

Chapter 6

Direct Employment

6.1 Introduction

In this chapter and the following, I turn to the question of whether fostering port freight volume through incentives continues to provide the regional benefits it traditionally has. The political justifications offered to the public for incentives fall into three general categories: direct employment in logistics services, indirect and induced employment, and support for economic activities whose cost competitiveness is dependent on an efficient, low-cost, local transportation infrastructure. By highlighting the role of technological change in spatio-organizational restructuring, these chapters demonstrate that the impact of ports as nodes in global production networks on local and regional economies is declining, calling into question local motivations for subsidizing infrastructure improvements that will benefit the private sector and not the residents themselves. This chapter proceeds by reviewing the probably insurmountable weaknesses of port impact evaluations to date. It then addresses direct employment trends in port labor, trucking, and warehousing, demonstrating a decline in the first and suggesting that the latter have grown through urbanization economies

rather than localization economies, i.e., through population growth rather than port activity. Recent research on the quality and character of these jobs is then reviewed, suggesting that the growing number of jobs in these sectors may not be the safe, stable, well-paying jobs that governments should seek for their residents.

6.2 Economic impact analyses

As early as Waters (1977), academics have bemoaned the difficulties of calculating the economic impacts of port activities on a region. The benefits are generally defined as the income a community receives per ton of cargo moving through its port in the form of jobs, sales, income, and taxes (Davis 1983; Waters 1977), and they are generally broken down into four categories (Davis 1983). *Direct* impacts include sales, jobs, and incomes derived from owning logistics firms or being employed by one. *Indirect* impacts include sales, jobs, and income generated by the purchase of goods and services by firms directly involved in providing logistics services. *Induced* effects refer to sales, jobs, and incomes created by the personal expenditures of employees and owners of directly related firms. Finally, *Port-dependent* impacts, which are the most difficult to measure, are the sales, jobs, and income derived by firms as a result of the lower transportation costs achieved by locating proximate to a port.

Measuring these values in a manner that enables port planning has proven nearly impossible. Commonly recognized obstacles include defining port activities, utilizing aggregate multipliers, accounting for modal substitution, extrapolating from existing services rather than calculating the effects of incremental changes, and sidestepping technological change and its spatial reorganization of the logistics system. To this list, we can add an evaluation of the quality of the jobs created.

The first problem is that of identifying port-related activities. This obstacle is

not one of identifying the character of these activities but rather one of locating those activities within available data. Though there is a generally agreed upon set of activities directly involved in port functions (see Table B.1), there is no single Standard Industrial Classification (SIC) code or North American Industrial Classification System (NAICS) code that encompasses all these activities (Davis 1983; de Langen 2007). The result is that economic impact studies tend to share an overlapping core of activities but lack the consistency necessary for effective comparison. This problem is aggravated by censorship in the *County Business Patterns* data. Not only does the data set suppress data that discloses too much information about individual firms but it sometimes also suppresses data on entire sectors. For instance, rail-related employment, which is often touted as a major beneficiary of port operations, is not reported at all.

The second problem is the use of single aggregate multipliers for disparate industrial sectors. As Davis (1983) argues, three of the four methods generally used to determine economic impacts (economic base analysis, income-expenditure analysis, and the application of previously established multipliers) yield single aggregate multipliers. But as Waters (1977, 15–17) claims, single multipliers can greatly distort the nature of geography- and sector-specific economic impacts. For instance, his analysis shows that the multiplier for forest products in the state of Washington is 27 and that for agricultural products is 60, the latter being vastly different from the typical range of 20 to 37. This suggests that a single multiplier will fail to capture the true economic impact of change in port capacity or local economic activity, since it fails to reflect the particular composition of the local economy and the differential impact of transportation on its various components. To amend this problem, most contemporary analysis employs input-output modeling, e.g., Lahr and A. Strauss-Weider Inc. (2004) and Yochum and Agarwal (1987). This approach requires expensive, customized tables

for each region or a more generic set of assumptions about the relations between industrial sectors in addition to identifying port-specific sectors. Another approach is to create weighting measures for the value-added by given commodities (Haezendonck 2001). This approach, however, also faces the problem of aggregation, as the weights are generally assumed to be constant across geographically distant ports, even though these ports support different combinations of economic activity that may not reflect the weighting appropriate to the benchmark port (de Langen 2007, 189). Additionally, the spatial fragmentation that has facilitated the decentralization of production has also permitted the centralization of command functions (cf. Fainstein and Fainstein 1989), which implies that many of the finance and insurance jobs associated with port activities need not collocate with ports' freight-movement functions to be successful.

The third problem is ignoring the potential for substitution in shipping. Though identified by Waters (1977) as early as 1977, this problem was ignored until Hall (2004) examined the situation closely after the 2002 West Coast port lockout. Developing ideas latent in Anderson's (2002) flash analysis of the situation, Hall demonstrates that firms dealt with the two-week shut-down by substituting other modes of transport for shipping (often air freight) and by shipping increased quantities of goods prior to the lock-out in a form of intertemporal substitution. The long run impact of this incident has been that shippers have developed redundant capacity in East Coast and Gulf Coast ports to ensure that supply chains will not break down should something similar occur in the future. The basic point is that simply because a port's activities "support" certain jobs, that port does not guarantee the ongoing existence of these jobs.

