

NORTH AMERICAN PORTS AND THE INTERNATIONALIZATION OF WORLD MARKETS

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ABSTRACT

In North America, the concept of a national market is fast disappearing and is being replaced by a larger continental market. This already has affected trade and transportation links within North America and between North America and other regions of the world. In this global environment, transportation is becoming an increasingly important factor in commercial success.

Manufacturers increasingly are seeking global sourcing. Intermediary products and services are ordered from different sites from around the world, based on a desired combination of price and quality. A nearby source is now competing with those from afar. Efficient transportation and logistics services are critical variables that can make or break the success of such arrangements.

In the coming years developments in transportation and logistics services will continue to change traditional distribution systems to fit new trading patterns that meet shippers' needs. The time will come, in the not-too-distant future, when some of today's critical intermodal freight corridors within North America will establish the path for an integrated continental transportation system capable of serving Canada, the United States, and Mexico. From a port perspective, we find that we are facing a new and ever-more-challenging competitive environment.

PORTS CANADA SYSTEM

In Canada, more than 350 commercial ports are engaged in the handling of domestic and international cargo. However, only a few of these ports play a pivotal role in international shipping, and the most significant of these form the Ports Canada system, a system of 14 federal ports administered pursuant to the Canada Ports Corporation Act, enacted in 1983.

Seven of these ports are the autonomous "local port corporations" located in St. John's, Newfoundland; Halifax, Nova Scotia; St. John, New Brunswick; Quebec City, Montreal, Quebec; and Vancouver and Prince Rupert, British Columbia. The other seven ports are ports administered directly by the Canada Ports

Corporation as divisional ports and include Belledune, New Brunswick; Sept-Iles, Trois-Rivieres, and Port Saguenay, Quebec; Prescott and Port Colborne, Ontario; and, Churchill, Manitoba.

Canada Ports Corporation and the seven local port corporations are federal Crown corporations. As such, they are responsible for furthering the objectives of the federal government in facilitating trade and transportation, while applying strong commercial discipline and achieving financial self-sufficiency. The seven local port corporations are administered by local boards of directors. Within the limits of their delegated authority, these boards administer their ports with full local, operational autonomy.

The Ports Canada system plays a vital role in Canada's trade. The 14 ports handled about 166 million tons of cargo in 1993, representing about 60 percent of Canada's marine traffic. Overall, Ports Canada ports handle the following:

- Nearly 80 percent of Canada's grain exports;
- More than 60 percent of Canada's port traffic of coal and alumina/bauxite;
- About 50 percent of Canada's marine shipments of iron ore;
- Approximately 40 percent of Canada's marine shipments of forest products; and
- Almost all of Canada's cargo tonnage.

In spite of its strong performance in terms of traffic volumes and financial results, the Ports Canada system is facing serious challenges. Some of these are commercial challenges similar to those faced by most enterprises. These include maintaining profitability, controlling costs, and securing financing for major capital expenditures.

BUSINESS ENVIRONMENT

The challenges this paper addresses, however, are those emanating from the competitive environment facing all North Americans. The nature of the port business environment is fast changing, as are environments in many other sectors. New trade patterns are emerging,

