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Container Shipping and the Decline of New York, 1955–1975

The introduction of container shipping in the late 1950s and early 1960s has received little attention from historians, but it represents a major technological advance with significant economic consequences. By dramatically lowering the cost of freight handling, the container reduced the need for factories to be near suppliers and markets and opened the way for manufacturing to move out of urban centers, first domestically and then abroad. This impact was particularly intense in New York City, where the container revolution began. Containerization had a devastating impact on New York City's economy, and was a major contributor to the collapse of its industrial base between 1967 and 1975.

In April 1956, a World War II tanker named the *Ideal-X* set sail from Newark, New Jersey, with fifty-eight metal truck trailers held in frames bolted to its deck. Six days later, the ship steamed into Houston and off-loaded the containers, to be hauled away by waiting trucks. That brief voyage began an era of dramatic change in the business of handling cargo—and a reshaping of New York City's economy.

The container represented a radical advance in transportation. It has not received the historical attention given the steamship, the canal, the railroad, and other technologies that brought economic transformation in their wakes. Yet the consequences of the container were considerable, and they are still being felt. Before containerization, international trade was an extremely expensive process: crating, insuring, transporting, loading, unloading, and storing goods being exported often cost 25 percent or more of the value of the goods. The cost of trade was so high that in many cases trading made no sense. By making goods transportation drastically cheaper, containerization allowed manufac-

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turers, wholesalers, and retailers to stretch their supply chains around the world with little concern for the expense of transporting inputs and finished products, thus fueling an increase in international trade that was far more rapid than the growth of the world economy. Half a century after the *Ideal-X*, the world's ports handle the equivalent of sixty million standard forty-foot containers of imported goods each year. Millions more containers cross borders by truck or train or are shipped in purely domestic trade. The phenomenon of "globalization," now a part of everyday vocabulary, is a direct result of the cost savings created by the container revolution.¹

The impact of the new technology was felt first in New York City. Transport-cost advantages had been critical to New York's success since its origins. The completion of the Erie Canal in 1825 made New York the country's largest port almost overnight, and it retained that title for more than a century and a half. The waterfront offered ideal sites for early manufacturers, and the docks provided jobs for generations of Irish and Italian immigrants and for smaller numbers of blacks. Up through World War II, the port was the defining feature of New York's economy.

The container got its start in New York Harbor, and within a decade it rendered New York Harbor all but unrecognizable. By changing the economics of shipping, containerization did away with tens of thousands of jobs in cargo-handling and distribution. By reducing the need for factories to be near docks or customers, it diminished New York's power as an industrial center. By opening the way to low-cost shipment of goods made in cheaper locations, the container contributed significantly to the decline of New York's economy in the 1970s, just as it would soon create winners and losers in every corner of the world.²

This change, by and large, came as a surprise. In the late 1950s, the Regional Plan Association, a civic group, commissioned a massive economic study of the New York region. The nine-volume report forecast that New York City's huge manufacturing and wholesaling industries

¹ The literature exploring the economic impact of other transportation technologies in the United States alone is large, including such works as Robert Albion, *The Rise of New York Port, 1815–1860* (New York, 1939); Robert W. Fogel, *Railroads and American Economic Growth* (Baltimore, 1964); Albert Fishlow, *American Railroads and the Transformation of the Antebellum Economy* (Cambridge, Mass., 1965); John L. Larson, *Internal Improvement* (Chapel Hill, N.C., 2001); and Edward L. Glaeser and Janet E. Kohlhase, "Cities, Regions, and the Decline of Transport Costs," Working Paper No. 9886, National Bureau of Economic Research, July 2003. The American Association of Port Authorities estimates that the world's fifty largest containerports handled the equivalent of 207 million twenty-foot containers in 2003; each container is double-counted, so the association's figure equates to 51.8 million one-way trips by forty-foot containers. Data available at www.aapa-ports.org.

² Almost none of the many political or economic works dealing with New York's decline during the 1960s and 1970s even mentions the port, the main exception being Matthew P. Drennan, "The Decline and Rise of the New York Economy," in *Dual City: Restructuring New York*, eds. John Mollenkopf and Manuel Castells (New York, 1990).

would continue to grow through 1975. The reality was far different. Instead of adding half a million jobs, the city lost almost that many. The industries that had furnished work for three generations of immigrants all but vanished, at a terrible cost in terms of social pathology and human misery. The possibility that a major change in the cost of transportation could accelerate the dispersion of economic activity, not just regionally but also globally, was not easily imaginable in the late 1950s. By the late 1960s, it was all too apparent.³

The Way It Was

In the early 1950s, before container shipping was even a concept, New York handled about one-third of America's foreign trade in manufactured goods and other general cargo. This success was not easily earned, for the city had some major disadvantages as a port. The city's piers, numbering about three hundred at mid-century—about half were able to handle oceangoing vessels—were strung out along the Manhattan and Brooklyn waterfronts. The main railroad connections, however, were in New Jersey. Each railroad owned a fleet of barges, or "lighters," to carry its boxcars to the city, either to its own terminal or directly to the dock being used by an arriving or outbound vessel. Rail freight was economically viable only because the Interstate Commerce Commission, the federal regulator, required the railroads to charge the same rates to Brooklyn and Manhattan as they charged to New Jersey; in effect, they were forced to throw in the lighter trip for free. The growth of the trucking industry made the inadequacy of New York's piers even more apparent. By mid-century, about half the port's cargo traveled by truck through congested tunnels and dockside streets. In Manhattan, trucks waited an average of one to two hours just to enter a pier. If they were headed to the Brooklyn piers, truckers coming from the west had to fight their way across Manhattan to one of the East River bridges.⁴

³ Raymond Vernon, *Metropolis 1985: An Interpretation of the Findings of the New York Metropolitan Region Study* (Cambridge, Mass., 1960), 233–37; Drennan, 26. Much political analysis of this period misses the connection between the drastic change in the city's economic base and the social problems that seemed to engulf the city. See, for example, Vincent J. Cannato, *John Lindsay and His Struggle to Save New York* (New York, 2001).

⁴ Benjamin Chinitz, *Freight and the Metropolis: The Impact of America's Transport Revolution on the New York Region* (Cambridge, Mass., 1960), 21, 50; Carl W. Condit, *The Port of New York: The History of the Rail and Terminal System from the Grand Central Electrification to the Present* (Chicago, 1981), 103–7. Attempts by New Jersey interests to eliminate the single rate led to the formation of the Port of New York Authority in 1921. See Jameson W. Doig, *Empire on the Hudson* (New York, 2001). Truck share from unpublished Port of New York Authority (hereafter PNYA), data cited in Chinitz, 41; average wait time from PNYA, *Proposal for Development of the Municipally Owned Waterfront and Piers of New York City* (1948), 64.

Delivering to the dock meant engaging a “public loader,” a gang that claimed the sole right to load and unload trucks on a particular pier. Shipping interests, mayors, governors, and the Teamsters Union, which wanted its members to handle the work, had tried to get rid of public loaders for decades. Many loaders were secretly controlled by leaders of the International Longshoremen’s Association, which created a “Truck Loading Authority” to publish “official” rates for loading: 5½ cents per 100-pound bag of marble chips, 6½ cents per 100 pounds of fish guts, and hours after 5 P.M. were paid at time and a half. Shippers who tried to unload their own trucks faced vandalism or worse. Even after the newly established Waterfront Commission of New York Harbor banned public loaders in December 1953, thugs continued to control access to the docks.⁵

Loading or unloading a ship was a hugely complicated task, because the cargo that crossed the docks was a jumble. Consumer goods might come packed in paperboard cartons. Heavier industrial goods, such as machinery and auto parts, were encased in custom-made wooden crates. Barrels of olives, bags of coffee, and coils of steel might all be part of the same load of “general cargo.” An incoming truck or railcar brought hundreds or thousands of such items, each of which had to be unloaded and stored in a transit shed, a warehouse adjacent to the dock. When a ship was ready to load, each item was counted by a checker and hauled on to the dock. Longshoremen assembled diverse pieces of freight into a “draft” of cargo atop a flat slingboard or a pallet designed for use with forklifts. The draft was secured with ropes or cables, and a winch operator on the ship positioned his hook over the sling. The longshoremen placed the cables on the hook, and the winch hoisted the draft from the dock, maneuvered it over an open hatch, and lowered it into the hold. In the dimness of the ship’s interior, other longshoremen removed each box or bag from the sling board and stowed it using four-wheeled carts, forklifts, metal hooks, and their own brute strength.⁶

The cargo ships of the era were mainly World War II Liberty Ships, breakbulk vessels, which had several levels of empty space below the deck to accommodate any sort of cargo. Loads had to be stowed tightly, so small boxes and barrels were pushed into every niche. Cargo for the

⁵ Waterfront Commission of New York Harbor, *Annual Reports*, 1954 and 1955, 13; Truck Loading Authority, “Official Loading Charges in the Port of New York,” Vernon Jensen papers, Catherwood Library, Cornell University, Collection 4067, Box 13; New York City Council on Port Development and Promotion, minutes of 18 Nov. 1963, Mayor Robert Wagner Papers, New York Municipal Archives (hereafter Wagner Papers), Reel 40532, Frame 728.

⁶ Dramatic photos of cargo handling on the West Coast, which was similar to that in New York, can be found in Louis Goldblatt, *Men and Machines: A Story about Longshoring on the West Coast Waterfront* (San Francisco, 1963). See also William DiFazio, *Longshoremen: Community and Resistance on the Brooklyn Waterfront* (South Hadley, Mass., 1985), 62.

Table 1
Cargo Aboard a North Atlantic Vessel, 1954

Cargo	Number of Pieces	Percent of Weight
Bag	24,036	12.9
Box	10,671	12.8
Carton	71,726	27.6
Case	74,903	27.9
Barrel	815	0.3
Drum	1,538	3.5
Bundle	2,880	1.0
Package	2,877	1.9
Piece	2,634	1.8
Can	888	0.3
Crate	21	0.3
Reel	5	0.1
Wheeled vehicles	53	6.7
Transporter	10	0.5
Undetermined	1,525	0.8
Total	194,582	98

Source: U.S. National Research Council, Maritime Cargo Transportation Conference. *The SS Warrior*. Washington, D.C.: National Academy of Sciences, 1954, 8.

first port of call had to be loaded last, so it would be near the hatch, available for easy unloading. At the same time, the load had to be stacked carefully for safety and balanced to keep the ship stable; longshoremen built retaining walls of lumber and metal to hold cargo in place in rough seas. A medium-sized breakbulk ship might carry two hundred thousand separate items (see Table 1). Discharging each item and then taking on a full load of outbound cargo could keep a vessel tied up at the dock for a week or more.

