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ESSAY

Freight Pain

The Rise and Fall of Globalization

Marc Levinson

*MARC LEVINSON is an economist in New York and the author of *The Box: How the Shipping Container Made the World Smaller and the World Economy Bigger*.*

As politicians blame international trade for closed car-parts factories in Ohio, shuttered furniture plants in the Carolinas, and the arrival of deadly pet food from China, discomfort with the global economy is growing throughout the United States. A 2007 survey by the Pew Research Center found that only 59 percent of Americans polled thought that trade was good for their country -- down 19 percentage points since 2002. Yet even as Americans lament too much globalization, they are in fact on the verge of facing the opposite dilemma: too little. Two factors are driving the retreat of globalization: rising transportation costs and diminishing reliability, both of which are causing long-distance supply chains to lose appeal. Companies that provide American and European customers with goods made in Asia are rethinking their business models and seeking ways to shorten the distance between the factory floor and the store shelf. Although international trade in manufactured goods will continue to expand, its rate of growth is likely to be far lower than the double-digit average of the past four decades. The world is not so flat after all.

The end of globalization's golden age will have major political and economic implications.

"Deindustrialization" is likely to fade as a domestic political issue as the recent wave of factory closures in the United States yields to a tide of openings and expansions. Although automated production makes a big recovery in assembly-line work unlikely, the rebound in manufacturing will bring new jobs in plant-level maintenance and technical tasks. Industrial unions may even regain a bit of the bargaining power they have lost since the 1970s. Consumers, who have grown accustomed to seeing imports drive down the prices of clothing, furniture, toys, and appliances, may be unhappy when imports become costlier. The Federal Reserve's job of maintaining price stability may become harder as domestic prices are no longer held so tightly in check by the influx of cheap goods from abroad. And if international trade becomes less important, the incentives for close cooperation between major trading partners, such as the United States and China, may weaken as well.

GOODBYE, GLOBALIZATION

The process now known as globalization was made possible by a decline in the cost of moving goods. Before the late 1960s, transport added anywhere from 10 to 25 percent to the cost of imports, effectively serving as a barrier to trade. Even though wages in Asian and Latin American countries were lower than those in the United States, U.S. imports from those regions were quite modest because the expense of transport exceeded the savings on labor.

That began to change in 1966 with the use of containers on international shipping routes. A single big box made unnecessary the repeated loading and unloading of individual cartons and crates and slashed the single biggest expense in freight transportation. Then, starting in the late 1970s, freight deregulation brought an end to a system in which all shippers paid an officially published price and received their goods whenever the transportation carrier got around to delivering them. Deregulation permitted the negotiation of contracts between shippers and carriers that specified rates, delivery schedules, and the frequency of service, so that a big U.S. retailer could bargain for a low rate and be confident that, for example, toys made in China would arrive in time for the holiday season. Starting in the 1980s, sharp declines in rates for air freight, thanks to the international expansion of small-package delivery services, made it economically viable to assemble a laptop computer in Taipei and deliver it in Atlanta two days later. Cheaper transport, combined with lower tariffs and technological advances, turned low-wage countries into workshops serving wealthy markets in Europe, Japan, and North America.

Many of these goods are not finished products but rather components and semifinished merchandise -- industrial chemicals, semiconductors, electric motors -- that are made in one country and then shipped to another for further processing. The supply lines needed to deliver these components cheaply to the right factory at the right time are not publicized by the companies that use them and are invisible to consumers, but they form the backbone of the global economy. Since the late 1980s, they have functioned so efficiently that U.S. manufacturers have not hesitated to import critical parts from thousands of miles away, confident that they could meet their needs as reliably with goods from Shenzhen as from St. Louis.

That globalization process is now beginning to shift into reverse. Because international freight transport is becoming more expensive and less reliable, companies are reconsidering whether it makes sense to depend on products made half a world away. Global sourcing is starting to lose much of its allure.

Energy prices are one piece of the story. The cost of international air freight to the United States, for example, has jumped 17 percent over the past year due to the near doubling of the price of jet fuel. Rates for shipping containers by sea are up around 15 percent since last year, as shipping lines have hit their clients with a variety of rate hikes and surcharges and ship owners have slowed down their vessels to reduce fuel consumption. Once an imported container reaches the United States, moving it across the country by rail costs 25 percent more than it did a year ago.