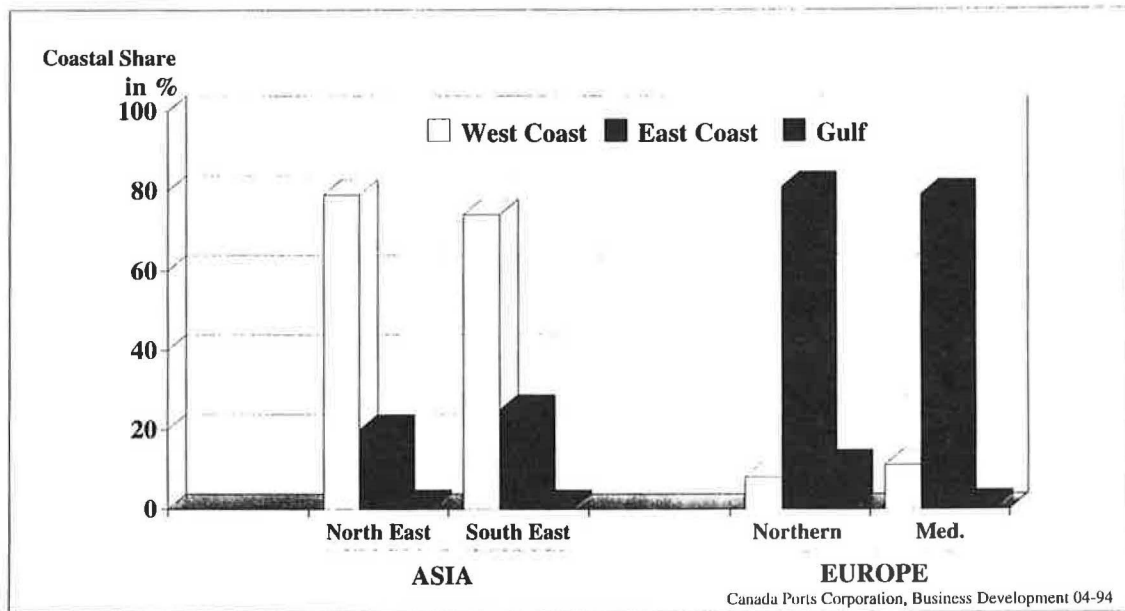


FIGURE 1 TransPacific and TransAtlantic Traffic by North American Coastal Port Regions.

exposing various North American coastal port zones to new and more difficult competitive pressures.

These competitive pressures emanate from several important trends affecting transportation—trends that have transformed the nature of the industry and have had a major impact on the way we conduct our business and serve our customers. This paper will examine some of these trends.

An Integrated North American Intermodal System

Consumers are attracted to the companies that produce superior products and offer better services at competitive prices. For most, it does not matter where the products or services originate, as long as they embody quality and competitive prices. This is true for all businesses, in all sectors of the economy, including transportation services.

From a transportation perspective, the now year-old Canada-U.S.-Mexico trade accord, the North American Free Trade Agreement (NAFTA), is strengthening continental north/south trade flows and changing continental transportation patterns. This is reflected in a series of new partnerships and alliances, first between Canadian and U.S. railways and now with the Mexican national railway. There also has been a trend toward new relationships among trucking firms in the three countries as well as between rail and truck companies. These market adjustments among North American overland transportation operators are leading to more

flexible and integrated, and thus seamless, intermodal services.

What do recent statistics tell about the direction of intermodal developments? The Association of American Railroads's 1993 statistics on intermodal loadings show that for 10 years in a row, the total number of containers and trailers increased and, in 1993, reached 7.1 million loadings. In 1982 railways moved 3.4 million trailers and containers.

Intermodal trailer shipments largely serve U.S. domestic markets and Canada-U.S.-Mexico transborder trade. Overseas import and export traffic make up the majority of container loadings. However, containers are increasingly becoming the preferred intermodal loading unit in North America. In 1993, containers accounted for 52 percent of the total number of intermodal loadings, compared with 40 percent in 1988. This trend is likely to continue.

During the past few years, there has been an increasing number of strategic alliances between railways and trucking companies, combining the strength of each mode. A number of trucking companies, such as J.B. Hunt and Kleysen Transport Ltd., have been shifting their investments in equipment from trailers to containers.

Domestic and transborder intermodal markets represent the fastest growing segment of the North American intermodal industry. The importance of having double-stack intermodal capability cannot be overemphasized.

