seaports. Available at http://www.gulfcoaststrategichighway.org/index.html, as of Oct. 5, 2010.

Intermodal Association of North America. 2010. Rail Intermodal Traffic Activity—Press Releases, May 13, 2010 and Aug. 13, 2010. Available at www.intermodal.org/pressroom_files/index.shtml, as of Oct. 2, 2010.

The Journal of Commerce (JOC). 2010a. Port Import Export Reporting Service (PIERS). Annual Container Trade Data. *The Journal of Commerce* 11, no. 15 (Apr. 12): 50.

The Journal of Commerce (JOC). 2010b. Port Congestion Could Return in Some Sectors. Available at The Journal of Commerce Online, www.joc.com, as of Sept. 27, 2010.

The Journal of Commerce (JOC). 2010c. Port Of Baltimore Selected For Further Study As Marine Highway Project. Available at The Journal of Commerce Online, www.joc.com, as of Oct. 5, 2010.

Mongelluzzo, B. 2010. The Port Moves Inland. *The Journal of Commerce*, 11, no. 36 (Sept. 13): 30–32.

National Research Council (NRC), Transportation Research Board (TRB). National Cooperative Highway Research Program (NCHRP). 2003. Report 497: Financing and Improving Land Access to U.S. Intermodal Cargo Hubs. Washington, DC.

The Port Authority of New York/New Jersey (PANYNJ). 2010. Monthly Loaded Container Statistics Online. Available at www.panynj.gov/port/monthly_loaded_containers.html, as of Oct. 3, 2010.

Southern California Association of Governments (SCAG). 2009. Comprehensive Regional Goods Movement Plan and Implementation Strategy Study Update. Available at http://www.scag.ca.gov/goodsmove/ as of Sept. 27, 2010.

Southern California Association of Governments, Los Angeles County Metropolitan Transportation Authority (Metro), Orange County Transportation Authority (OCTA), Riverside County Transportation Commission (RCTC), San Bernardino Associated Governments (SANBAG), Ventura County Transportation Commission (VCTC), California Department of Transportation (Caltrans) Districts 7, 8, 11 & 12, San Diego Association of Governments (SANDAG) (SCAG, et. al.). 2008. Multi-County Goods Movement Action Plan. Available at http://www.scag.ca.gov/goodsmove/ as of Sept. 27, 2010.

U.S. Army Corps of Engineers (USACE), Navigational Data Center (NDC). 2008. Waterborne Commerce of the United States, Part 5–National Summaries. Table 1.2. Available at http://www.ndc.iwr.usace.army.mil//wcsc/pdf/wcusnatl08.pdf as of Nov. 18, 2010.

U.S. Department of Commerce (USDOC), Bureau of Economic Analysis (BEA). 2010a. National Income and Product Accounts Table. Table 1.1.6 Real Gross Domestic Product, Chained Dollars. Available at www.bea.gov/National/nipaweb2010/SelectTable.asp as of Sept. 30, 2010.

U.S. Department of Commerce (USDOC), Bureau of Economic Analysis (BEA). 2010b. Gross Domestic Product: Second Quarter 2010 (Final). News release, Sept. 30, 2010. Available at www.bea.gov/newsreleases/national/gdp/gdpnewsrelease.htm.

U.S. Department of Commerce (USDOC), Census Bureau (CB). 2010. Foreign Trade Division, USA Trade Online. Available at http://data.usatradeonline.gov, as of Sept. 20, 2010.

U.S. Department of Commerce (USDOC), Census Bureau (CB) and Bureau of Economic Analysis (BEA). 2010. U.S. International Trade in Goods and Services (July 2010). Press release, Aug. 11. Available at www.census.gov/foreign-trade/Press-Release/2010pr/06/ftdpress.txt.

U.S. Department of Defense (USDOD). U.S. Navy. 2010. Combined Task Force 150. Available at www.cusnc.navy.mil/cmf/150/index.html, as of Oct. 1, 2010.

U.S. Department of Energy (USDOE). National Nuclear Security Administration (NNSA). 2010. Megaports Initiative. Available online at nnsa.energy.gov, as of Oct. 1, 2010.