The fourth problem is that studies base projections on simple extrapolations of existing relationships rather than on incremental changes in port services (Davis 1983). Rather than assuming a fixed relation between port capacity and regional economic

activity, more rigorous economic analysis would suggest that the sector might encounter diminishing marginal returns as services increase. The development of new facilities may not attract the same amount of activity that earlier facilities did. One might cite Baltimore's ambitious construction of a container terminal at great taxpayer expense in the late 1980s that has remained underutilized (Luberoff and Walder 2000). "Build it and they will come," is not a motto on which the port industry can rely.

There are two additional problems with port economic impact analyses that constitute the primary content of this chapter and the next. The first of these is that the static nature of the coefficients generated by any of the methods, including input-output analysis and value-added analysis, cannot account for the dynamism of technological change (Davis 1983). As technology shifts, the relation between firms also shifts, as does the relation between capital and labor, resulting in a constantly changing set of coefficients to describe those relationships. While coefficients generated at one time may fairly accurately describe the relation between a port and local economic activity, they fail to indicate the direction in which those coefficients have moved or are likely to move in the future, greatly reducing the ability to employ them in successful planning.

In the logistics industry, the spatial impact of containerization adds an additional layer of complexity. By reducing the time, labor, and costs of moving freight through ports and the remainder of the logistics network, containerization and other technological improvements have expanded port hinterlands (Rodrigue and Notteboom 2009) and facilitated the spatial fragmentation of production (Whitford and Potter 2007), redefining the *region* impacted by a port. As a consequence, the localized impact analyses typically conducted are no longer sufficient (de Langen 2007). Worse, they are becoming irrelevant. As port hinterlands overlap and merge (Notteboom and Rodrigue 2005, 2007), ports are coming to serve the same economic base. This

has two implications. First, it boosts substitutability within shipping. For instance, as Hall (2004) and others have noted, a growing number of firms in the US have developed bicoastal shipping strategies to increase flexibility, particularly since the West Coast lock-out. Second, this substitutability makes it practically impossible to distinguish which firms and sectors are reliant upon services of a particular port.

Finally, while economic impact analyses focus on the number of jobs created and to some extent the income associated with those jobs, they do not question whether or not these are good jobs. As the analysis below shows (see Figures 6.3 and 6.4), most job growth has occurred in warehousing and trucking. However, recent research on the impacts of deregulation in these sectors (Bensman 2009) indicates that they are precarious, dangerous, poorly paid jobs with no benefits for non-union workers.

The following sections examine employment trends in directly related industries. Indirect and induced employment is not evaluated, as these would require vastly different methodologies and are nonessential to the chapter's argument. The dependence of other industries on proximity to ports is addressed in the next chapter.

6.3 Port operations and marine cargo handling

There are a great variety of professions directly involved in port operations, including tug boat operators, ship repairmen, crane operators, and, of course, longshoremen. The original SIC classification (4463) was broken up into two parts under the NAICS classification (488310 and 488320). Port and harbor operations (NAICS 488310) comprises “establishments primarily engaged in operating ports, harbors (including docking and pier facilities), or canals” (U.S. Dept. of Commerce, Bureau of the Census 2007); and marine cargo handling (NAICS 488320) comprises “establishments primarily engaged in providing stevedoring and other marine cargo handling services

(except warehousing)” (U.S. Dept. of Commerce, Bureau of the Census 2007). The latter is what we traditionally refer to as longshoring, and constitutes roughly 87 percent of the earlier SIC classification that combines these two. Thus, figures for employment in this category refer primarily to longshoremen.

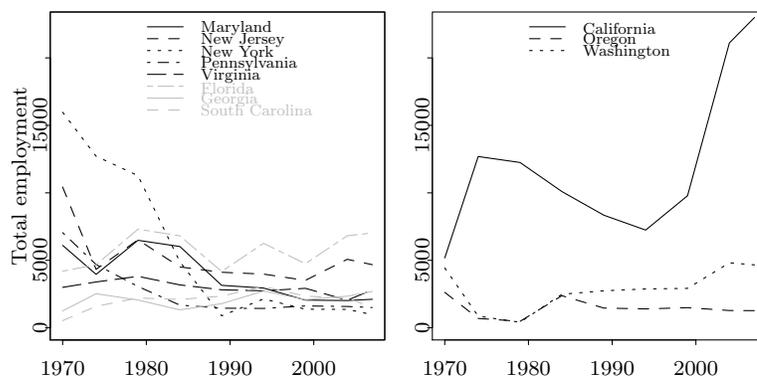


Figure 6.1: Total employment in marine cargo handling transportation (SIC 4463 and NAICS 488310 and 488320) by state (East Coast left, West Coast right)

Source: Country Business Patterns

Employment in these areas, particularly that of freight handling, has demonstrated a remarkable decline since 1970. Total employment declined by fifty percent from just under 100,000 in 1970 to less than 50,000 in 1999 before climbing again to approach 70,000 today. As Figure 6.1 indicates, though there is generalized marginal growth in several other states as well, almost the entirety of the recent upturn in employment has occurred in California, where containerization growth has been highest.¹ Still, as a fraction of total employment (see Table 4.2), the importance of longshoring has declined even more steeply, from 0.17 percent of total employment to 0.06 percent, a decline of two-thirds.

Table 6.1 offers another perspective on this relationship. It shows the number of

¹Note that this growth represents new jobs, which are not offered guaranteed annual incomes under the 1960s Mechanization and Modernization Agreement.