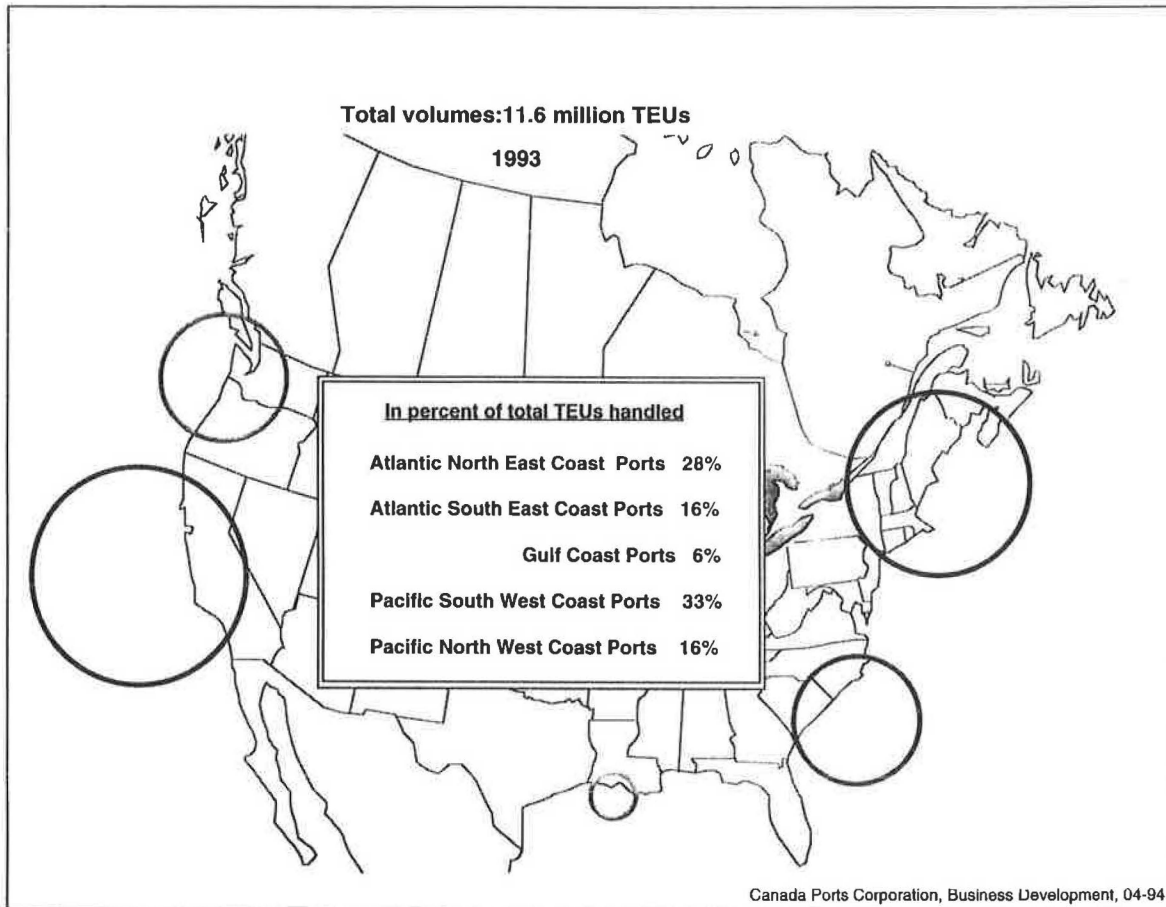


FIGURE 2 North American coastal port gateway's market share for international loaded container traffic.

During the first half of the 1980s, the liner shipping industry quickly adopted double-stack equipment to handle its import and export containers. During the second half of the 1990s, truck carriers are expected to increase their shift from trailers to containers for their intermodal shipments. Indeed, similar to liner shipping carriers, many medium- and long-distance truck carriers of North American transborder and domestic traffic will discover the advantages of joining the stack-train movement.

This will, in all likelihood, strengthen the development of critical North American intermodal corridors. The remaining physical barriers to double-stack operations will continue to fall and, by the year 2000, there likely will be seamless and through transcontinental movement of stacked full-height containers among all three nations.

Two significant factors that will continue to influence the development of the transportation system are

regional population concentrations and the pattern of trade flows among them.