U.S. Department of Homeland Security (USDHS). 2007. Strategy to Enhance International Supply Chain Security. Washington, DC. July. Available at www.dhs.gov, as of Mar. 31, 2009.

U.S. Department of Homeland Security (USDHS), Customs and Border Patrol (CBP). 2007. Customs-Trade Partnership Against Terrorism, Cost-Benefit Survey Report of Results, August. Available online at www.cbp.gov, as of Sept. 24, 2010.

U.S. Department of Homeland Security (USDHS), Customs and Border Protection (CBP). 2008. Fact Sheet: C-TPAT. March 27. Available at www.cbp.gov,, as of Oct. 7, 2010.

U.S. Department of Homeland Security (USDHS), Transportation Security Administration (TSA). 2010. TWIC Dashboard. December 13. Available at www.tsa.gov/assets/pdf/twic_dashboard.pdf, as of Dec. 13, 2010.

U.S. Department of Transportation (USDOT), Maritime Administration (MARAD). 2009. America's Ports and Intermodal Transportation System. Washington, DC. Available at www.marad.dot.gov, as of Sept. 27, 2010.

U.S. Department of Transportation (USDOT), Maritime Administration (MARAD). 2010a. Vessel Calls Snapshot 2009. Washington, DC. Available at www.marad.dot.gov/.../Vessel_Calls_at_US_Ports_Snapshot.pdf , as of Oct. 4, 2010.

U.S. Department of Transportation (USDOT). Maritime Administration (MARAD). 2010b. America's Marine Highway Program. Available at www.marad.dot.gov, as of Oct. 5, 2010.

U.S. Department of Transportation (USDOT), Research and Innovative Technology Administration (RITA), Bureau of Transportation Statistics (BTS). 2010. Transportation Services Index press release, as of Feb. 18, 2010 and June 9, 2010. Available at www.bts.gov/press_releases/2010/.

U.S. Federal Reserve Bank (USFRB). 2010a. Statistical Release. Industrial Production and Capacity Utilization. Available at http://www.federalreserve.gov/releases/G17/Current/default.htm, as of Oct. 20, 2010.

U S. Federal Reserve Bank of St. Louis (USFRB). 2010b. Economic Research. Index of Industrial Production. Available at http://research.stlouisfed.org/fred2/series/INDPRO, as of Oct. 20, 2010.

Washington State. 2009. Governor's Container Ports Initiative: Recommendations of the Container Ports and Land Use Work Group Main Report. Available at www.ofm.wa.gov/reports/ContainerPorts.pdf, as of Sept. 27, 2010.

Whitlock, C. U.S. Marines nab Somali pirates in Gulf of Aden. The Washington Post, Sept. 9, 2010, A1.

World Trade Organization (WTO), 2010. Trade Statistics. Available at http://stat.wto.org/Home/WSDBHome.aspx, as of Sept. 18, 2010.

List of Abbreviations

AAR	Association of American Railroads
ATA	American Trucking Association
BEA	Bureau of Economic Analysis
BTS	Bureau of Transportation Statistics
CB	U.S. Census Bureau
CBP	U.S. Customs and Border Protection
dwt	deadweight ton
FHWA	Federal Highway Administration
FRA	Federal Railroad Administration
GAO	U.S. Government Accountability Office
GDP	gross domestic product
HTS	harmonized tariff schedule
ICC	International Chamber of Commerce
JOC	Journal of Commerce
MARAD	Maritime Administration
NCHRP	National Cooperative Highway Research Program
NRC	National Research Council
PIERS	Port Import and Export Reporting Service
RITA	Research and Innovative Technology Administration
TEU	twenty-foot equivalent container unit
TRB	Transportation Research Board
TSA	Transportation Security Administration
TSI	Transportation Services Index
TTI	Texas Transportation Institute
TWIC	Transportation Worker Identification Credential
USCG	U.S. Coast Guard
USDHS	U.S. Department of Homeland Security
USDOC	U.S. Department of Commerce
USDOE	U.S. Department of Energy
USDOT	U.S. Department of Transportation

Glossary

Definitions in this glossary are adapted from the U.S. Department of Transportation, Research and Innovative Technologies Administration, Bureau of Transportation Statistics, available at www.bts.gov/dictionary.

Break-bulk. Packages of maritime cargo that are handled individually, palletized, or unitized for purposes of transportation as opposed to bulk and containerized freight.