	1979	1984	1989	1994	1999	2004
California	15.13	3.31	1.74	1.10	0.87	1.27
Oregon	5.47	19.35	7.86	4.41	5.13	7.98
Washington	0.58	2.06	1.39	1.18	1.02	1.16
WCNA Average	8.17	3.42	1.80	1.23	0.98	1.30
Florida	28.62	16.05	4.12	3.26	1.89	2.50
Georgia	12.64	3.75	4.55	4.85	2.20	1.23
Maryland	16.33	7.78	5.82	5.55	4.12	3.40
New Jersey	Inf	Inf	60.13	Inf	Inf	111.64
New York	Inf	Inf	13.00	Inf	Inf	30.04
Pennsylvania	18.25	10.39	23.98	13.50	9.04	7.72
South Carolina	6.50	4.97	2.91	3.15	1.44	1.11
Virginia	9.15	10.08	3.93	2.92	2.10	1.03
PA and NJ	57.12	38.23	43.17	50.92	28.69	26.59
PA via NJ	Inf	Inf	21.21	Inf	Inf	34.77
ECNA Average	24.56	12.45	5.76	5.03	2.89	2.49
Alabama	262.20	19.76	33.73	59.11	31.52	14.04
Louisiana	42.46	21.55	19.80	15.60	18.14	14.31
Texas	42.69	22.97	9.40	9.34	3.49	2.85
USGC Average	49.73	22.20	13.57	12.23	6.58	4.57

PA and NJ combines volumes and employment for the two states.
New York and PA via NJ use cargo volume from NJ only.
Averages are based on totals for the states listed.
Source: Country Business Patterns

Table 6.1: Employment in port operations and marine cargo handling by state per 1,000 TEUs moved through ports in that state

jobs for every thousand TEUs² handled by ports in the listed states.³ There has been a marked decline from anywhere between 3.62 (New Jersey) and 14.95 (California) for major container ports down to roughly one and a half longshoreman for every 1,000 TEUs and as low as one job in New Jersey. Note that the higher figures for Oregon, Georgia, Maryland, Pennsylvania, and the Gulf Coast states reflect the much larger role of bulk commodities in these states' ports.⁴ The Port of South Louisiana,

²TEUs, or twenty-foot equivalent units, are basically half of the most common container. Thus, it is the equivalent of a twenty foot by eight foot by eight and a half foot box.

³While the West Coast ports are generally located well within state boundaries, allowing us to assume that all longshoring employment in these states are in their ports, there is potential overlap on the East Coast, particularly in New Jersey. Philadelphia's location on the border of Pennsylvania and New Jersey may lead to a minor overestimate for New Jersey figures, as establishments that work in Philadelphia may be located in New Jersey. However, the fact that the ports of Newark and Elizabeth handle more than twenty times that of Philadelphia makes any discrepancies minimal. Similar effects may be in play in the Gulf Coast ports as well, though the role of bulk goods, like agricultural products and petroleum are most likely responsible.

⁴Note that even the ratios for major container port states include those marine cargo handlers who handle bulk commodities and autos, which is a not insignificant portion of these ports' activities.

for instance, is the largest volume shipping port in the Western Hemisphere, but since it deals primarily in petroleum, farm products, steel, and chemicals rather than containers, the per TEU level of employment is greatly inflated. And automation is poised to decrease this ratio even further.

Still, this represents a sizable level of employment. For example, at this rate, the new Maher Terminals terminal in Prince Rupert, British Columbia, is expected to handle 500,000 TEUs and would employ 750 longshoremen at this rate. And the Maersk-SeaLand terminal in Port Newark, which was predicted to handle 1.2 million TEUs by 2028, would employ almost two thousand workers directly at the East Coast average and 1,200 at the New Jersey rate.

6.4 Deep sea freight transportation

Deep sea freight transportation (SIC 4410 and NAICS 483111) refers to establishments “primarily engaged in providing deep sea transportation of cargo to or from foreign ports” (U.S. Dept. of Commerce, Bureau of the Census 2007). It thus refers to those shipping companies that organize and provide the transport of goods between US and foreign ports. These companies generally own ships and should be distinguished from freight transportation arrangement establishments (SIC 4710 and NAICS 488510), which will be discussed later.

Table 4.2 shows that deep sea freight handling has dropped to less than half (11,217) of its 1970 level (23,919) nationwide. It has also dropped in proportion to national employment, making up 0.04 percent of all employment in 1970 and less than 0.01 percent today. This trend can be seen in more detail in Figure 6.2, which

Handling such cargo is more labor intensive than container handling. For instance, each auto has to be driven by an individual onto or off the ship and earlier techniques for handling agricultural goods involved smaller units requiring more labor power for unit of volume. Thus, these figures should be taken as upper end estimates.

shows the general decline in employment in deep sea freight transportation for five of the major Northeast port states. These statistics offer an important indicator of the decreasing benefits that deep sea freight transporters offer their host states.