These waterfront realities meant that shipping was a highly labor-intensive industry in the postwar era. The war's end freed hundreds of cargo vessels for civilian use at little cost to ship lines. Requirements for forklifts and other equipment were modest. By far the biggest expense facing ship lines was the wages of longshore gangs. Investing in new ships and port facilities made little sense when the need to handle cargo by hand made it very difficult to cut vessel turnaround times and to use capital efficiently.⁷

The port was a vastly important source of jobs in New York City

⁷ Andrew Gibson interview, 28 Apr. 1998, National Museum of American History (hereafter NMAH), Containerization Oral History Project (COHP), Box AC NMAH 639, Folder 3; Paul Richardson interview, 1 July 1997, COHP, Box AC NMAH 639, Folder 10.

Table 2
Port-Related Employment in New York City, 1951

<i>Type of Industry^a</i>	<i>Number of Workers</i>	<i>Number of Firms</i>
Water transportation	67,453	637
Trucking and warehousing	36,164	3,494
Transportation services	13,968	1,030
Ship repair	9,469	84
Merchant wholesaling	206,315	22,135
Chemicals and allied products	33,472	1,129
Primary metal industries	11,452	249
Petroleum refining	1,161	7
Meat products	7,345	183
Grain-mill products	1,061	30
Stone, clay, and glass manufacturing	9,880	590
Pulp, paper, and boxes	12,977	294
<i>Total</i>	410,717	29,862

Source: U.S. Census Bureau, *County Business Patterns*, 1951.

^a Excludes railroad, municipal ferry, and public port administration workers, as well as insurance, legal, and financial workers engaged in port-related work. New York City employment for that year was 3,008,364.

(see Table 2). In 1951, more than one hundred thousand New Yorkers worked in water transportation, trucking, and warehousing, not counting railroad employees and workers in the municipal ferry system. Another fourteen thousand worked in “transportation services,” handling the complexities of international trade in an age when each leg of a journey had to be arranged, and paid for, separately. More than one-third of all “transportation services” workers nationally were in New York. About three-fourths of the nation’s wholesale trade in the early 1950s was transacted through New York. Then there were the factories located on the waterfront for ease of shipping. In 1956, ninety thousand manufacturing jobs within New York City were “fairly directly” tied to imports arriving through the Port of New York. Marine construction and ship repair employed thousands more. Add in the marine insurance brokers whose offices lined John Street in Lower Manhattan and the lawyers and bankers who serviced the shipping business, and it would be fair to assume that the livelihoods of half a million workers may have depended directly on the port.⁸

⁸ U.S. Department of Commerce, Census Bureau, and Bureau of Old-Age and Survivors Insurance, *County Business Patterns*, 1st quarter, 1951 (Washington, D.C., 1953), 56; Chinitz, 31, 96. Detailed information on plant locations in selected industries in the early part of the century is in Robert Murray Haig, *Major Economic Factors in Metropolitan Growth and Arrangement* (New York, 1927, repr. 1974), esp. 64–65, 96–97.

Trouble Brewing

Its location had helped the Port of New York gain market share during the World War II; in 1944, when it moved nearly one-third of all U.S. waterborne exports, New York handled twice as much cargo as in 1928. With the war's end, though, New York suddenly faced serious competition. The war had stimulated economic growth in the West and the South, whose factories were much less likely than plants in Rochester and Cleveland to ship through New York. The impending opening of the St. Lawrence Seaway in 1956 would permit direct shipping between Great Lakes ports and Europe: one forecast predicted that it would divert 8 percent of New York's exports and 3 percent of its imports by 1965.⁹

High land freight rates handicapped New York in competition for shipments to and from the Midwest. New York officials were prone to complain that the railroads unfairly favored Philadelphia, Baltimore, or Norfolk, but the truth was that the railroads could serve those points at lower cost, without having to float cars across the harbor. Truckers frequently sought to add the cost of New York port delays to customers' bills.¹⁰ Labor turmoil was a further burden. Some or all of the docks were closed by strikes in 1945, 1948, 1951, and 1954. Between 1945 and 1955 the International Longshoremen's Association (ILA), the legally recognized union throughout the port, battled with the Communist-backed National Maritime Union and with a competing union set up by the American Federation of Labor, which ejected the ILA on corruption charges in 1953. The Teamsters union claimed the right to load and unload trucks on the piers, precipitating violent clashes between Teamsters and Longshoremen in 1954. The high risk of labor disruption encouraged shippers to use other ports.¹¹

Crime drove shippers away as well. Cargo theft was rampant, even after the new Waterfront Commission barred 670 ex-convicts from waterfront jobs, starting in 1953. Most goods were packaged in small boxes or crates, so stealing wristwatches, liquor, or almost anything else was not particularly difficult. And if land-transport costs, labor concerns, and crime were not enough to deter businesses from shipping

⁹ PNYA, *Outlook for Waterborne Commerce through the Port of New York* (Nov. 1948), Table VIII; U.S. Bureau of the Census, *Historical Statistics of the United States*, part 2 (Washington, D.C., 1975), 761; Chinitz, 77–78.

¹⁰ Chinitz, 202; U.S. Department of Commerce, *Annual Report of the Federal Maritime Board and Maritime Administration* (1955), 33.

¹¹ Vernon Jensen, *Strife on the Waterfront* (Ithaca, N.Y., 1974), 105–10 and ch. 6. On waterfront labor in New York, see Lester Rubin, *The Negro in the Longshore Industry* (Philadelphia 1974), 51–70; and Bruce Nelson, *Divided We Stand: American Workers and the Struggle for Black Equality* (Princeton 2001), chs. 1 and 2.

through New York, there were the port's decrepit facilities. The East River pier at Roosevelt Street dated to the 1870s; the Hudson Pier at West Twenty-sixth Street, to 1882. These piers, and dozens like them, were narrow fingers protruding into the harbor, designed for the days when ships would turn ninety degrees from the channel, point their bows toward the shore, and tie up to the dock for days on end. Some were too small to allow trucks to turn around. Many piers were literally collapsing into the water. "By 1980, it will be hard to find space in a whaling museum for piers that met the requirements of 1870 and were condemned as obsolete as long ago as 1920," Port Authority executive director Austin E. Tobin commented in 1954.¹²

The Port Authority Awakens

Despite its name, the Port Authority was a latecomer to maritime affairs. The major activity of the bi-state agency since its founding in 1921 had been building and operating bridges and tunnels. But, in the 1940s, the governors of both New York and New Jersey asked it to get involved with shipping, each for different reasons. New York governor Thomas Dewey thought that the Port Authority might be able to push organized crime off the docks, while New Jersey governor Walter Edge wanted it to develop piers on the New Jersey side of the harbor. Tobin and Port Authority chairman Howard Cullman jumped at the opportunity, calculating that taking on port projects that local governments were unable to finance could generate support for the Port Authority's expansion into the business they most wanted it to enter: airports.¹³

In 1948, after a study undertaken at the request of Mayor William O'Dwyer, the Port Authority proposed to take control of New York City's waterfront and spend \$114 million—the equivalent of \$900 million today—on new piers and warehouses, while paying the city \$5 million per year. The amount involved was far more than the city had spent on its docks over decades, but the Board of Estimate, the city's

¹² DiFazio, 62; A. H. Raskin, "C-Men on the Waterfront," *New York Times Magazine*, 9 Oct. 1955, 15; New York City Planning Commission, *The Waterfront* (New York, 1971), 89; George Horne, "City Action Seen on Port Program," *New York Times*, 7 Aug. 1952; Austin J. Tobin, *Transportation in the New York Metropolitan Region during the Next Twenty-Five Years* (New York, 1954), 7.

¹³ Cover letter in PNYA, *Marine Terminal Survey of the New Jersey Waterfront* (New York, 1949); Doig, 259–60. An article by Cullman in 1946 discussed the urgent need for improved port facilities and airports and noted the Port Authority's success at carrying out large capital projects; the subheadline—written at a time when the agency had no responsibility whatsoever for ports or airports—was: "Now the Port Authority, with 25 Years Behind It, Prepares for a New Era of Sea, Land, and Air Traffic." See "Our Port of Many Ports," *New York Times Magazine*, 5 May 1946, 12.

governing body, rejected the offer. The ILA was opposed. So was the city's Department of Marine and Aviation, which ran the docks. Most of all, city politicians did not want the Port Authority on their turf. A revised Port Authority proposal was rejected by city officials in 1949.¹⁴

While New York officials thought they could modernize the city's piers without the Port Authority's involvement, the financially troubled city of Newark, New Jersey, had no such illusions. Its money-losing municipal docks were in a state of physical collapse. Newark agreed to lease its docks (and its airport) to the Port Authority late in 1947. Between 1948 and 1952, the agency spent \$11 million to dredge channels and rebuild wharves. It then built the biggest terminal yet on the New Jersey side, for the Waterman Steamship Company, which moved across the harbor from Brooklyn. The Waterman terminal had a fifteen-hundred-foot wharf running parallel to the shore for fast docking and easy loading—a feature no New York City pier could match. Watching the construction in Newark and the loss of a major steamship operator, New York's city controller suggested that perhaps the city should give up its docks after all. A Port Authority spokesman responded that the agency was not inclined to reopen negotiations.¹⁵

Late in 1953, as the Waterman terminal neared completion, the Port Authority was contacted by a real-estate firm representing McLean Trucking Company, which wanted to build a terminal on New York Harbor. A trucking company was an odd candidate to lease prime waterfront land, and odder still was the client's plan for the property. McLean Trucking wanted trucks to be able to drive inside the ships, which would ferry them to Providence, Rhode Island, or Wilmington, North Carolina.¹⁶

The idea that a truck line would drive its trucks on board its own ship, float them down the coast, and then deliver them at the other end was radical in an era when regulation ensured that trucks and ships had

¹⁴ PNYA, *Proposal for Development*; Austin J. Tobin, statement to New York Board of Estimate, 19 July 1948; PNYA, *Annual Report* 1949, 7; PNYA, *Marine Terminal Survey*, 5; Doig, 353–54 and 538. As early as 1946, the city's commissioner of marine and aviation rejected calls for the Port Authority to undertake port improvements: "The Port Authority has nothing to do with the Port of New York, and has no authority in it." See "Rejuvenated Port to Rise in Future," *New York Times*, 23 Nov. 1946.