Chained dollars. A measure used to express real prices, defined as prices that are adjusted to remove the effect of changes in the purchasing power of the dollar. Real prices usually reflect buying power relative to a reference year. The "chained-dollar" measure is based on the average weights of goods and services in successive pairs of years. It is "chained" because the second year in each pair, with its weights, becomes the first year of the next pair. Before 1996, real prices were expressed in constant dollars, a weighted measure of goods and services in a single year. See also *current dollars*.

Class I freight railroad. Defined by the American Association of Railroads each year based on annual operating revenue. For 2009, the threshold for Class I railroads was revenues exceeding $401 million. A railroad is dropped from the Class I list if it fails to meet the annual revenue threshold for three consecutive years.

Container. A large standard-size metal box into which cargo is packed for shipment aboard specially configured oceangoing containerships. It is designed to be moved with common handling equipment to enable high-speed intermodal transfers in economically large units between ships, railcars, truck chassis, and barges using a minimum of labor. Therefore, the container rather than the cargo in it serves as the transfer unit.

Container Port. A harbor with marine terminal facilities for transferring cargo between containerships and land transportation, such as truck or rail.

Containerization. A system of intermodal freight transportation that uses standard containers that can be loaded onto vessels, railcars, and trucks. It involves the stowage of general or special cargo in a container for transport in the various modes.

Containership. A cargo vessel designed and constructed to transport, within specifically designed cells, portable tanks, and freight containers, which are lifted on and off with their contents intact.

Containerized cargo: Cargo that is practical to transport in a container and results in a more economical shipment than could be achieved by shipping the cargo in some other form of unitization (e.g., break-bulk).

Container throughput. A measure of the number of containers handled over a period of time. It is a standard measure for the productivity of a seaport. Container throughput is measured by twenty-foot equivalent units (TEU).

Current dollars. Dollar value of a good or service in terms of prices current at the time the good or service is sold. See also *chained dollars*.

Customs-Trade Partnership Against Terrorism (C-TPAT). A voluntary public-private partnership program in which the private owners of supply chain infrastructure and cargo work with U.S. Customs and Border Protection to improve the security of the international supply chain. See www.cbp.gov for details.

Deadweight tons (dwt). The total weight of a ship's load, including cargo, fuel, and crew. The deadweight tonnage of a ship is the difference between its weight when completely empty and its weight when fully loaded.

Dry Bulk Cargo. Cargo which may be loose, granular, free-flowing, or solid, such as grain, coal, and ore, and is shipped in bulk rather than in package form. Dry bulk cargo is usually handled by specialized mechanical handling equipment at specially designed dry bulk terminals.

General Cargo. General cargo consists of those products or commodities—such as timber, structural steel, rolled newsprint, concrete forms, and agricultural equipment—that are not conducive to packaging or unitization. Break-bulk cargo (e.g., packaged products such as lubricants and cereal) are often regarded as a subdivision of general cargo.

Gross domestic product (GDP). The total value of goods and services produced by labor and

property located in the United States. As long as the labor and property are located in the United States, the supplier (the workers and, for property, the owners) may be either U.S. residents or residents of foreign countries.

Highway-rail crossing. A location where one or more railroad tracks intersect a public or private thoroughfare, a sidewalk, or a pathway.

Intermodal container. A freight container designed to be used interchangeably in two or more modes of transport.

Intermodal. Used to denote movements of cargo containers interchangeably between transport modes—i.e., motor, water, and air carriers—and where the equipment is compatible within the multiple systems.

Just in time (JIT). A method of inventory control in which warehousing is minimal or nonexistent. A container is the movable warehouse and must arrive "just in time," or not too early or too late.

Marine terminal. A designated area of a port used for the transmission, care, and convenience of cargo and/or passengers in the interchange of them between land and water carriers or between two water carriers. It includes wharves, warehouses, covered and/or open storage spaces, cold storage plants, grain elevators and/or bulk cargo loading and/or unloading structures, landings, and receiving stations.

Marine Transportation System (MTS). Consists of all the intermodal components that are part of the maritime domain, including ships, ports, inland waterways, intermodal rail and truck, and other users of the maritime system.

