

# CONTAINER SHIPPING AND THE ECONOMY

*Stimulating Trade and Transformations Worldwide*

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*This article was excerpted from The Box with material added for TR News by Anne Marie Kappel, Vice President, World Shipping Council, Washington, D.C. (www.worldshipping.org). The book excerpts are copyrighted by Princeton University Press and are used with permission.*

Aerial view of Pier 400, in the Port of Los Angeles. The largest proprietary container terminal in the world, the 484-acre Maersk Pacific Ltd. project took more than 8 years to complete at a total construction value of more than \$400 million.

**W**hat is it about the container that is so important? Surely not the thing itself. A soulless aluminum or steel box held together with welds and rivets, with a wooden floor and two enormous doors at one end, the standard container has all the romance of a tin can.

The value of this utilitarian object lies not in what it is, but in how it is used. The container is at the core of a highly automated system for moving goods from anywhere to anywhere, with a minimum of cost and complication. The container made shipping cheap and changed the shape of the world economy.

## Economic Effects

Sleepy harbors such as Busan in South Korea and Seattle moved into the front ranks of the world's ports, and massive new ports were built in places where none had been before, like Felixstowe in England and Tanjung Pelepas in Malaysia. Poor countries, desperate to climb the rungs of the ladder of economic development, could dream realistically of

becoming suppliers to wealthy countries far away. Huge industrial complexes mushroomed in places like Los Angeles and Hong Kong, because the cost of bringing raw materials in and sending finished goods out had dropped drastically (1).

Shipping costs no longer sheltered producers whose advantage was proximity to the customers—even with customs duties and time delays, factories in Malaysia could deliver blouses to Macy's in Herald Square more cheaply than could blouse manufacturers in the lofts of New York's garment district. Multinational manufacturers—companies with plants in different countries—transformed into international manufacturers, integrating once-isolated factories into networks so that they could choose the cheapest location for making a particular item yet still shift production from one place to another as costs or exchange rates might dictate.

In 1956, the year the container was introduced, the world was full of small manufacturers selling locally. By the end of the 20th century, purely local markets for goods of any sort were few and far between.



PHOTO: PORT OF LOS ANGELES

As Secretary of Transportation Norman Y. Mineta pointed out in his farewell remarks to the U.S. Chamber of Commerce on July 6, “The modern economy—and by extension, our transportation system—is global in nature.... Today, international trade is propelling the American economy—and the world economy—in ways previously unimaginable.”

Consumers enjoy infinitely more choices thanks to the global trade the container has stimulated. By one careful study, the United States imported four times as many varieties of goods in 2002 as in 1972, generating a consumer benefit—not counted in official statistics—equal to nearly 3 percent of the entire economy. The competition that came with increased trade has diffused new products with remarkable speed and has held down prices so that average households can partake.

The ready availability of inexpensive imported consumer goods has boosted living standards around the world (2). For workers, this has been a mixed blessing. Low shipping costs helped make capital even more mobile, making the wages for less mobile factory workers in the United States and Europe depend on the pay and productivity of their counterparts in Asia. Yet the emergence of the logistics industry in the quest for more effective supply chain management has led to the creation of new and often better-paying jobs in warehousing and transportation.

### Containerport Efficiencies

A modern containerport is a factory whose scale strains the limits of the imagination. Every day at every major port, thousands of containers arrive and depart by truck and train. Loaded trucks stream through the gates, where scanners read the unique number on each container and computers compare it against ships’ manifests before the trucker is told where to deliver the load. Tractor units arrive to hook up chassis and haul away containers that have just come off the ship.

Trains carrying double-stacked containers roll into an intermodal terminal near the dock, where giant cranes straddle the train to remove one container after another. Outbound container trains, destined for a rail yard 2,000 miles away with only the briefest of stops en route, are assembled on the same tracks and loaded by the same cranes.

The result of all this activity is a nearly seamless system for shipping freight around the world. A 15-ton container of coffee makers can leave a factory in Malaysia, be loaded aboard a ship, and cover the 9,000 miles to Los Angeles in 16 days. A day later, the container is on a unit train to Chicago, where it is transferred immediately to a truck headed for

Cincinnati. The 11,000-mile trip from the factory gate to the Ohio warehouse can take as little as 22 days, a rate of 500 miles per day, at a cost lower than that of a single first-class air ticket.

### Historic Costs

How much the container matters to the world economy—and therefore to the U.S. economy—is impossible to quantify. How much did it cost to send 1,000 men’s shirts from Bangkok to Chicago in 1955, and how did that cost change as containerization came into use? The data do not exist, but clearly the container reduced the cost of moving freight.

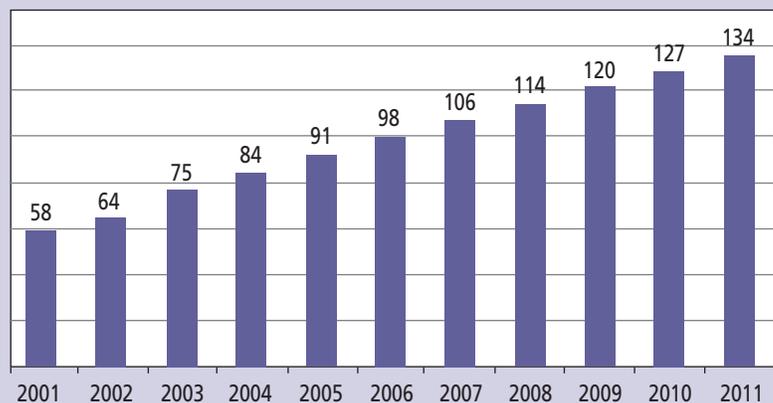
In 1961, before the container was in international use, ocean freight costs accounted for 12 percent of the value of U.S. exports and 10 percent of the value of U.S. imports. According to the staff of the Joint Economic Committee of Congress, “these costs are more significant in many cases than governmental trade barriers,” noting that the average U.S. import tariff was 7 percent (3).