¹⁵ PNYA, *Weekly Report to Commissioners*, 5 Apr. 1952, in uncatalogued files of Jameson Doig, New Jersey State Archives, Accession No. 2004.004 (hereafter Doig Files); "Betterments Set for Port Newark," *New York Times*, 9 Apr. 1952; Charles Zerner, "Big Port Terminal Near Completion," *New York Times*, 31 Jan. 1954; Edward P. Tastrom, "Newark Port to Start Operating New \$6 Million Terminal Soon," *Journal of Commerce*, 9 Mar. 1954; "Awaits Bid for Piers," *Newark Evening News*, 8 Dec. 1952; "City's Port Costs Show Blunder in Rejecting Authority's Aid," *Brooklyn Eagle*, 17 Dec. 1952.

¹⁶ This scheme was first publicized in A. H. Raskin, "Union Head Backs 'Sea-Land' Trucks," *New York Times*, 17 Feb. 1954.

nothing in common. The truck-ship scheme was startling as well, because coastwise shipping was widely seen as a dying business. The background of its originator, however, gave the truck-ship scheme instant credibility. Starting in 1934 with a single used truck, Malcom McLean had built McLean Trucking into one of the nation's largest trucking companies. His success as an innovator in a highly regulated industry was legendary, as was his focus on efficiency; truckers had to show the Interstate Commerce Commission that any proposed rate was profitable, so having lower costs than competitors was the only way to charge less and thus gain market share. The truck-ship scheme was entirely in that vein: the company estimated that the low cost of water transport would let it underprice other truckers between New York and North Carolina.¹⁷

As it happened, the Port Authority was uniquely positioned to serve McLean Trucking's needs. On the Newark waterfront it had underutilized docks, space to marshal trucks, and nearby rail lines. Trucks from points west could get in and out via the newly built New Jersey Turnpike without having to endure the congested tunnels to New York. Its ability to issue revenue bonds allowed the Authority to finance any new facilities. All these were advantages that New York City could not match.¹⁸

McLean's ideas evolved rapidly. In 1954, he bid for Waterman, one of the nation's largest ship lines. Waterman, which sailed to Europe and Japan, owned thirty-seven ships and had \$20 million of cash on its balance sheet. A pathbreaking transaction ensued. To circumvent regulations separating trucking and shipping, McLean created a new company, McLean Industries, in January 1955, and put control of McLean Trucking in a trust that soon sold it off. McLean Industries immediately bought Waterman's tiny domestic subsidiary, Pan-Atlantic Steamship Corp., gaining rights to serve sixteen ports from Boston to Houston. Four months later, McLean Industries bought Waterman itself in what was perhaps the first modern leveraged buyout. The plan to put trucks on ships was soon abandoned, because Malcom McLean had come up with an even more efficient way to move freight: rather than using complete trailers, whose large wheels meant wasted space aboard ship, he

¹⁷ Port Authority of New York and New Jersey (hereafter PANYNJ), *Foreign Trade 1976* (New York, 1977), 23; author's interview with Paul Richardson, Holmdel, N.J., 20 July 1992; PNYA, *Weekly Report to Commissioners*, 13 Mar. 1954, 16, Doig Files; PNYA, *Minutes of Committee on Port Planning*, 8 Apr. 1954, 2, in Robert B. Meyner Papers, New Jersey State Archives (hereafter Meyner Papers), Box 43.

¹⁸ PNYA, *Minutes of Committee on Port Planning*, 2 Sept. 1954, Meyner Papers, Box 43; PNYA, *Minutes of the Commissioners*, 9 Dec. 1954, 232, Meyner Papers, Box 43; 29 June 1955, 216; 26 Oct. 1955, 316 and 322, all in Meyner Papers, Box 44; PNYA, *Thirty-Fifth Annual Report*, 1956, 1-4.

wanted to put cargo into aluminum truck bodies that could be detached from the trucks.¹⁹

Putting cargo into metal containers was not an entirely new idea. Various railroads and ship lines had made limited use of containers for decades. These innovations had not led to much change in shipping economics. Typically, the containers were treated just like bags and boxes, lowered through the hatch of a breakbulk ship, and stowed along with other types of cargo. McLean's concept was quite different. He proposed to take two small oil tankers, install metal frames (called spardecks) ten feet above their decks, and use the spardecks to hold thirty-three-foot-long aluminum containers. Using tankers meant that the ships could carry oil, in case no one wanted to ship by container. Carrying the containers on deck simplified loading. Most important, the containers Pan-Atlantic planned to use, unlike all predecessors, would be designed to be shifted easily among ships, trucks, and trains. A Port Authority study soon showed that a container of beer packed at the brewery would cost 94 percent less to load aboard ship than the same quantity loaded as traditional breakbulk cargo.²⁰

The Port Authority aggressively staked its claim to shipping's new frontier. On December 2, 1955, New Jersey governor Robert Meyner announced that the Port Authority would develop a 450-acre tract of privately owned tidal marsh just south of Port Newark. The new Port Elizabeth, the largest port project ever undertaken in the United States, was planned eventually to accommodate twenty-five oceangoing vessels at once, enabling New Jersey to handle more than one-fourth of all general cargo in the Port of New York. Previously, the Port Authority had shown little interest in Elizabeth. The idea of putting truck bodies on ships changed that view entirely. Now, port planners foresaw a resurgence of domestic coastal shipping. The new Port Elizabeth would have ample space for "the proposed use of large shipping containers on specially adapted vessels." The first containership had yet to set sail,

¹⁹ Pan-Atlantic Steamship Corporation, "Summary of Post-World War II Coastwise Operations," typescript, 1 July 1957; "Railroads Assail Sea-Trailer Plan," *New York Times*, 11 Feb. 1955; ICC, *McLean Trucking Company and Pan-Atlantic Steamship Corporation—Investigation of Control*, No. MC-F-5976, 8 July 1957; McLean Industries, *Annual Report*, 1955, 5 and 11; U.S. Department of Commerce, *Annual Report of Federal Maritime Board and Maritime Administration, 1955* (Washington, D.C., 1955), 14; and 1956 (Washington, D.C., 1956), 7; K. W. Tantlinger, "U.S. Containerization: From the Beginning through Standardization," paper presented to World Port Conference, Rotterdam, 1982.

²⁰ U.S. railroads introduced steel containers in the 1920s, but among other problems a 2,900-pound container could hold only 10,000 pounds of freight. G. C. Woodruff, "The Container Car as the Solution of the Less Than Carload Lot Problem," speech to Associated Industries of Massachusetts, 23 Oct. 1929; PNYA, "Steel Containers," in *Via Port of New York* (July 1954): 1; author's telephone interview with Earl Hall, 14 May 1993. Beer anecdote from author's interview with Guy F. Tozzoli, New York, 13 Jan. 2004.

but the Port Authority was making clear that the future of container shipping would be in New Jersey, not in New York.²¹

The Battle for the New York Docks

The frenzy of activity on the New Jersey side of the harbor caused alarm in New York City. Through the 1940s, the New Jersey docks had been notable mainly for their lack of activity, but as ship operators relocated from New York, the tempo was picking up. With general cargo traffic flat, every ton handled in New Jersey meant one ton less handled in New York.²²

Robert F. Wagner, familiar with the docks from his years as Manhattan borough president, was elected mayor in 1953 after assembling an unusually broad coalition of labor unions and ethnic groups. The one major group he failed to capture was the Italians, who voted overwhelmingly for incumbent mayor Vincent Impellitteri. Gaining support from the group that supplied most of New York's dockworkers may have been part of Wagner's calculus in boosting Department of Marine and Aviation outlays to \$13.2 million, more than double the previous level, in his first capital budget, announced in late 1954. In the summer of 1955, city marine and aviation commissioner Vincent O'Connor charged the Port Authority with trying to "sabotage" city waterfront improvement efforts, in the face of "a growing City determination to meet the challenge of its waterfront without yielding its precious waterfront properties to Port Authority control." That September, Mayor Wagner announced that waterfront reconstruction would be one of his top four capital-spending priorities, along with education, transit, and pollution control.²³

The container, not yet reality, did not enter into the city's assessment. O'Connor came forth with a six-year plan to build new piers and transit sheds, and the city began to pump large amounts of money into

²¹ Press release, Office of the Governor, 2 Dec. 1955; PNYA, *Minutes of Committee on Port Planning*, 5 Jan. 1956, Meyner Papers, Box 44. The Port Authority's previous view of Elizabeth was expressed in *Marine Terminal Survey*, 26, which discussed the potential for port development in other locations but emphasized with italic type that the Elizabeth waterfront was best suited for *industrial* use.

²² PNYA, *Annual Report*, 1955, 9; and PANYNJ, *Foreign Trade* 1976.