But the challenges go far beyond the price of oil. Even if the price of crude oil were to drop below \$60 a barrel, where it was at the start of 2007, other obstacles would likely lead U.S. companies to shorten

their supply chains and bring manufacturing from Asia back to the Western Hemisphere.

Economies of scale were a key factor in the decline of transportation costs that made globalization possible. The first container ship to sail internationally, in 1966, carried the equivalent of 200 modern 40-foot containers. Today's largest container ships carry approximately 30 times as much cargo. Ports, too, have expanded beyond all expectations, as the shipping industry discovered that serving a handful of very large ports was much more efficient than calling at many small ones. One-third of all U.S. container trade now passes through a single port complex, Los Angeles-Long Beach, which last year handled the equivalent of eight million truck-sized containers. At the receiving end of container shipments, railroad cars that once carried a single container apiece now usually hold two, stacked one atop the other, and trucks commonly pull two or three containers down the highway.

These improvements in efficiency, however, have largely run their course. Further gains may be hard to come by, and past ones may be reversed. And some advances that improve efficiency in one part of the supply chain may end up doing just the opposite in another part. Consider the next generation of container ships, which may be able to carry 8,000 40-foot containers. At sea, they will move far more cargo per ton of oil than any of their predecessors and operate with the same size crews as much smaller ships. When they reach land, however, these ships will have to spend three or four unprofitable days in port, rather than one or two, racking up interest charges while generating no revenue as thousands of containers are unloaded and reloaded. In addition to those costs, importers will have to accept an extra day or two of delay in access to their cargo because of the sheer number of boxes to be moved through container yards and inspection stations.

Once the cargo is on land, moving a single shipload out of the port will require thousands of truck trips or 30 mile-long trains carrying nothing but containers. This additional freight will test a ground transportation system that is already choking on traffic. Congestion has worsened markedly on U.S. highways over the past decade, and there is little political interest in raising taxes to expand roads or in imposing tolls to reduce traffic on existing roads. Traffic jams are just as much a problem on the rails. In part because of overwhelming volume -- North American railroads now move 12 million containers per year -- the average container train on the Union Pacific Railroad runs at less than 28 miles per hour, down from 31 miles per hour a decade ago, adding eight hours to the trip between Los Angeles and Chicago. Railroads have been investing in new tracks, but because limited capacity enables the railroads to charge high rates, they have little incentive to invest enough money to permit the free flow of freight.

This lack of investment, along with the the recent lack of productivity improvements at U.S. ports, means that crowding on U.S. docks, roads, and rails is likely to get worse. As a result, shipping goods from Asia to inland points in North America will take more time and money. The widening of the Panama Canal, scheduled for completion in 2014, may ease some of the pressure on West Coast ports by allowing large ships from Asia to sail directly to the Gulf of Mexico and the East Coast. But those improvements will exact costs far beyond the \$144-per-container toll that the canal expects to charge by 2009. Vessels routinely make the voyage between Shanghai and Los Angeles in 13 days. The trip from Shanghai to

Savannah, Georgia, or Newark, New Jersey, takes more than twice as long, forcing importers to bear higher costs. Even if the melting of the polar icecap eventually makes it possible for commercial vessels to pass through the Arctic Ocean during part of the year, this would have little consequence for shipping to and from the United States; the major impact would be to provide a shortcut between East Asia and northern Europe.

UNCERTAIN TIMES

Congested shipping lanes and highways make transit times uncertain, and this uncertainty hurts profits. Over the past two decades, much of the economic benefit of tighter supply chains has come in the form of lower inventories. In economic terms, inventories represent waste. Whether these inventories are sitting on warehouse shelves or on the deck of a ship, their owner has paid for them but has not yet sold them -- and therefore incurs costs while waiting. If the time required to bring foreign-made goods to sale in the United States grows longer and if retailers and manufacturers are less certain about whether imports will arrive on schedule, the logical -- if economically inefficient -- response will be to keep larger inventories.