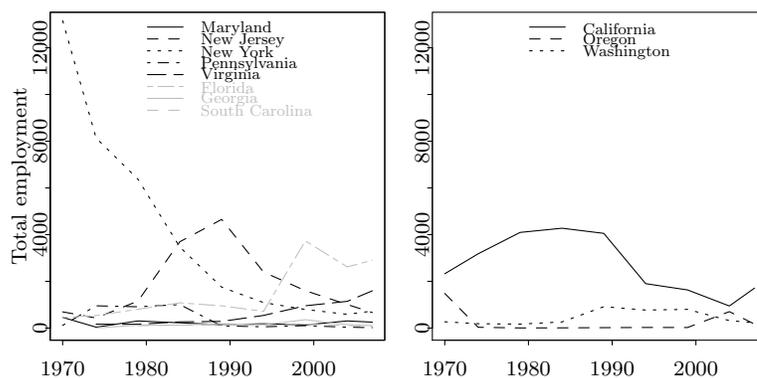


Figure 6.2: Total employment in deep sea freight transportation (SIC 4410 and NAICS 483111) by state (East Coast left, West Coast right)

Source: Country Business Patterns

There are three basic trends in the data. The most obvious is the rapid evaporation of employment in New York State. This loss is a result of the port's center of activity shifting to the New Jersey waterfront, which accounts for that state's steep rise in the 1980s. Note, however, that New Jersey's employment declines again rapidly after 1990 and converges toward the other ports, suggesting a minimal number of employees required for contemporary freight providers. The second trend is the relatively even keel of employment in Pennsylvania and Maryland, each of which (like New York and New Jersey) have one main port. This supports the steady minimum necessary to operate a freight operation. Finally, the third trend is the growth of employment in Virginia, which has aggressively developed several new terminals since 1990.

If we consider these trends with respect to the total volume of cargo moving through ports, the decline becomes even steeper. As is evident from figures 4.2, 4.1, and 4.3, the total volume of containerized cargo is increasing in all but a few isolated ports. Thus, for deep sea freight handling, where overall employment has decreased

	1979	1984	1989	1994	1999	2004
California	5.06	1.40	0.84	0.29	0.14	0.06
Oregon	0.06	0.07	0.09	0.08	0.08	4.38
Washington	0.24	0.22	0.46	0.31	0.28	0.08
WCNA Average	2.65	1.04	0.72	0.29	0.17	0.09
Florida	3.15	2.54	0.94	0.37	1.48	0.96
Georgia	0.79	0.35	0.48	0.25	0.38	0.08
Maryland	0.77	0.29	0.27	0.34	0.27	0.51
New Jersey	Inf	Inf	67.96	Inf	Inf	22.17
New York	Inf	Inf	25.57	Inf	Inf	12.91
Pennsylvania	5.43	6.20	1.54	0.52	0.57	0.18
South Carolina	0.30	0.29	0.16	0.12	0.10	0.06
Virginia	0.39	0.84	0.40	0.58	0.69	0.58
PA and NJ	12.32	29.01	36.78	23.05	9.50	4.17
PA via NJ	Inf	Inf	1.36	Inf	Inf	0.79
ECNA Average	5.71	4.07	2.28	1.04	1.09	0.63
Alabama	40.51	6.89	0.12		0.26	0.78
Louisiana	14.42	8.19	4.90	4.99	3.07	2.21
Texas	9.13	4.20	1.59	1.97	1.48	0.50
USGC Average	12.52	5.99	2.66	2.87	1.75	0.73

PA and NJ combines volumes and employment for the two states.
New York and PA via NJ use cargo volume from NJ only.
Averages are based on totals for the states listed.
Source: Country Business Patterns

Table 6.2: Employment in deep sea freight transportation by state per 1,000 TEUs moved through ports in that state

precipitously, the per unit level of employment has dropped even further. Table 6.2 shows that average employment in deep sea freight transportation on the West Coast has dropped almost 97 percent from 2.63 jobs per thousand TEUs to a mere 0.09; that it has fallen 85 percent from 2.81 to 0.42 on the East Coast and half that in New Jersey; and that it has sunk 94 percent from 12.52 to 0.73 on the Gulf Coast. Notable exceptions include Florida, which posted major gains in the mid- to late-1990s and Virginia, which has exhibited a slow, unsteady climb since 1990.

Overall, employment in firms that provide deep sea freight transportation has plummeted since the 1970s. This can be attributed to three factors. First, technological improvements in communications and data processing have reduced the number of employees required to operate these firms. Second, increasing ship size has reduced the relative size of administrative overhead. And third, consolidation among shipping

companies has further reduced administrative overhead, allowing the firms to trim down over time.

6.5 Warehousing and storage

Warehousing and storage have been discussed in Section 4.3. That analysis showed that warehousing employment has grown exponentially over the last four decades and that it has grown in importance in the national economy as a whole. It also demonstrated that warehousing has experienced a spatial deconcentration and reconcentration, directing much activity to a band of warehousing a few hundred kilometers inland from the ocean coasts. Closer inspection of employment in the five states evaluated above reinforces our understanding of this pattern. Figure 6.3 shows that state-level employment in general warehousing and storage has climbed steadily in all five states from 1970 to the late 1990s and then steeply to 2007. The greatest gains have been in Pennsylvania, which has exceptional interstate access and lies within the inland band. Pennsylvania is now home to the largest number of warehousing and storage workers on the East Coast.

Warehousing employment in terms of throughput has also been rising for reasons discussed previously. On the West Coast, employment fell from an average of 2.5 employees per thousand TEUs in 1979 to just above one employee in the late 1990s before tripling to roughly three employees per thousand TEUs. The East Coast follows a similar pattern, declining in the late 1990s before tripling from roughly three to nine employees per thousand TEUs. These per unit increases imply strong job creation possibilities from port expansion in warehousing, though not necessarily near the port itself.