About 60 percent of the U.S. population lives east of the Mississippi River, and at least 60 percent of Canada's population resides in two provinces: Ontario and Quebec. In terms of border gateways for U.S. and Canada trade, statistics indicate that at least two-thirds of either country's exports take place along the U.S.-Ontario border. The gateways located south of Montreal are overland links to and from northeastern states and represent the third most active gateway for Canada-U.S. trade.

The western region of North America accounts for about 20 percent of Canada-U.S. transborder trade. The Pacific Northwest region is the most important subregion of western Canada-U.S. trade. This traffic is largely associated with the growing business activity between the three metropolitan areas of Vancouver, Seattle, and Portland. In the prairies, movements of

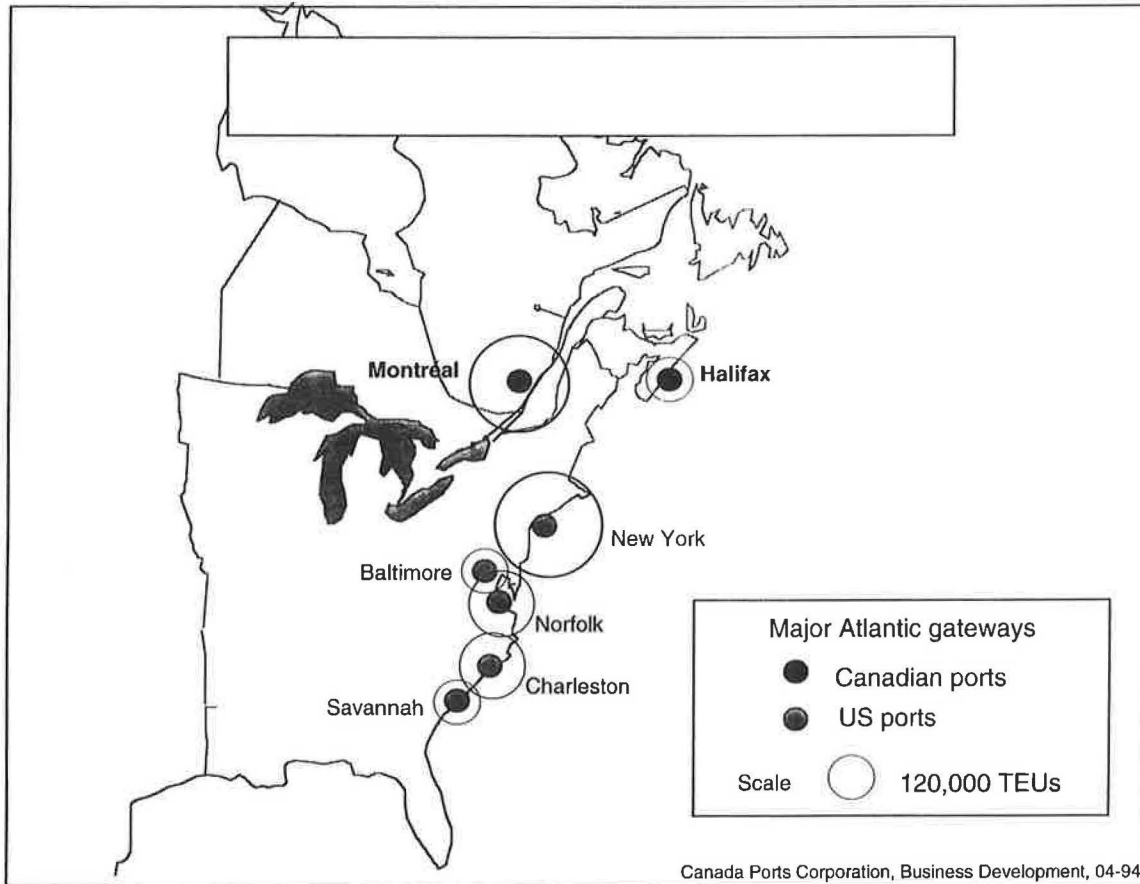


FIGURE 3 Major North American gateways for North Europe and Mediterranean trade.

goods tend to be either cross Canada or the United States. East-west flows largely to and from the Great Lakes region and to and from Texas and Louisiana.