The emergence of port security as a major concern only adds to supply-chain uncertainty. The political pressure since 9/11 to screen every container entering the United States remains considerable, although whether universal screening is a worthwhile way to use the government's limited resources is a much-debated question. As technology improves, most containers will be examined with imaging devices -- at importers' expense -- and allowed to proceed with little delay. But some percentage of containers will be selected for physical inspection, a process that may delay delivery by two to three days or more. Even if the proportion of containers pulled out of the flow of traffic is small, importers will be forced to reckon with the possibility that their goods might be delayed in transit. In some instances, importers will adjust by keeping more stocks in their U.S. warehouses at any one time, effectively raising the cost of imported goods. In other cases -- particularly those involving consumer products whose demand is driven by fads or high-tech products that quickly become obsolete -- stocking up is not a realistic option. Instead, manufacturers may seek to reduce uncertainty by producing nearby, in the United States, Mexico, or countries in Central America.

One further deterrent to long-distance trade lies on the horizon: environmental protection. Until recently, U.S. air-pollution standards for ports, trains, airplanes, and trucks were lax, and standards for oceangoing ships were nonexistent. The sorts of pollution-reducing investments required in other industries were not forced on the freight industry. As a result, the cost of international trade has been kept artificially low because shippers do not pay for the environmental harm they inflict.

Regulators are finally catching up, driven by mounting local opposition to pollution near major ports. As on most environmental matters, California is at the forefront. Ships, which account for about 60 percent of the particulates emitted and about 90 percent of the sulfur oxides emitted at the ports of Los Angeles and Long Beach, will soon be required to switch their engines from highly polluting bunker fuel to more

expensive low-sulfur diesel when they near the California coast. At the dock, they are expected to turn off their engines and plug into shoreside power -- provided at a capital cost of more than \$300 million for the ports, plus several million dollars per vessel. By 2012, all 16,000 trucks that regularly haul containers in that port area, many of them 20 years old, will need to be replaced with vehicles that meet the latest federal diesel-pollution standards. State officials are pressing railroads to install particulate filters on engines at portside rail yards, cut down on locomotive idling, and substitute electricity for diesel. Even hybrid tugboats, which operate primarily on battery power rather than diesel, are on the way in.

None of this is cheap. Within the past year, Los Angeles and Long Beach have imposed a \$70 environmental fee on every container crossing their docks to cover most of the \$2.2 billion needed to replace their trucks. A \$30-per-container infrastructure fee to fund a variety of improvements, many of them environmental, takes effect next year, and there also may be a new state environmental charge of \$60 per loaded container. These fees are likely to increase over time, further raising the cost of shipping a container across the Pacific. And they are likely to appear at other ports where citizens groups have sought to block the expansion of ports and rail yards on environmental grounds, such as in Seattle and Tacoma, in Washington State, and Vancouver, British Columbia.

Climate change has not yet begun to factor into the equation. Ships are responsible for an estimated four percent of global emissions of carbon dioxide, with cargo planes accounting for a much smaller share. The large international bodies that oversee these industries, the International Maritime Organization and the International Civil Aviation Organization, typically act only with unanimity and are divided over whether emissions-reducing measures should be mandatory or voluntary. But if these international organizations fail to limit emissions, national governments and regional organizations, facing less internal disagreement, are likely to take the initiative; the European Union already plans to require emissions permits for cargo flights under its emissions-trading scheme, and EU officials talk of imposing similar constraints on ships. Other regulations aimed at reducing emissions include taxing the carbon content in fuel and imposing oceanic speed limits. All of these measures would be felt in the prices of imported goods.

Slower, costlier, and less certain transportation will not put an end to the growth of international trade. But on the margin, where business decisions are made, the strategies of manufacturers and retailers will change. As transportation eats up a greater share of the total cost of an imported product, supply chains will shorten and production will move closer to home. Your local discount store may actually stock American products once again. In retrospect, globalization will likely appear not as an inexorable trend but as a temporary stage in economic development. When prices for imported sneakers and ceiling fans start to rise in response to higher transportation costs, consumers may wish that the golden age of globalization had lasted a bit longer.

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[Home](#) > [Essay](#) > Freight Pain

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