²³ Chris McNickle, *To Be Mayor of New York* (New York, 1993), 97–107; proposed 1954 capital budget, Wagner Papers, Reel 7709, Frame 1372; John J. Bennett, chairman, City Planning Commission, to Henry L. Epstein, deputy mayor, 11 Mar. 1954, Wagner Papers, Reel 7709, Frame 1179; New York City Department of Marine and Aviation (hereafter NYDMA), press release, 24 Aug. 1955, Wagner Papers, Reel 40531, Frame 1220; Jensen, 147; Wagner letter to City Planning Commission in Wagner Papers, Reel 40507, Frame 843.

the docks. The 1956 capital budget included \$14.8 million for waterfront construction as the initial installment on a program that was estimated to cost \$130 million—the equivalent of \$800 million 2005 dollars. The plans were state of the art for the mid-1950s, featuring piers parallel to the shoreline, separate terminal levels for passengers and freight, and paved patios that allowed trucks to back up to high loading docks. There would be five new terminals to handle railcars floated across the harbor and a big new pier for Cunard's transatlantic passenger liners. The crown jewel, clearly intended as a slap at the Port Authority, was a \$17 million complex for Holland-America Line. After sixty-six years in New Jersey, that company would move its cargo and passenger service to Manhattan.²⁴

None of these proposals, of course, could do much about the underlying problems of the city's docks. Costs were simply uncompetitive with those at other ports. Rail freight headed for Europe would still have to be lightered across the harbor, off-loaded on to a pier, and then reloaded onto an oceangoing vessel. Trucks would still have to fight city traffic. And, of course, reconstruction would not fix the port's labor problems, which were so severe that the reopening of one of the first rebuilt piers was delayed by a dispute over which ILA members would receive priority in hiring.²⁵

Wagner's own City Planning Commission, skeptical of O'Connor's port projects almost from the beginning, urged that the city restart negotiations to transfer its docks to the Port Authority. The mayor was unresponsive. Large-scale building was a hallmark of Wagner's tenure, and he had no intention of ceding waterfront reconstruction to an agency over which he had no control. Wagner's lack of an ethnic base in New York politics—"There weren't too many German-Americans who voted in New York," recalled Thomas Russell Jones, an influential black politician of the era—made it essential for him to seek support in black, Irish, and Italian neighborhoods reliant on waterfront jobs. In this he succeeded: in his first reelection campaign, in 1957, Wagner captured about half the Italian vote, a big improvement over 1953. Business backed port renovation as well. The Downtown-Lower Manhattan Association, a group organized by David Rockefeller of Chase National

²⁴ O'Connor address to New York Symposium on Increasing Port Efficiency, 28 Nov. 1956, Wagner Papers, Reel 40531, Frame 1554; NYDMA, "Rebuilding New York City's Waterfront," 5 Sept. 1956, Wagner Papers, Reel 40531, Frames 1603-39.

²⁵ The city's Council on Port Promotion and Development estimated in 1963 that handling general cargo cost ten dollars per ton in New York versus five dollars per ton in Baltimore. Wagner Papers, Reel 40532, Frame 866; "Statement of Vincent A. G. O'Connor Regarding Operation of Grace Line Terminal," Wagner Papers, Reel 40531, Frame 1268.

Bank, urged that all piers on the west side of Lower Manhattan and all but four on the East River be retained and modernized.²⁶

Port spending took on unprecedented proportions. In 1957, O'Connor outlined \$200 million of waterfront investment by 1962—\$1.4 billion in 2005 dollars. Talk of selling the piers to the Port Authority faded. For their part, Tobin and King were now convinced that the container was the future, and they lost interest in taking over city piers that would never have the acreage needed to store containers. Their greater concern was that the city was unleashing a subsidy war that could depress rents. Tobin attacked the city's lease with Holland America, contending that it created a "new policy of undercutting established pier rental levels by subsidizing private shippers." O'Connor fired back that "the port octopus" was exerting "all its propaganda efforts to thwart the City in the desire of New York to keep its waterfront under the control of its citizens."²⁷

In 1959, the City Planning Commission proposed new office and residential buildings along the East River and suggested that rebuilding derelict piers there might not be the best use of precious waterfront land. O'Connor countered by enlisting the support of Robert Moses, the city's powerful parks commissioner and a member of the Planning Commission, and then by attacking the Planning Commission itself. Wrote O'Connor: "The assertion . . . that the potential of the Port of New York must be judged by its recent past, rather than by an affirmative anticipation of its future, is an example of negative, rather than constructive planning. It would appear to be inconsistent with the dynamism of New York."²⁸

²⁶ Department of City Planning, *Newsletter*, Nov. 1956, Wagner Papers, Reel 40507, Frame 1596; oral history interviews with Robert F. Wagner, 21 May 1988, Julius C. C. Edelstein, 5 Apr. 1991, and Thomas Russell Jones, 10 June 1993, in LaGuardia-Wagner Archive, LaGuardia Community College, Queens, N.Y.; McNickle, 121; Downtown-Lower Manhattan Association, *Lower Manhattan* (1958), 6.

²⁷ Press release, 4 Sept. 1957, Wagner Papers, Reel 40531, Frame 1945; press release, 11 Sept. 1957, Wagner Papers, Reel 40531, Frame 1957; O'Connor statement at Board of Estimate capital budget hearing, 18 Nov. 1958, Wagner Papers, Reel 40532, Frame 1149; Tozzoli interview; letter from Howard S. Cullman and Donald V. Lowe to Mayor Wagner and the Board of Estimate, 18 Sept. 1957, Wagner Papers, Reel 40531, Frame 1448; "Statement by Vincent A.G. O'Connor," 19 Sept. 1957, Wagner Papers, Reel 40531, Frame 1936.

²⁸ James Felt, chairman, City Planning Commission, to O'Connor, 23 Sept. 1959, Wagner Papers, Reel 40508, Frame 691; Department of City Planning, "Redevelopment of Lower Manhattan East River Piers," Sept. 1959; Robert Moses to Felt, 29 Sept. 1959, Wagner Papers, Reel 40508, Frame 688; O'Connor to Board of Estimate, 25 Nov. 1959, Wagner Papers, Reel 40531, Frame 2179. Moses appears to have had no interest in shipping. The port is not mentioned in Robert A. Caro's authoritative biography, *The Power Broker* (New York, 1974), and Moses's memoir, *Public Works: A Dangerous Trade* (New York, 1970), has only a single general comment, 894. According to Guy Tozzoli, who knew Moses for many years, Moses was very interested in automobiles and passenger transportation, but not in freight issues; author's interview, New York, 13 Jan. 2004.

Left unsaid was that much of the city's investment already was going to waste. In 1955, when O'Connor first proposed building five new terminals to handle cross-harbor lighter traffic, lighters moved 9.5 million short tons of cargo between New Jersey and New York. By 1960, despite the new terminals, one-third of that lighter traffic had vanished, and the trend was inexorably downward. Jet airplanes made the rebuilt Pier 57 on the Hudson River, specially designed for Grace Line's combined passenger and freight service, obsolete before it opened. New piers alone clearly would not be enough to preserve the pattern of port commerce in New York City.²⁹

The Box

That first container voyage in April 1956 was not easily achieved. The Interstate Commerce Commission spent months weighing objections by the railroads before ruling in late 1955 that Pan-Atlantic could use ships to haul truck trailers. Meanwhile, the Coast Guard demanded safety tests. Loading presented particular challenges, because the on-board cranes carried by most general-cargo ships in the 1950s could not shift a thirty-ton container without destabilizing the vessel. McLean's engineers found two huge naval construction cranes, dismantled them, and shipped them to Newark and Houston, where port managers reinforced the piers to accommodate the added weight. On April 26, 1956, one hundred dignitaries enjoyed lunch at Port Newark and watched the crane place a container on the *Ideal-X* every seven minutes. The ship was loaded in less than eight hours and departed the same day.³⁰

Within six months, Pan-Atlantic was carrying 120 containers a week between Newark and Houston. McLean rushed to expand. Pan-Atlantic rebuilt breakbulk ships to carry 226 containers each, four times the load on the *Ideal-X*. The new ships had frames built into their holds, creating cells defined by angled strips of steel: containers could be stacked one atop another in each cell, and no longshoremen were needed to tie the boxes down. Each vessel had two gantry cranes, which spanned the ship from side to side and moved forward and aft along rails. The cranes could stop immediately over any cell, lift a container, move it over the dock, place it on a steel chassis towed by a truck, and return for the next lift within four-and-a-half minutes. In early 1957, after barely nine months of operation, Pan-Atlantic leased sixty additional acres in

²⁹ Condit, 346.

³⁰ *Marine Engineering* (Nov. 1955): 104; Tantlinger, "U.S. Containerization"; PNYA, *Minutes of Committee on Operations*, 2 Feb. 1956, Meyner Papers, Box 44; "Tanker to Carry 2-Way Loads," *New York Times*, 27 Apr. 1956.

Newark, twelve times its original space, to store more containers and chassis. It began service between Newark and Puerto Rico in July 1958. After a study found that container shipping cost 39 percent to 74 percent less per ton than conventional shipping, the Propeller Club, the association of top shipping-company executives, devoted a full day of its 1958 convention to containers. No one could doubt that conventional shipping would soon be in trouble.³¹

As container traffic surged, so did Port Newark's fortunes. Newark's cargo tonnage doubled between 1956 and 1960, while tonnage on the New York side declined slightly. Pan-Atlantic, now renamed Sea-Land Service, accounted for more than one-third of Newark's general cargo and 6 percent of all general cargo in the Port of New York. All this was achieved in the once-moribund domestic trade, which by 1960 had shifted almost entirely out of Manhattan.³²

A stone's throw to the south of Sea-Land's terminal, dredges and bulldozers were shaping Port Elizabeth. After two years of planning and after overcoming protests by wary local officials, the Port Authority had embarked in 1958 on a massive construction project: a nine-thousand-foot channel, eight hundred feet wide and thirty-five feet deep, directly opposite Port Newark; thousands of feet of wharf frontage; rail lines; and roadways up to a hundred feet wide. Planners projected that Elizabeth would handle 2.5 million tons of container traffic each year, four times the level then passing through Port Newark. The differences with New York's dock reconstruction could not have been starker. In a 1961 speech discussing New York City's port redevelopment, marine and aviation commissioner O'Connor did not mention the word "container." The piers he was building were meant to serve vessels carrying a mix of containers, loose freight, passengers, and baggage. Port Elizabeth, by contrast, was planned from the start, as the Port Authority's magazine explained, to handle "a continuous flow of trailers to shipside in 'assembly line' fashion."³³

³¹ *Annual Report of the Federal Maritime Board and Maritime Administration*, 1957, 12; PNYA, *Minutes of the Commissioners*, 14 Feb. 1957, 98, Meyner Papers, Box 44; PNYA, *Weekly Report to the Commissioners*, 15 Nov. 1965, Doig Files; U.S. National Academy of Sciences, *Roll-On, Roll-Off Sea Transportation* (Washington, D.C., 1957), 9; "Propeller Club Annual Convention," *Marine Engineering* (Nov. 1958): 64–65.