Growth in the absolute number of warehousing jobs in the immediate vicinity of

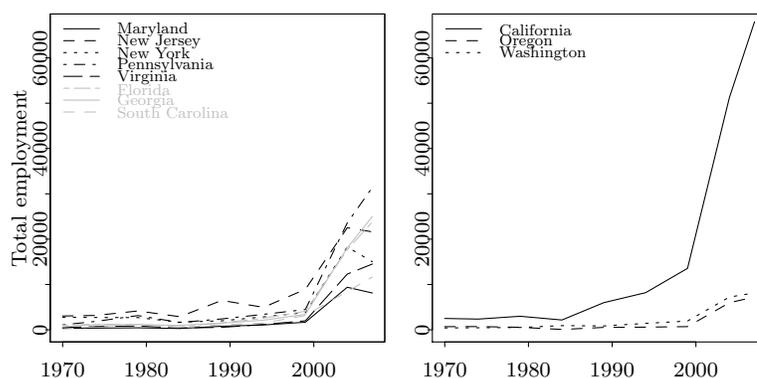


Figure 6.3: Total employment in general warehousing and storage (SIC 4225 and 4226 and NAICS 493110) by state (East Coast left, West Coast right)

Source: County Business Patterns

ports is evident in the total employment series of maps (Figures 4.4, 4.5, 4.6, 4.7, 4.8, 4.9, 4.10, and 4.11). For example, LA County shows the highest number of jobs (over 1,000) in 1974, with the surrounding counties having less than 500. By 2007, LA County has roughly 18,000 warehousing jobs and the surrounding counties have over 1,000. Elizabeth and Newark, New Jersey, meanwhile, have fewer than 500 in 1974 and over 5,000 in 2007.

However, the relative importance of warehousing employment as a percentage of total employment in the economies of these counties has remained steady and even low relative to the national average. With minor and temporary exceptions, the location quotient of counties proximate to ports remains consistently below 0.50 relative to total employment in this sector for the nation as a whole. This suggests that warehousing employment plays only a minor role in these counties' overall employment, though it does not indicate whether or not the role it plays is critical to the success of other economic activities in those counties.

The latter concern is countered by two factors. First, as mentioned previously (Section 4.3.2), warehousing employment is determined primarily by proximity to customer bases. The fact that these bases are geographically coincident with ports is

	1979	1984	1989	1994	1999	2004
California	3.69	0.71	1.24	1.24	1.20	3.09
Oregon	6.23	0.63	2.82	1.83	2.41	37.16
Washington	0.72	0.76	0.43	0.58	0.68	1.74
WCNA Average	2.51	0.72	1.06	1.09	1.12	3.08
Florida	4.65	1.51	1.51	1.33	1.63	6.49
Georgia	7.09	2.75	3.75	3.76	3.59	9.50
Maryland	1.11	0.37	1.44	2.01	3.36	15.77
New Jersey	Inf	Inf	94.67	Inf	Inf	495.16
New York	Inf	Inf	29.01	Inf	Inf	401.98
Pennsylvania	18.72	9.94	39.59	32.10	25.02	115.07
South Carolina	3.37	1.23	1.39	1.52	1.94	4.26
Virginia	1.99	1.30	0.74	1.26	1.43	6.20
PA and NJ	43.51	27.77	68.82	78.73	74.91	184.10
PA via NJ	Inf	Inf	35.02	Inf	Inf	518.61
ECNA Average	8.47	3.67	4.53	3.90	4.40	13.80
Alabama	22.31	5.27	13.81	36.21	60.91	133.03
Louisiana	2.87	1.10	1.30	1.25	3.85	13.13
Texas	7.80	3.72	4.29	5.14	5.41	16.77
USGC Average	6.06	2.74	3.55	4.52	5.96	18.80

PA and NJ combines volumes and employment for the two states.
New York and PA via NJ use cargo volume from NJ only.
Averages are based on totals for the states listed.
Source: Country Business Patterns

Table 6.3: Employment in general warehousing and storage by state per 1,000 TEUs moved through ports in that state

a matter of historical development rather than contemporary need. Second, the increasing deconcentration of warehousing employment would suggest that warehousing is important to economic activity in general rather than port activity specifically.

Though warehousing plays a small role in a county's economy relative to other activities, it does still offer significant potential gains in both counties and states that host ports in terms of the number of employees. Though policy makers in the late 1990s could not have foreseen such astounding growth in this sector, it certainly stands as one of the major benefits of port expansion during this period. The question going forward is whether this trend will continue or whether the shift has been completed. Trend lines show conflicting directions. While some states continued to increase rapidly prior to the economic crisis of 2008, others had already begun to turn downward.

6.6 Freight trucking

Freight trucking has also been discussed earlier (see Section 4.4). It was shown that though trucking has experienced mild but steady growth, employment has dropped relative to total employment at the national level, particularly from the late 1990s. Analysis also showed that trucking has not shifted relative to infrastructure nodes but, rather, is tied to population density and per capita income.

Figure 4.13 shows that this is the case for the five states being examined here. Trucking employment has grown steadily but weakly, except for a decline in the late 1990s that seems to have levelled out. Again, for ports this does not seem to be a major gain. The highest number of truckers work in the warehouse state of Pennsylvania, establishing themselves inland, perhaps near the end of the day's hauling and lower cost housing. And trucking exhibits a pattern similar to that of general warehousing and storage, in that over the time period examined here employment increases as one moves further away from ports (see Figure 4.13).