Merchandise trade exports. Merchandise transported out of the United States to foreign countries whether such merchandise is exported from within the U.S. Customs Service territory, from a U.S. Customs bonded warehouse, or from a U.S. Foreign Trade Zone. (Foreign Trade Zones are areas, operated as public utilities, under the control of U.S. Customs with facilities for handling, storing, manipulating, manufacturing, and exhibiting goods.)

Merchandise trade imports. Commodities of foreign origin entering the United States, as well as goods of domestic origin returned to the United States with no change in condition or after having been processed and/or assembled in other countries. Puerto Rico is a customs district within the U.S. Customs territory, and its trade with foreign countries is included in U.S. import statistics. U.S. import statistics also include merchandise trade between the U.S. Virgin Islands and foreign countries even though the islands are not officially a part of the U.S. Customs territory.

Metric tons. A metric ton—a standard measure used globally—is a unit of weight equal to 2,205 pounds or 1,000 kilograms. By comparison, a "short ton," used in the United States and Canada, is equal to 2,000 pounds or 907 kilograms. Thus, 1 metric ton equals 1.1 short tons. (Yet another measure, the "long" ton, is sometimes used in the United Kingdom. A long ton is equivalent to 2,240 pounds, or 1,016 kilograms.)

Port. A harbor area in which marine terminal facilities for transferring cargo between ships and land transportation are located.

Post-Panamax vessels. Ocean vessels that are too large to pass through the Panama Canal. They typically have widths exceeding 32.2 meters (105.6 feet) and can carry up to 6,500 TEUs. Recent designs of these vessels are able to carry more than 12,000 TEUs.

Real gross domestic product (GDP). The real counterpart to current/nominal GDP, obtained by valuing output in a given year at prices from another year, called the base year. It reflects correction for inflation and changes in the price of goods and services.

Roll-on/roll-off vessel. Ships that are designed to carry wheeled containers or other wheeled cargo and that use the roll-on/roll-off method for loading and unloading.

Secure Freight Initiative (SFI). A joint program of the U.S. Department of Homeland Security and the U.S. Department of Energy that is designed to scan U.S.-bound containers for nuclear or radiological materials at their foreign ports of origin. See www.cbp.gov/xp/cgov/trade/cargo_security/secure_freight_initiative for details.

Short-Sea Shipping. Short-sea shipping describes the movement of freight along coastal waterways (for example, from Long Beach to Portland or from New York/New Jersey to Savannah). It includes the movement of containers and wet and dry bulk cargoes.

Tanker. An oceangoing ship designed to haul liquid bulk cargo in world trade.

Twenty-foot equivalent unit (TEU). The standard unit for measuring the volume of containers that

seaports handle. Standard container sizes are 20 feet, 40 feet, and 48 feet long.

Transportation Worker Identification Credential (TWIC). The Transportation Worker Identification Credential (TWIC) is a security program designed to ensure that individuals who pose a threat do not gain unescorted access to secure areas of the Nation's maritime transportation system. TWIC is administered by the Transportation Security Administration and U.S. Coast Guard. The program issues tamper-resistant biometric identification cards to workers who require unescorted access to secure areas of ports, vessels, and outer continental shelf facilities, and to all credentialed merchant mariners.

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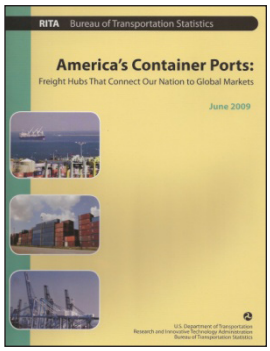

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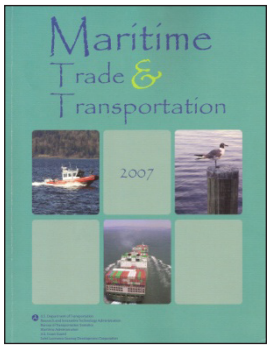

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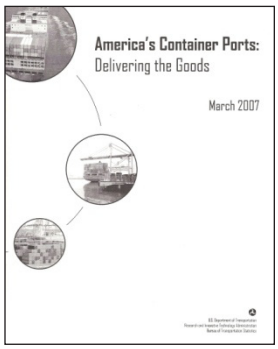

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