³² PNYA, *Report on Port Authority Operation of Port Newark & Newark Airport, January 1, 1960–December 31, 1960*; Chinitz, 156.

³³ Elizabeth officials protested that the Port Authority was violating a 1951 promise not to condemn land without the city's consent. See PNYA, *Weekly Report to the Commissioners*, 31 Mar. 1956; Tobin to Elizabeth Mayor Nicholas LaCorte, 21 May 1956; Meyner to Elizabeth City Attorney Jacob Pfefferstein, 4 June 1956; Francis A. Mulhearn, PNYA legal department to Tobin, 29 June 1956, all in Doig Files; O'Connor address on Marine and Aviation Day, 23 May 1961, Wagner Papers, Reel 40532, Frame 325; "Creation of a Container Port," *VIA Port of New York*, special issue, *Transatlantic Transport Preview* (1965): 31; Anthony J. Tozzoli and John S. Wilson, "The Elizabeth, N.J. Port Authority Marine Terminal," *Civil Engineering* (Jan. 1969): 34–39.

The new Sea-Land terminal at Port Elizabeth, opened in 1962, was on a scale inconceivable in New York City. The ninety-two-acre site had thirty-six acres of paved yards to store containers and chassis. Sea-Land's fleet now included four freighters that had been "jumboized" to carry almost nine times as many containers as the little *Ideal-X*. Sea-Land won permission to sail from Newark to the West Coast, and its traffic soared. The Port of New York handled more domestic general cargo in 1962 than in any year since 1941. Almost all this cargo moved across the Sea-Land pier in New Jersey, and almost none moved through New York City. By the end of 1962, Sea-Land owned 7,848 containers, 4,876 chassis, and 385 tractors. It soon occupied a vast building at Port Elizabeth, where small shipments from separate customers could be consolidated into containers. Experience proved that a shoreside crane could work faster than shipboard cranes, so giant cranes were installed at Elizabeth and other ports of call. In 1965, Port Newark and Port Elizabeth jointly handled 4.7 million tons of general cargo, one-third of the total for the entire port. Containers now accounted for 10 percent of the port's general cargo, and their share was growing very rapidly.³⁴

The container was starting to turn the economics of the shipping industry upside down. Longshore labor, long the largest single cost in shipping, could now become almost an incidental expense. Outlays for "jumboized" ships, huge wharves, giant cranes, and thousands of pieces of equipment made container shipping a massively capital-intensive business. That capital could earn revenue only when it was moving, so the key to profitability was keeping the ships underway. A mixed load of containers and breakbulk freight—the only kind of container traffic Manhattan's rebuilt piers could handle—was an economic drain, because the cost of extra port time to handle noncontainerized cargo ate up the savings from containerization.

The ILA's Deal

Container shipping originally had attracted little attention from the longshoremen's union, the ILA. Port Newark, like all parts of New York harbor, operated under ILA contracts, and McLean struck a deal with the union before the *Ideal-X* first set sail in 1956. At the time, the ILA had a host of more pressing concerns: it was in internal turmoil; its portwide contract was set to expire on September 30, 1956; and its top bargaining demand, a single contract covering all Atlantic and Gulf ports, was meeting strong management resistance. Two small ships carrying a few containers from Newark were not a priority. Besides, as

³⁴ McLean Industries, *Annual Reports*, 1962 and 1963.

an ILA official later told Congress, Pan-Atlantic's was a new operation that would add longshore jobs rather than removing existing jobs. The union agreed to work Pan-Atlantic's containerships with a single twenty-one-man gang.³⁵

By 1958, with its jurisdiction in New York reaffirmed and with wages, work hours, and pensions in ports from Maine to Virginia covered by a single contract, the ILA was free to focus on automation. The first returns on container shipping were in, and they alarmed the union. "A containership can be loaded and unloaded in almost one-sixth of the time required for a conventional cargo ship and with about one-third of the labor," McLean Industries told shareholders after two years of operation. The issue came to a head with a new Grace Line vessel that loaded containers and other cargo through the side, rather than through hatches in the deck. When Grace proposed to use gangs made up of only six men, the union announced that it would not handle the containers of any company, except Pan-Atlantic, unless they had been filled by ILA members. On the afternoon of November 18, 1958, the ILA stopped work throughout the port and convened twenty-one thousand workers at Madison Square Garden to hear about the threat of mechanization. Union leaders insisted they would not accept smaller gang sizes to handle containers, and they demanded that employers "share the benefits" of containerization.³⁶

The issue festered until the summer of 1959, when contract bargaining began. Automation emerged as the most important issue, as the ILA insisted that all containers be "stripped and stuffed"—emptied and then reloaded—by ILA members on the pier in order to preserve jobs. Finally, the two sides agreed to allow unrestricted use of container-handling equipment, so long as the ship lines paid a penalty for each container that had not been loaded by ILA workers and so long as gang sizes remained unchanged. This job-preserving agreement was far more hostile to the new technology than a 1960 agreement on the Pacific Coast, which allowed unrestricted mechanization in return for fixed payments to fund retirement schemes and a wage guarantee. The politics of the fractious ILA, in which local leaders had considerable independence, would not allow such a sweeping settlement.³⁷

³⁵ Author's interview with Thomas W. Gleason, New York, 29 Sept. 1992; Jensen, 173–83; Philip Ross, "Waterfront Labor Response to Technological Change: A Tale of Two Unions," *Labor Law Journal* 21 (July 1970): 400.

³⁶ McLean Industries, *Annual Report*, 1958, 4; *New York Times*, 18 Nov. 1958; *New York Times*, 27 Nov. 1958.

³⁷ Port of New York Labor Relations Committee press release, in Vernon Jensen papers, Catherwood Library, Cornell University, Collection 4067, Box 13; Jensen, ch. 11, 13–14; Joseph P. Goldberg, "U.S. Longshoremen and Port Development," in *Port Planning and Development as Related to Problems of U.S. Ports and the U.S. Coastal Environment*, eds. Eric Schenker and Harry C. Brockel (Cambridge, Md., 1974), 68–81.

The union's political problems were rooted in unpleasant economic realities. Although the port as a whole was prospering, Manhattan's piers were not. As business shifted across the harbor, the number of workers hired at the Waterfront Commission's five hiring centers in Manhattan fell from 1.75 million in 1957–58 to 1.41 million in 1961–62 and then to 1.25 million in 1965–66. Brooklyn longshoremen faced a less immediate threat, as employment on the Brooklyn docks was steady until 1967. Meanwhile, union members in New Jersey could get all the work they wanted. With powerful local presidents staking out differing views, the ILA had great difficulty coming up with a united approach to the container.³⁸

Despite yet more huge public investments, including a \$25 million pier for United States Lines, prospects for New York City's docks grew dimmer by the day. The ILA, desperate to fend off competing claims to the use of the urban shoreline, proposed that new waterfront developments in Manhattan should combine piers with apartments. But the combative O'Connor was gone, and the City Planning Commission was not afraid to take on his successor, Leo Brown, in the Wagner administration's waning days. "We believe it is neither necessary, desirable, nor indeed feasible to 'turn back the clock' and attempt to rebuild two more miles of Manhattan waterfront for cargo piers," the commission proclaimed in 1964. In any case, fundamental problems had not been solved. Shipping executives continued to complain about corruption and about the "chaotic conditions" along the waterfront. New concrete was not enough to make ship lines want to dock in New York.³⁹

In late 1964, with the Manhattan docks clearly in decline, concerns about mechanization and job security triggered wildcat strikes that turned into a two-month portwide stoppage. The result was a radically new contract between the ILA and the New York Shipping Association. The union agreed to reduce the gang size for general cargo from twenty men to seventeen by 1967. In return, starting in 1966, a royalty would be assessed on every container passing through the port, and the funds would be used to guarantee qualified longshoremen the equivalent of 1,600 hours' pay each year. This guaranteed annual income would be paid until an eligible longshoreman reached retirement age. The guarantee

³⁸ Waterfront Commission of New York Harbor, *Annual Report*, 1961–62 and 1965–66.

³⁹ NYDMA, press release, 23 Jan. 1961, Wagner Papers, Reel 40532, Frame 357; remarks by Mayor Robert F. Wagner, 30 Aug. 1962, Wagner Papers, Reel 40532, Frame 457; Walter Hamshar, "Face-Lift for the Waterfront," *New York Herald Tribune*, 2 Nov. 1963; "NY Port Development Scored," *Journal of Commerce*, 23 Dec. 1963; New York City Planning Commission, *The Port of New York: Proposals for Development*, 1964, 8, 13, and plate 2; Minutes of New York City Council on Port Development and Promotion, 18 Nov. 1963, Wagner Papers, Reel 40532, Frame 728; "Report on Recommendations by the Steering Committee to the Committee for Alleviating Truck Congestion and Delay at the Waterfront of the City of New York," 7 Oct. 1965, Wagner Papers, Reel 40532, Frame 978.

was soon raised to 2,080 hours, equivalent to full-time pay. An agreement in 1968 provided that ILA workers had no right to open any container that had been filled by a single shipper, eliminating the union's last hope of preserving large numbers of waterfront jobs by unstuffing and restuffing containers. The way was open for new technology in the Port of New York.⁴⁰

The Rush to Containers

As labor constraints eased, shipping costs began to fall massively. Between 1966 and 1970, average tonnage per man-hour in the Port of New York rose 38 percent. Individual carriers reported stunning productivity gains (see Figure 1). American Export Lines found that seventeen men could load three hundred tons per hour aboard a container-ship—twenty times what they could load in one hour on a ship carrying loose cargo. Moore-McCormack Lines pegged the cost of loading containerized cargo at Port Elizabeth at \$2 to \$2.50 per ton, versus \$16 per ton for conventional freight.⁴¹

Ship lines rushed to adopt the new technology. "In 1966, commitments by ship operators and ports to containers passed the point of no return," a consultant judged. United States Lines, Moore-McCormack Lines, and Sea-Land all launched container services to Europe that year, mainly using ships that carried breakbulk cargo as well as containers. Many carriers placed their first orders for pure containerships, which were designed to maximize the load of forty-foot-long boxes that were quickly becoming the industry standard. By 1967, as the Port Authority touted a study showing that 75 percent of New York's general cargo could move in containers, sixty-four container vessels were under construction by twelve ship lines.⁴²

⁴⁰ Jensen, 305–10, 348, and 371; Ross, 402–5. The ILA won one important concession in 1969, when the "50-mile rule" awarded its members the right to consolidate or deconsolidate containers holding multiple shipments whose origin or destination is within fifty miles of the port. This job-preserving rule, though, applied to only a fifth of the port's container traffic. On the ILA's efforts to control the location of work, see Andrew Herod, *Labor Geographies: Workers and the Landscapes of Capitalism* (New York, 2001), ch. 4.