Though much freight trucking is related to urban concentration (cf. Table C.2), its ratio to container throughput is significantly higher than the other sectors explored so far. On average, employment has dropped by three quarters to 23 employees per thousand TEUs on the East Coast, by over ninety percent to eight employees per thousand TEUs on the West Coast, and by more than half to eighty employees per thousand TEUs on the Gulf Coast. A closer look at the East Coast reinforces the trend observed in the previous paragraph. Trucking employment per unit is lowest in New York and New Jersey, where the major port is located, and nearly fifty percent higher in Pennsylvania, which hosts the greatest number of general freight truckers on the East Coast. Additionally, though there were significant gains in New York and New Jersey in the late 1980s and early 1990s, these states have experienced a much

steeper decline than Pennsylvania.

	1979	1984	1989	1994	1999	2004
California	142.24	36.27	31.22	23.64	10.20	7.09
Oregon	185.50	121.84	108.19	77.66	64.32	139.07
Washington	26.37	16.25	13.32	12.12	8.59	5.67
WCNA Average	93.38	33.15	28.21	22.46	10.97	7.82
Florida	127.64	89.55	52.83	33.79	25.84	17.83
Georgia	195.88	93.97	124.47	88.43	50.36	28.61
Maryland	54.00	27.44	52.91	55.03	37.22	29.22
New Jersey	Inf	Inf	913.53	Inf	Inf	966.90
New York	Inf	Inf	1164.49	Inf	Inf	922.56
Pennsylvania	438.28	365.93	1177.54	699.49	334.66	300.53
South Carolina	35.92	29.16	21.64	20.65	10.98	10.98
Virginia	63.03	77.16	43.17	36.64	22.20	16.78
PA and NJ	741.17	679.91	1037.44	1278.49	612.63	421.54
PA via NJ	Inf	Inf	1041.52	Inf	Inf	1354.43
ECNA Average	180.99	122.76	109.19	81.39	46.78	34.23
Alabama	1032.12	375.20	1067.97	1559.08	1261.38	709.05
Louisiana	71.27	50.75	61.15	66.84	66.17	78.06
Texas	268.77	167.24	146.72	153.65	82.70	65.64
USGC Average	205.17	131.57	143.37	153.32	97.38	81.07

PA and NJ combines volumes and employment for the two states.
New York and PA via NJ use cargo volume from NJ only.
Averages are based on totals for the states listed.
Source: Country Business Patterns

Table 6.4: Employment in general freight trucking by state per 1,000 TEUs moved through ports in that state

All in all, one is compelled to conclude that trucking as well does not contribute significantly to the economic wellbeing of areas adjacent to ports. While providing a significant number of jobs overall, the total number of jobs is declining, especially near ports, and is shifting inland. Further, it is not clear that jobs in this sector are as safe, steady, and well-paid as they could be (see Section 6.8 below).

6.7 Freight transportation arrangement

The U.S. Dept. of Commerce, Bureau of the Census (2007) defines freight transportation arrangement as “arranging transportation of freight between shippers and carriers.” Personnel in this sector are often known “as freight forwarders, marine shipping

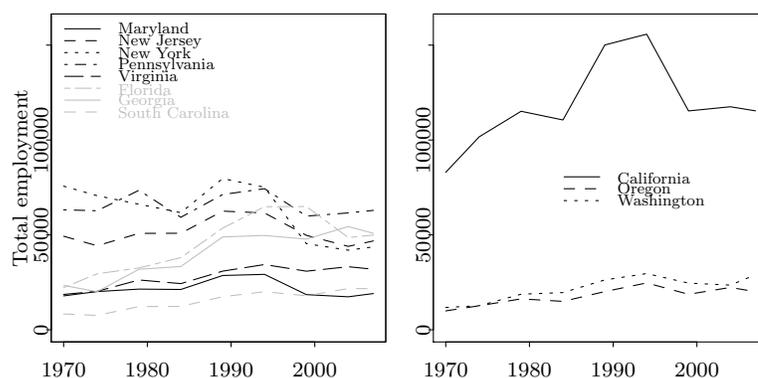


Figure 6.4: Total employment in general freight trucking (SIC 4210 and NAICS 484100 and 484200) by state (East Coast left, West Coast right)

Source: County Business Patterns

agents, or customs brokers and offer a combination of services spanning transportation modes.” Some of the decline in deep sea freight transportation employment is surely attributable to the expansion of the freight transportation arrangement sector, which generally goes by the term “third party logistics” (3PL). Due to regulatory restrictions on direct transportation providers, firms in this sector have until recently been the only source for coordinating door-to-door shipments of goods. They were the only firms (other than shippers themselves) that could legally coordinate shipment across multiple modes of transportation. They thus developed expertise in this kind of coordination, and their importance has grown with containerization, reflecting the increasingly transactional nature of trade, transportation, and supply chain management.

Employment in 3PL has increased by roughly 250 percent since 1974 from just under 60,000 nationwide to over 210,000. As a proportion of national employment, the sector has doubled from 0.09 percent to 0.18 percent of all employment. It is not surprising that this sector grew faster than the national average, since globalization requires additional work to coordinate transportation overseas as well as domestically. Growth has been uneven, however. On the West Coast, almost all expansion has been

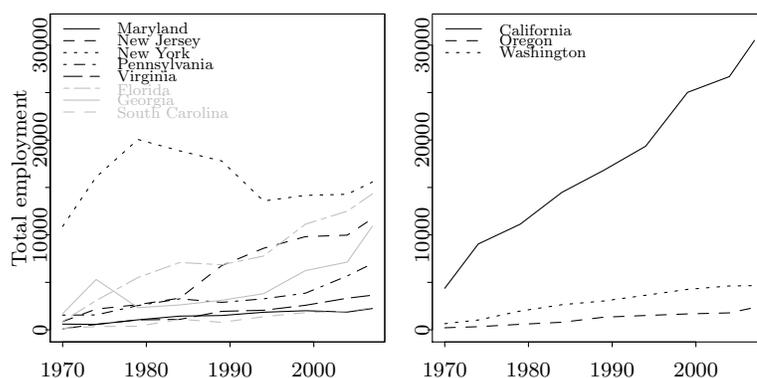


Figure 6.5: Total employment in freight transportation arrangement (SIC 4710, 4723 and NAICS 488510) by state (East Coast left, West Coast right)