This process was so expensive that in many cases selling international was not worthwhile. “For some commodities, the freight may be as much as 25 percent of the cost of the product,” two engineers concluded after a careful study of data from 1959 (4). Shipping steel pipe from New York to Brazil cost an average of \$57 per ton in 1962 or 13 percent of the average cost of the pipe—not includ-



The Port of Seattle, Washington, has revived and thrived with containerized trade.

**Global Containerized Trade, 2001 to 2011 (Forecast), in Million TEU**  
 According to data from Global Insight, Inc., global containerized trade has grown at a compound annual rate of 12 percent from 2001 to 2005. The forecast growth rate for the period 2005 to 2011 is 6.5 percent. In 2011, global containerized trade is forecast to reach 134 million TEU, 2.3 times as much as the 58 million TEU recorded in 2001. The data represent maritime trade in fully loaded containers, not port throughput or the movement of full and empty containers.



Source: Global Insight, Inc. World Trade Service



A container is transloaded in the Port of Amsterdam, Netherlands.

ing the cost of moving the pipe from the steel mill to the dock (3). No wonder that, relative to the size of the economy, U.S. international trade was smaller in 1960 than it had been in 1950, or even in the Depression year of 1930 (5). The cost of conducting trade had risen so high that in many cases trade made no sense.

By far the biggest expense in the process was shifting the cargo from land transport to ship at the port of departure and then moving it back to truck or train at the other end of the ocean voyage (see table, below). As one expert explained, “A 4,000-mile voyage for a shipment might consume 50 percent of its costs in covering just the two 10-mile movements through two ports.”

The container first affected these costs. The elimination of piece-by-piece freight handling brought lower expenses for longshore labor, insurance, pier rental, and the like. Containers were quickly adopted for land transportation, and the reduction in loading time and transshipment cost lowered rates for goods that moved entirely by land. As ship lines built huge vessels designed to handle containers, ocean freight rates plummeted. As container shipping became intermodal, with a seamless shifting of containers among ships, trucks, and trains, goods could move in a never-ending stream from Asian factories directly to the stockrooms of retail stores in North America or Europe, making the overall cost of transporting goods little more than a footnote in a company’s cost analysis (6).

### Time Dimensions

Transport efficiencies, however, hardly begin to capture the economic impact of containerization. The container not only lowered freight bills but saved time. Quicker handling and less time in storage translated to faster transit from manufacturer to customer, reducing the costs of financing inventories that could sit unproductively on railway sidings or in pierside warehouses awaiting a ship.

Combined with the computer, the container

made it practical for companies like Toyota and Honda to develop just-in-time manufacturing, in which a supplier makes the goods its customer wants only as the customer needs them and then ships them, in containers, to arrive at a specified time. Such precision, unimaginable before the container, has led to massive reductions in manufacturers’ inventories and correspondingly huge cost savings. Retailers have applied these same lessons, using careful logistics management to squeeze out billions of dollars in costs.

### Global Effects

In 1966, in the decade after the container first came into international use, the volume of international trade in manufactured goods grew more than twice as fast as the volume of global manufacturing production, and two-and-a-half times as fast as global economic output. Something was accelerating the growth of trade even though economic expansion was weak. Something was driving a vast increase in international commerce in manufactured goods even though oil shocks were making the world economy sluggish.

Attributing the vast changes in the world economy to a single cause would be foolhardy, but the possibility should not be dismissed that the sharp drop in freight costs from the introduction of container shipping played a major role in increasing the integration of the global economy (7, 8).

### References

1. Erie, S. P. *Globalizing L.A.: Trade, Infrastructure, and Regional Development*. Stanford University Press, Palo Alto, California, 2004.
2. Broda, C., and D. E. Weinstein. *Globalization and the Gains from Variety*. Working Paper 10314, National Bureau of Economic Research, Cambridge, Massachusetts, February 2004.
3. Joint Economic Committee, U.S. Congress. *Discriminatory Ocean Freight Rates and the Balance of Payments*. Washington, D.C., 1964.
4. MacMillan, D. C., and T. B. Westfall. Competitive General Cargo Ships. *Transactions of the Society of Naval Architects and Marine Engineers*, 68, 1970, p. 843. 5.
5. *Historical Statistics of the United States*. Bureau of the Census, Washington, D.C., 1975, p. 887.
6. Eyre, J. L. Shipping Containers in the Americas. In *Recent Developments in the Use and Handling of Unitized Cargoes*. Pan American Union, Washington, D.C., 1964.
7. Krugman, P. *Growing World Trade: Causes and Consequences*. Brookings Papers on Economic Activity 1995, No. 1, 1995, p. 341.
8. *World Trade Report 2004*. World Trade Organization, Geneva, 2005, pp. 114–129

### Cost of Shipping One Truckload of Medicine from Chicago to Nancy, France (Estimates, 1960)

	Cash Outlay	Percent of Cost
Freight to U.S. port city	\$ 341	14.3
Local freight in port vicinity	\$ 95	4.0
Total port cost	\$1,163	48.7
Ocean shipping	\$ 581	24.4
European inland freight	\$ 206	8.6
Total	\$2,386	

Source: American Association of Port Authorities (6).