⁴¹ Longshore productivity data were problematic in the pre-container era, because productivity depended upon the nature of the cargo. The estimates here were made by adding general-cargo tonnage to one-fifth of total bulk tonnage excluding petroleum, then dividing by the number of man-hours worked. See Lincoln Fairley, *Facing Mechanization: The West Coast Longshore Plan* (Los Angeles 1979), 401; Edward Cowan, "Container Service on Atlantic Begins," *New York Times*, 24 Apr. 1966.

⁴² Arthur D. Little, Ltd., *Containerisation on the North Atlantic: A Port-to-port Analysis, and the 1970 Outlook for Deep Sea Container Services* (London, 1967), 2; PNYA, *Container Shipping: Full Ahead* (New York, 1967), "Containers Widen Their World," *Business Week*, 7 Jan. 1967; George Horne, "Container Revolution, Hailed by Many, Feared," *New York Times*, 22 Sept. 1968.

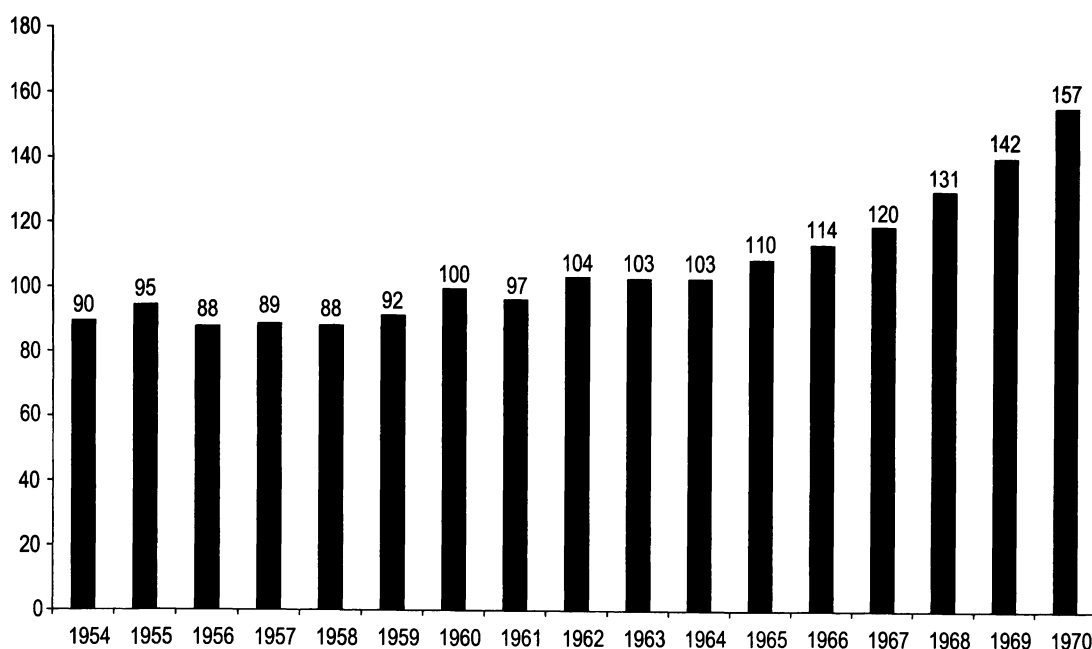


Figure 1. Labor productivity in the Port of New York. Index, 1960 = 100. (Source: Lincoln Fairley, *Facing Mechanization* [Los Angeles], 1979, 401.)

Only Port Elizabeth had the space to accommodate the surging demand for container facilities. The Authority had accelerated construction on Port Elizabeth's third phase late in 1965, adding five new piers and sixty-five acres of paved land for container storage. Just ten months later, the agency raced ahead with a fourth phase, which would bring the number of container berths at Elizabeth to twenty. The container tide was running so strong that the Port Authority no longer needed to be reticent about the future. When New York City officials demanded that the Port Authority build container terminals on Brooklyn and Staten Island in return for permission to erect the World Trade Center, they won only a pledge that the Authority would take a closer look.⁴³

In 1960, when only Sea-Land was allowed to ship containers under the ILA contract, containerized freight accounted for about 6 percent of the port's general cargo tonnage. More than three-quarters of all general cargo still passed through New York City. Six years later, when Port Elizabeth's first phase was up and running, nearly one-third of the port's general cargo was crossing the docks in New Jersey, and more than 13 percent, all of it domestic, was being shipped in containers (see Table 3). "The Port of New York—America's container capital" became the Port Authority's worldwide advertising slogan. Financial interests

⁴³ Lyle King to Austin J. Tobin, 8 Nov. 1965; PNYA, *Minutes of the Commissioners*, 10 Nov. 1965; PNYA, press release, 15 Nov. 1965; PNYA, *Minutes of the Commissioners*, 8 Sept. 1966; all in Doig Files.

Table 3
Estimated Container Share of Port of New York General Cargo

<i>Year</i>	<i>Container Share (%)</i>
1956	0.40
1957	1.47
1958	4.71
1959	5.00
1960	6.19
1961	6.48
1962	8.36
1963	11.45
1964	11.85
1965	10.92
1966	13.19
1967	14.19
1968	16.39
1969	23.62
1970	31.01
1971	32.95
1972	31.92
1973	29.25
1974	32.79
1975	39.24
1976	37.45

Source: Author's estimates, based on data of the Port of New York Authority and the U.S. Maritime Administration.

began to speak openly of other “worthwhile activities” that could be located on Manhattan’s waterfront.⁴⁴

New York dockers fought back by seeking to block the World Trade Center and picketing city hall. “If [the Port Authority] can put money into Elizabeth and Newark, why can’t they spend some in New York?” Robert Price, deputy mayor under John V. Lindsay, pleaded in 1966. All the Port Authority could offer in response was the promise that the relatively modern docks it had rebuilt in Brooklyn would continue to handle breakbulk cargo, although, “with breakbulk operations diminishing, it is unlikely that new conventional piers will be built in the near or distant future.”⁴⁵

⁴⁴ Port Authority of New York, *1996 Annual Report*, 14; First National City Bank, *The Port of New York: Challenge and Opportunity*, June 1967, 27, 30.

⁴⁵ Edward C. Burks, “Jersey Facilities Set Port Agency Pace,” *New York Times*, 11 May 1975; Edith Evans Asbury, “Port Agency Scored on Jersey Project,” *New York Times*, 17 July 1966; Port Authority of New York and New Jersey (hereafter PANYNJ), *Foreign Trade 1976*, 12.

The Lindsay administration's public bluster notwithstanding, officials recognized that the Manhattan docks had no future. In 1966, part of Pier 42 in Greenwich Village was converted to recreational use. By the following year, when ILA locals sought a meeting with Lindsay to demand new piers, even the marine and aviation commissioner advised that "to build marine terminals in Manhattan, in the quantity requested, is not at present good economic planning. . . ." In 1968, the ILA hired Wagner's former commissioner, Vincent O'Connor, to lobby for pier construction. O'Connor delivered one plan for a combined ship-rail-truck terminal with an airplane landing strip on the roof, and another for a "vertical pier" that would use technology developed for automated parking garages to lift containers to storage places high in the sky. Such fantasies were of no use. When proposals for a new passenger-ship terminal reached the front burner in 1970, Lindsay decided to get the city out of the port business at long last. "Dear Austin," he wrote in language unthinkable a few years earlier. "After considering the alternatives available to us, I am convinced that the entity best able to construct and operate the terminal is the Port Authority."⁴⁶

The first custom-designed containerships arrived on the scene in early 1968, and dozens more entered service over the next two years. These vessels, designed from the start to work smoothly with dockside container cranes, cost \$30 million or more, and they included a full complement of containers, making them vastly more expensive than the second-hand breakbulk ships they replaced.

The cost of these new vessels forced a change in the structure of the industry. When breakbulk freight was the norm and ships to carry it were cheap, ports like New York's hosted dozens of tiny ship lines. No fewer than twenty-eight "liner" operators plied regular routes across the North Atlantic in 1960, and dozens of other companies offered unscheduled "tramp" service to any destination. Containerization, however, would succeed only with frequent, regular service on fixed routes. Smaller operators were pushed aside; in the late 1960s and early 1970s, companies such as Grace Line, American Export Line, and Isbrandtsen Line, whose vessels had made New York home for decades, were merged out of existence.⁴⁷

⁴⁶ Brown to Lindsay, 12 May 1966, in New York Maritime Association (NYMA), Mayor John V. Lindsay Papers (hereafter Lindsay papers), Reel 45087, Frame 1560; Herbert Halberg to Deputy Mayor Robert W. Sweet, 29 Sept. 1967, in Lindsay Papers, Reel 45087, Frame 1653; Longshore News, Apr. 1967, 4; Nov. 1967, 4; Oct. 1968, 1; and Oct. 1969, 1; Werner Bamberger, "A 90-Second Depot for Containerships Studied," *New York Times*, 1 Dec. 1966; Lindsay to Tobin, 29 June 1970, in Lindsay Papers, Confidential Subject Files, Reel 45208, Frame 668.

⁴⁷ Andrew Gibson and Arthur Donovan, *The Abandoned Ocean* (Columbia, S.C., 2000), 215–16.