Source: County Business Patterns

	1979	1984	1989	1994	1999	2004
California	13.74	4.75	3.50	2.94	2.21	1.61
Oregon	6.59	6.46	7.14	4.74	5.75	11.10
Washington	2.77	2.19	1.54	1.49	1.49	1.11
WCNA Average	8.50	4.09	3.04	2.62	2.14	1.58
Florida	21.60	16.70	6.76	4.05	4.42	4.59
Georgia	14.33	7.38	7.91	6.78	6.58	3.75
Maryland	2.65	1.86	2.78	3.49	4.04	3.14
New Jersey	Inf	Inf	98.86	Inf	Inf	219.41
New York	Inf	Inf	259.99	Inf	Inf	314.09
Pennsylvania	15.21	20.14	47.72	30.70	21.55	27.68
South Carolina	1.07	2.64	0.98	1.43	1.11	0.99
Virginia	2.50	3.49	2.72	2.19	1.85	1.68
PA and NJ	31.00	40.75	74.86	111.49	76.39	62.50
PA via NJ	Inf	Inf	42.21	Inf	Inf	124.75
ECNA Average	20.44	15.82	11.57	8.41	7.20	6.01
Alabama	28.59	8.38	37.30	48.25	54.77	26.39
Louisiana	8.53	5.32	9.47	6.24	6.64	8.00
Texas	26.32	15.84	15.86	20.09	16.49	11.88
USGC Average	18.43	11.10	14.30	16.33	15.27	11.69

PA and NJ combines volumes and employment for the two states.

New York and PA via NJ use cargo volume from NJ only.

Averages are based on totals for the states listed.

Source: County Business Patterns

Table 6.5: Employment in freight transportation arrangement by state per 1,000 TEUs moved through ports in that state

in California, which dominates container shipping. On the East Coast, there has been a fairly consistent increase across all states, but New York is only now beginning to recover from a significant decline during the 1980s and early 1990s that coincided

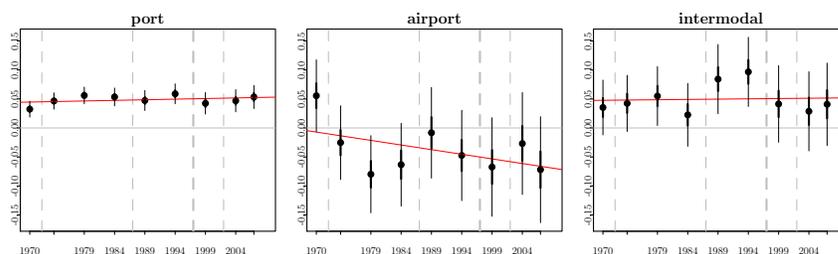


Figure 6.6: Freight transportation arrangement (SIC 4710 and 4723 and NAICS 488510): Regression coefficients for distance (in 100km) from closest port, airport, and intermodal terminal by year against the logarithm of employment. NAICS and SIC comparable.

Point represents estimate. Wide line indicates the 50 percent confidence interval, and thin line represents the 95 percent confidence interval for the estimate. Dotted grey lines indicate industrial classification transitions. Red line indicates trend in estimators.

Source: County Business Patterns

with the purchase of the last American shipping companies by European and Asian interests. Still, New York, the traditional seat of trade on the East Coast, employs the greatest number in the sector in the United States.

This sector has, however, declined relative to throughput. On the West Coast, employment has declined over eighty percent from 8.4 to 1.6 employees per thousand TEUs. On the East Coast, employment has shrank from about ten to about four employees per thousand TEUs. And on the Gulf Coast, employment has declined from over eighteen to under twelve employees per thousand TEUs. Looking more closely at the East Coast, one observes a general rise in the ratio in the late 1980s and early 1990s in New Jersey, Maryland, and Pennsylvania followed by a forty to fifty percent decline. Employment relative to throughput in New York, by comparison, deteriorates steadily from over eleven jobs per thousand TEUs passing through the Port of New York and New Jersey to under three today, and employment in Virginia exhibits a slow slide from 3.5 in 1984 to 1.7 in 2004. Additionally, in the south, the sector has grown immensely, particularly in Florida, which serves as a gateway to Central and South America (Friedmann and Wolff 1982).

Together, these trends suggest that even as employment in this sector has been

rising, its locus has been shifting toward states that host other types of transportation nodes, like airports. Figure 6.6 implies that this shift has been toward airports and perhaps away from ports, though again population density is the main and an increasingly important driver of location (cf. Table C.3). Thus, the geographical shift in employment is not *interregional* but *intraregional*.