Even larger companies had little prospect of raising hundreds of millions of dollars to build containerships: in 1966, the total profits of all British steamship operators combined had come to barely \$16 million. The biggest American carriers, Sea-Land and United States Lines, sold out to conglomerates that had the resources to finance such huge investments. The leading European ship lines, lacking access to such deep pockets, tried to join forces instead. British carriers combined their container businesses into Overseas Container Lines. West Germany's two biggest lines merged to become Hapag-Lloyd, while French, Dutch, and Scandinavian companies created a joint venture. Deeply in debt, the industry suddenly began to pay unaccustomed attention to the bottom line. "Cold, pragmatical thinking" is taking over, a leading steamship executive complained in 1968. Venerable traditions quickly fell away, not least leisurely calls at the outmoded terminals along the Manhattan and Brooklyn waterfronts. By 1969, almost every major ocean carrier operating containerships was berthing at Elizabeth.⁴⁸

Pure containerships offered unheard-of efficiencies to carriers. As costs fell, international traffic took off like a rocket. Container shipments between the United States and Europe, negligible in 1967, reached 3 million long tons by 1969, even though only a few ports on either side of the ocean were equipped to handle containers. By 1970, worldwide container traffic hit 47 million tons, and Sea-Land's U.S. coastal business was hardly worth a footnote. Global container trade trebled by 1975 and then doubled to 256 million tons by 1980. Except for commodity cargoes such as grain and ore and the odd piece of machinery too big to fit in a container, breakbulk shipping all but vanished from the scene.⁴⁹

Since it was the largest containerport in the world, the Port of New York was the epicenter of this earthquake throughout the 1960s and 1970s. As containers supplanted conventional ships, New Jersey's share of the port's general cargo jumped from 30 percent in 1965 to 63 percent in 1970. In New York City, though, only destruction was visible. "The container is digging our graves and we cannot live off containers," ILA president Thomas Gleason complained, and he was not far wrong. In 1963–64, Manhattan employers used 1.4 million days of longshore labor. Hirings slid below a million in 1967–68 and dropped to 127,041 in 1975–76—a 91 percent decline in 12 years. Two years after Manhat-

⁴⁸ *Fairplay*, 11 Jan. 1968, 92A; Gunnar K. Sletmo and Ernest W. Williams Jr., *Liner Conferences in the Container Age: U.S. Policy at Sea* (New York 1981), 39; comment of Theodore DeSmedt, president of Isthmian Line, in *New York Times*, 20 Mar. 1968; Sea-Land became a subsidiary of R. J. Reynolds, the tobacco giant, while Walter Kidde & Co. bought U.S. Lines, both in 1969.

⁴⁹ Alan Schoedel, "Full Container Capability is Coming to Major Ports," *Journal of Commerce*, 7 Dec. 1970; U.S. Bureau of the Census, *Historical Statistics of the United States* (Washington, D.C., 1971), Series Q-509.

tan's longshore employment began its long decline, Brooklyn's followed, dropping from 2.3 million hirings in 1965–66 to just 930,000 in 1975–76. On the New Jersey side, meanwhile, growth outran all forecasts, and stevedores were complaining of a labor shortage.⁵⁰

By the middle of the 1970s, the New York City docks were mostly a memory. Lighters carried one-fiftieth as much freight to waiting ships in 1974 as in 1960. Steamship lines whose funnels had been familiar to generations of New Yorkers—Grace Line, Bull Line, Moore-McCormack, Delta Steamship—departed for good, unable to withstand the violent rate cycles and without prospects of raising enough capital to compete in an industry in which scale mattered more and more. In Brooklyn, the three piers known as “Little Japan,” fully rebuilt in the late 1950s, emptied out when five Japanese carriers moved to New Jersey. The four-pier complex on the Hudson River north of Fourteenth Street, reconstructed for United States Lines in 1963, stood vacant, a monument to the city's costly unwillingness to accept that its time as a port was over. When it finally reopened, it had a new use: recreation.⁵¹

After the Fall

The decline of the docks reverberated through New York City's economy. In a purely economic sense, the longshoremen were not among the losers: the ILA contract guaranteed them the equivalent of 2,080 hours of pay from 1968, so long as they showed up at the hiring hall to prove their availability for work. Their numbers already had been in decline, largely due to the Waterfront Commission's deliberate efforts to purge occasional workers from the rolls in order to raise the incomes of full-timers, but the container clearly accelerated the fall in employment. In March 1964, about twenty-four thousand people worked in marine cargo handling in New York City. Over the next six years, as container shipping burgeoned at Port Elizabeth, dock employment rose nationally while plummeting in New York (see Table 4). Only after 1973, as the Vietnam War wound down and as containerization spread to other ports, did longshore employment decline nationally.⁵²

⁵⁰ Goldberg, 76–78; Waterfront Commission of New York Harbor, *Annual Report*, various years; U.S. Bureau of the Census, *County Business Patterns, 1964* (Washington, D.C., 1967), 34–91, and *County Business Patterns, 1973* (Washington, D.C., 1976), 34–111.

⁵¹ Carl W. Condit, *The Port of New York: A History of the Railroad Terminal System from the Beginnings to Pennsylvania Station* (Chicago 1980), 346; Bill D. Ross, “The New Port Newark is Prospering,” *New York Times*, 12 Dec. 1973; Goldberg, 78; David F. White, “New York Harbor Tries a Comeback,” *New York magazine*, 16 Oct. 1978, 75; Richard Phalon, “Port Jersey Development Could Cut Brooklyn Jobs,” *New York Times*, 14 Jan. 1972; New York City Planning Commission, *The Waterfront* (1971), 35; DiFazio, 34–35.

⁵² Employment figures are reported in each *Annual Report* of the Waterfront Commission of New York Harbor.

Table 4
Employment in Marine Cargo Handling

Year	Manhattan	Brooklyn	United States
1964	19,007	5,285	91,073
1967	15,148	5,281	95,438
1970	10,563	4,921	103,679
1973	8,444	3,776	105,467
1976	7,934	4,298	83,937
Change: 1964–70	–44.4%	–6.9%	13.8%
Change: 1970–76	–28.9%	–12.7%	–19.0%

Source: U.S. Census Bureau, County Business Patterns, various years.

The disappearance of waterfront employment had dire consequences for some of the city's poorest neighborhoods, particularly those in Brooklyn. In 1960, there were only 23 Census tracts, of the 836 in the borough, in which 10 percent or more of active workers were engaged in nonrailroad transportation. On a map, these tracts form a belt parallel to the waterfront. They had much in common: large numbers of immigrants, mainly Italian; low incomes; and very low education levels. In tract 67 in South Brooklyn, where one in five workers was employed in nonrailroad transportation, 57 percent of adults had fewer than eight years of schooling. Nearby tract 63 was home to 1,071 employed workers—including four with college degrees. By 1970, transportation employment had fallen sharply throughout this entire district. With no job prospects for their sons on the docks, longshoremen could take their guaranteed annual incomes and move to the suburbs, returning each morning to “badge in.” The population in these former longshore strongholds plummeted. The depths of the decline were revealed in a housing study conducted a few years later: in Sunset Park and Windsor Terrace, an area with more than one hundred thousand residents hard by the docks, not a single privately owned housing unit was completed in 1975.⁵³

The revolutionary changes in cargo handling had far more dire implications for off-dock workers in transportation and distribution. Between

⁵³ U.S. Bureau of the Census, *U.S. Census of Population and Housing, 1960* (Washington, D.C., 1962), Report 104, part 1, and *1970 Census of Population and Housing* (Washington, D.C., 1972), New York Standard Metropolitan Statistical Area (SMSA), part 1. Tract boundaries in 1970 were not identical to those in 1960, so definitive conclusions about economic change in small geographic areas are possible only in scattered instances. New York City Planning Commission, “New Dwelling Units Completed in 1975,” NYMA, Mayor Abraham Beame Papers, Departmental Correspondence, City Planning Commission, Reel 61002, Frame 167.

1964 and 1976, the number of trucking and warehousing workers rose nationally, but the number in New York fell sharply after 1970. With fewer vessels calling at New York City, fewer trucks were needed to deliver and collect cargo at the piers. Transit warehouses were abandoned or used for parking. An entirely different pattern of goods distribution took hold. Sealed containers filled with export freight were delivered to Newark and Elizabeth, where they were stacked in the open until the vessel arrived; only small loads to be consolidated in single containers now required sorting in a warehouse. Imported containers were hauled straight to the new single-story warehouses built on large plots in central New Jersey and eastern Pennsylvania, where businesses could benefit from easy access to the port while enjoying lower labor costs. Trucking and warehousing employment in these areas tracked national trends much more closely than in New York (see Table 5).

Employment in wholesaling, traditionally one of New York's leading industries, was hurt as well, even as it was growing strongly across the country. If employment change in Manhattan and Brooklyn had mirrored national trends in these sectors from 1964 to 1976, the two boroughs would have added two hundred thousand jobs, most of them suitable for manual or clerical workers. Instead, New York lost more than seventy thousand jobs in these port-related industries, while employment nationally rose 32 percent.

Job losses in these ancillary sectors were exacerbated by the relocation of manufacturing away from New York due to changes in transport costs induced by the container. Factory employment in New York City had begun to fall in the mid-1950s, a decade before the container came into widespread use, yet the city retained a surprisingly robust factory sector into the 1960s. In 1964, New York's thirty thousand manufacturers

Table 5
Employment in Trucking and Warehousing

<i>Year</i>	<i>Manhattan and Brooklyn</i>	<i>New Jersey</i>	<i>Pennsylvania</i>	<i>United States</i>
1964	20,559	43,675	57,324	853,993
1967	21,601	49,895	63,105	986,901
1970	28,865	54,989	67,001	1,049,737
1973	22,988	57,275	71,490	1,135,087
1976	22,220	52,909	67,583	1,085,372
Change: 1964–76	8.08%	21.14%	17.90%	27.09%
Change: 1970–76	–23.02%	–3.78%	0.87%	3.39%

Source: U.S. Census Bureau.

Table 6
U.S. Freight Transport Costs as Share of GNP

Year	Costs (%)
1960	9.0
1965	9.0
1970	8.0
1975	7.0
1980	7.6
1985	6.4

Sources: Eno Foundation (transport costs) and Bureau of Economic Analysis (GNP).

employed nearly 900 thousand workers, down from a peak of 1.07 million in 1953. Factory employment in the city held steady through 1967, then abruptly collapsed. Between 1967 and 1976, New York lost one-fourth of its factories and one-third of its manufacturing jobs. The scope of this deindustrialization was shockingly widespread: forty-five of forty-seven important manufacturing industries experienced double-digit declines in employment.⁵⁴

The timing of this employment decline fits closely with the development of containerization and the fall in transport costs that ensued. The linkage is difficult to demonstrate conclusively, because reliable data on freight costs are hard to come by and because official statistics ignore internal outlays, such as those of manufacturers that owned their own ships or trucks. The best estimate, by the Eno Transportation Foundation, indicates that total freight costs of U.S. shippers held steady in the first half of the 1960s and then declined sharply—precisely during the years when container shipping burgeoned (see Table 6).⁵⁵

The fall in freight costs initially was a domestic phenomenon, as truckers and railroads used the container to handle cargo more efficiently; shipments of “piggyback” containers carried on railroad flatcars rose from 168,000 in 1955, the first full year of such operations, to 1.3 million in 1975. Containerization reached Europe in 1966 and stretched across the Pacific by 1969, spreading the freight-cost decline around the world and slashing the time required for an international shipment by as much as half. Warehousing time was reduced as well, as there was no longer a need to have the goods at the pier long before vessel depar-

⁵⁴ U.S. Bureau of the Census, *Census of Manufactures*, various years; *County Business Patterns*, 1964, 1967, and 1976, part 34.

⁵⁵ Chinitz, 86, 162; “Trains and Trucks Take to the Ocean,” *Via Port of New York*, Special Issue: Transatlantic Transport Preview (1965): 24; U.S. Department of Transportation, *Transportation Statistics Annual Report*, 1994 (Washington, D.C., 1994), Table 5-1.

ture. One recent study values each day saved in the transportation of manufactured products at 0.8 percent of the value of the goods. If this is true, then containerization, by cutting at least ten days from transatlantic shipping times, reduced the landed cost of U.S. imports from Europe by about 8 percent, and of imports from Asia by even more.⁵⁶

Punctuated Equilibrium?

Economic theory predicts that, within a metropolitan area, high transport costs will encourage centralization. Declining costs will promote decentralization within the metropolitan area or even beyond, depending on the extent to which cost savings increase with distance. These locational changes will not necessarily be gradual. Sharp alterations in the cost of goods transportation, as economists Masahisa Fujita, Paul Krugman, and Anthony J. Venables showed in 1999, could result in a “punctuated equilibrium,” whereby an urban region loses its economic specialization almost overnight.⁵⁷

The collapse of New York City’s manufacturing sector in consequence of dramatic transport-cost changes may have been just such an event. Initially, with domestic freight costs mattering less, the city lost favor as a manufacturing location to nearby areas with only moderate population density—places with sufficient labor to staff factories, but with lower land and labor costs. Then, as international transportation costs began to decline, other cost factors, notably international wage differentials, came to loom large. Factories in Hong Kong and South Korea were soon supplying blouses and skirts to New York department stores more cheaply than garment plants located in the middle of New York City, dealing a major blow to New York’s largest manufacturing industry. This sequence of events is visible in employment data. In the first part of the 1960s, when containerization was reducing transportation costs domestically but not internationally, New York City’s huge apparel industry declined relative to apparel manufacturing in nearby states, such as New Jersey and Pennsylvania. By 1973, when container-ships were bringing in cheap clothing from Asia, the increased competition hurt apparel manufacturers in all three relatively high-cost states (see Table 7). Similarly, containers of electric goods made by low-wage workers in Asia could enter through West Coast ports and arrive three

⁵⁶ Association of American Railroads, *Carloads of Revenue Freight Loaded*, annual. On the value of time savings, see David Hummels, “Time as a Trade Barrier,” working paper, Purdue University, 2001.

⁵⁷ Edwin S. Mills and Luan Sendé Lubuele, “Inner Cities,” *Journal of Economic Literature* 35 (June 1997): 729; Masahisa Fujita, Paul Krugman, and Anthony J. Venables, *The Spatial Economy: Cities, Regions, and International Trade* (Cambridge, Mass. 1999), 310.

Table 7
Employment in Apparel Manufacturing

<i>Year</i>	<i>Manhattan and Brooklyn</i>	<i>New Jersey</i>	<i>Pennsylvania</i>	<i>United States</i>
1964	233,917	74,124	174,142	1,279,624
1967	228,300	77,982	179,726	1,390,846
1970	204,829	74,715	174,023	1,376,356
1973	177,194	68,832	160,077	1,396,228
1976	147,437	59,139	141,012	1,323,531
Change: 1964–70	–12.44%	0.80%	–0.07%	7.56%
Change: 1970–76	–28.02%	–20.85%	–18.97%	–3.84%

Source: Census Bureau, County Business Patterns, various years.

days later in Louisville or Toledo, at a delivered cost lower than that of goods made by union workers in New York.⁵⁸

The decline in New York City's wholesaling industry accompanied, rather than led, the decline in manufacturing. Although the city's wholesale employment did not increase with the nation's during the 1960s, the industry was relatively stable. Flight set in late in the decade, when New York's manufacturing employment had entered free fall, a trend that accelerated during the first half of the 1970s. This was the period in which international container shipping blossomed and other ports began to attract service in competition with New York.

The decline in freight costs was a boon for the region, the nation, and for economies abroad, but it was a disaster for New York City. Brooklyn was the hardest hit by the changes. In 1962, writes historian Ellen M. Snyder-Grenier, "the waterfront was a dense concentration of docks, warehouses, and industrial buildings." A photo of the time shows piers crowded with ships, vast acreage covered with transit sheds, and large, multistory factory buildings literally a stone's throw from the water. The shift of shipping to New Jersey through the 1960s, combined with the closing of the Brooklyn Navy Yard in 1966, destroyed the industrial base of one of the largest manufacturing centers in the country. Even Bushwick's famous breweries were victims of the container revolution: the container made it all too easy to ship in beer brewed elsewhere at lower cost. Long known for having a disproportionately large share of the New York region's manufacturing, Brooklyn was remarkable for its disproportionately small share of manufacturing activity by 1980. Economic conditions were so bad that Brooklyn's population fell 14 percent

⁵⁸ Glaeser and Kohlhase, "Cities, Regions," 7, 25–26.

between 1971 and 1980. Inflation-adjusted personal income declined for eight consecutive years. Not until 1986 did Brooklyn workers regain the income level they collectively enjoyed in 1972.⁵⁹

Similar industrial carnage occurred in Manhattan, where the chemical and food-processing industries all but vanished between 1967 and 1976. Employment in book publishing grew, but cheaper shipping costs allowed the manufacturing part of the business to be shifted out of the city; employment in book printing fell 60 percent over those nine years. As journalist and social critic Roger Starr explained, the container helped “repeal” the geography of New York harbor, turning “the primary asset of the city, the foundation of its greatness, into a liability.”⁶⁰

How much of the loss of industry can be blamed on the container? A definitive answer is impossible, as containerization was only one of many forces affecting the manufacturing sector during the late 1960s and the first half of the 1970s. This period saw the completion of suburban expressways that opened new areas to industrial development. New York’s high taxes and electricity costs pushed out some manufacturers. The general shift of population to the South and the West accelerated, leaving New York factories poorly situated to serve expanding markets. The economic downturn of the early 1970s contributed to a fall in manufacturing unemployment nationwide, and New York factories, often housed in old buildings ill suited for modern manufacturing use and with little land to expand, bore the brunt of this shrinkage.⁶¹

The container alone is not a sufficient explanation for the surprising and painful economic changes of the 1960s and 1970s, but it is a necessary part of any plausible explanation. Container technology developed far beyond the imaginations of even its most ardent proponents. By the late 1970s, vessels were carrying up to 1,750 standard forty-foot containers in a single trip, more than had entered all U.S. ports combined during an average week in 1968. By the early 1980s, the

⁵⁹ Ellen M. Snyder-Grenier, *Brooklyn! An Illustrated History* (Philadelphia, 1996), 152–63; “Red Hook,” in *The Columbia Gazetteer of North America, 2000*, on-line edition; William Finlay, *Work on the Waterfront: Worker Power and Technological Change in a West Coast Port* (Philadelphia, 1988), 61; Richard Harris, “The Geography of Employment and Residence in New York since 1950,” in Mollenkopf and Castells, *Restructuring New York*; New York State Department of Labor, *Population and Income Statistics*; Brian J. Godfrey, “Restructuring and Decentralization in a World City,” *Geographical Review* 85, Thematic Issue: American Urban Geography (1995): 452.

⁶⁰ *County Business Patterns, 1967 and 1976*, part 34; Roger Starr, *The Rise and Fall of New York City* (New York, 1985), 54.

⁶¹ Edgar Hoover and Raymond Vernon, *Anatomy of a Metropolis* (Cambridge, Mass., 1959), 31, 57–58. One factor that does not to explain the sharp decline of New York’s manufacturers is their relatively small size. Employment nationally grew more rapidly at relatively small plants than at large ones though the 1960s and early 1970s; see U.S. Bureau of the Census, *Statistical Abstract of the United States, 1976* (Washington, D.C., 1976), 763.

latest ships held 2,100 forty-foot boxes; by the late 1990s, the number had risen to four thousand: a single ship carried eighty times the load of Malcom McLean's *Ideal-X*. Scale was everything. Larger ships and larger ports meant lower unit costs, driving down the cost of shipping and increasing still further the flow of trade. Major shippers took advantage of deregulation to negotiate rates and sign long-term contracts with carriers, making a ten-thousand-mile container shipment as easy to arrange, and almost as reliable, as an airline trip. The industrialization of South Korea, the flourishing of Singapore, the rise of a vast manufacturing sector in China all are directly related to the dramatic decline in transport costs that containerization brought about.

Just as other radical changes in transportation turned the tables of local comparative advantage, so the container encouraged the development of new manufacturing and distribution centers at the expense of old ones. Through the 1960s and 1970s, cheap shipping transformed the economies, the social conditions, and the demographics of established industrial cities like New York for the worse. Eventually, New York City developed an entirely new economy based on finance, media, and law, industries that deal in ideas. Industries dealing in goods all but vanished from the city, a change unimaginable before the container arrived on the scene.