6.8 Good jobs or bad?

When politicians and analysts speak of job creation, they seldom address the characteristics of those jobs beyond some vague assurances of respectable wages. In the context of port labor, which has traditionally been blue-collar work, and deregulation in the transportation industry (see Chapter 3), this issue takes on additional importance. A recent report (Bensman 2009) argues that since the federal government deregulated the trucking industry in 1980 through the Federal Motor Carriers Act, the quality and safety of trucking employment has deteriorated significantly. Bensman (2009) argues that an exploitative form of independent contracting between trucking service providers and individual truckers that resembles contingent hiring more than it does independent contracting has led to inefficiencies, environmental damage, more dangerous highways, enormous public costs, and a degrading of port trucking jobs. Truckers are now expected to own or lease and maintain their own trucks in which they work on average for ten to twelve hours a day five days a week and to cover their own medical expenses on an average annual income of \$28,000. In the line of work, they are compelled to wait long hours among lung-damaging diesel fumes to be sure they will have work for the day, to often haul trailers on chassis they know are unsafe, and to discover sometimes that their loads are improperly insured or overweight when accidents do happen, often leading to personal bankruptcy.

In warehousing, the situation is no better. Most workers are contingent workers who start at \$9 per hour with no benefits and can hope at best to step up to a permanent position at \$15 per hour and no benefits. Additionally, the work is very insecure. There are seasonal fluctuations with hiring peaks in advance of the Christmas season and slumps after the holidays. There are also frequent closures, as unprofitable operations are shut down and new facilities are constructed alongside newly built infrastructure (Bensman 2008).

Benefits are also elusive in the one time bastion of labor power, longshoring. Bensman (2008) reports that the Waterfront Commission of New York Harbor has stated that one third of longshoremen hired since 2003 have not worked enough hours to qualify for benefits. This is a result of declining strength and standards, especially “on the East Coast where the ILA was forced to accept a nine-tier contract that has reduced pay levels and reintroduced casual work for thousands of recent hires” (Bensman 2008, 7).

The overall trend appears fairly clear cut: job quality, pay rates, benefits, and security are all decreasing in logistics-related employment. In the sectors growing fastest, port trucking and warehousing, conditions are deteriorating the most rapidly. Though there are surely exceptions within each sector, jobs in the logistics industry do not appear to be “good” jobs.

6.9 Conclusion

The preceding analyses call into question ports as effective generators of local, directly related employment. Longshoring work has dropped toward half its level forty years ago, and the trend toward increasing automation will continue to drive employment still lower. Deep sea freight transportation has declined by fifty percent and almost

disappeared relative to total freight volume. While warehousing jobs have increased significantly, they have become less concentrated and play a smaller and smaller role in those local economies that host ports. Finally, trucking employment has experienced some mild growth, but the primary gains are in areas distant from the ports themselves and the currently degraded quality of these jobs would suggest that they are not jobs that local governments should be aggressively seeking to attract through subsidies to terminal operators and shipping companies. Together, the declining levels and quality of employment in these four areas of direct employment make port authority and politicians' claims that port subsidization will create jobs overly sanguine.

One bright note in the sector may be that of freight transportation arrangement. This sector has been growing faster than national employment as a whole, though it, too, is declining relative to total freight volume.

Sector	WCNA		ECNA		USGC	
	Ratio	Inc/Dec	Ratio	Inc/Dec	Ratio	Inc/Dec
Port operations and marine cargo handling	1.3	↑	1.7	↓	4.6	↓
Deep sea freight transportation	0.1	↓	0.4	↓	0.7	↓
General warehousing and storage	3.1	↑	9.2	↑	18.8	↑
General freight trucking	7.9	↓	22.7	↓	81.1	↓
Freight transportation arrangement	1.6	↓	4.0	↓	11.7	↓
Total	14.0		39.0		116.9	

Arrows indicate whether the trend is increasing or decreasing.

Table 6.6: Estimated ratio of jobs per 1,000 TEUs of container traffic by sector

Table 6.6 summarizes the current ratio of employment by sector for every thousand TEUs passing through ports in the three US port ranges and indicates the current trend. At present, all sectors are declining relative to total freight throughput except warehousing, which has been increasing as the final stages of production are shifted into the logistics chain. The totals in this table provide a loose indication of how many directly related jobs can be attributed to each thousand TEUs moved through a given port range. It suggests that five million TEUs (roughly the total volume

in the Port of New York and New Jersey) coincide with 70,000 jobs on the West Coast, 195,000 jobs on the East Coast, and 600,000 jobs on the Gulf Coast. One half to two thirds of these jobs are in trucking. Of course, these figures should be considered maximal employment generation figures, as bulk commodities, which are not included in these calculations, are responsible for a significant proportion of jobs in these sectors, especially on the Gulf Coast.

These are clearly not insignificant numbers. Three additional caveats are in order, however. First, these jobs are distributed (and redistributed) throughout a given port's hinterland, and many of them are moving inland to areas where land and labor are less expensive. This reduces the economic impact on areas proximate to ports. Second, as Table 6.6 indicates, the job creation rate is moving downward. Thus, except for warehousing, job generation estimates made on the basis of static coefficients are likely to be wildly optimistic. Going forward, cost-benefit analyses must account for these probable shifts and more actively develop projection ranges, as Flyvbjerg, Bruzelius, and Rothengatter (2003) suggest. Third, deregulation, decreasing unionization, and loss of union power⁵ have degraded the quality of these jobs. They are increasingly lower paid, more dangerous, and less secure.

We can conclude, then, that direct employment at the port is no longer the significant regional economic driver it once was. While quantitative expansion of capacity can create new jobs, increases appear to be producing diminishing marginal returns and diminishing job quality.

⁵This often occurs through processes of interport competition in the context of increasing supply chain flexibility, such as the case illustrated in Chapter 5.