The largest portion of Canada and U.S. freight to and from Mexico crosses the Texas border at Laredo. This traffic is carried on transportation routes linking Chicago, southeast Michigan, Buffalo, Toronto, and Montreal.

More than 85 percent of Canada-Mexico two-way overland trade passes through the Ontario border, particularly through the Michigan and Niagara border gateways. In fact, in addition to being at the center of a large concentration of trade between Canada and the U.S., the Michigan and Niagara frontiers account for the largest portion of both Canada and U.S. trade with Mexico, after Texas and California. Canada-U.S.-Mexico transborder trade is highly concentrated, passing through only a few dominant border gateways. This reflects another important characteristic of the transportation patterns of the North American trade flow; that is, trade originates in many regions, but, as it nears the border,

the trade flow tends to converge before crossing, and as the flow moves further away from the border it disperses to multiple destinations.

These arterial links leading to and from border gateways connect with the main provincial and state overland transportation systems. These systems not only are servicing Canada-U.S.-Mexico transborder trade but also Canadian and U.S. international trade. This includes sea-rail intermodal movements linking international container ports with major North American production and consumption regions.

The time will come, in the not-too-distant future, when some of these routes will emerge as critical international intermodal freight corridors. These corridors will pave the way for an integrated North American intermodal transportation system.

This has far-reaching implications for Canadian and U.S. ports. Ocean carriers already have a continental market orientation. When serving Canada and the U.S., they view these two countries and their transportation systems as a single market. Both shippers and ocean

carriers are assessing their routing options in comparison with alternative routings through Canadian and U.S. ports and their related overland transportation systems.

From a port perspective, in an integrated North American transportation industry, the ability of a port to attract and serve international traffic will increasingly depend on the competitiveness of its prices and services of its rail intermodal links to major North American production and consumption markets.

Globalization of Markets and Logistics

The aforementioned market developments are not unique to North America. They are part of a larger process to integrate world markets and, to a large extent, reflect the strong trade liberalization pressures being observed worldwide.

The rapidly growing importance of waterborne trade between the southern Far Eastern nations and the Organization for Economic Cooperation and Development (OECD) countries and more recently, the strong growth in both Latin American and intra-Asia container trade, are examples of the globalization of world markets.

Another example of the global integration of business is the development of the "global corporation." The phrase refers to an enterprise that manages its integrated business operations independent of national borders. Global corporations typically locate their specialized production facilities in different countries with a continental or global product mandate. This globalization of world markets is intensifying demand on the liner industry for the provision of wider trade coverage and higher service frequency.

The global integration of a company's business with respect to the company's productive capabilities is made possible by the improved quality of transportation services, more sophisticated information and communication system, and a better understanding of logistics systems and the capability to manage them.

Competition is intense; margins are narrow, and customer expectations are high. From a transportation perspective, the global sourcing of production and distribution systems means an increased demand for effective intermodal services.

In response to tougher international competition, firms are streamlining their operations, reducing production costs, and focusing their efforts on specializing in what their firms do best. This frequently means greater attention to detail and an examination of all elements of the business process to ensure that maximum value and cost-effectiveness are achieved.

As the pressure for profit improvement intensifies, companies increasingly are looking to logistics management to gain a competitive edge. Logistics deals with freight distribution and transportation services and how they can be best integrated into the production and marketing functions of a company.

As a natural extension of intermodalism and significant improvements in efficiency that it has introduced into the transportation system, logistics management is increasingly attracting international shippers that use liner shipping services to optimize their operations.

Effective logistics management involves much more than simply minimizing individual cost elements. It also seeks to increase flexibility, improve responsiveness and reduce the time it takes for a product to move through the distribution process. This must be coupled with the lowest possible total network cost.

There is no doubt that logistics will increasingly become a driving force in international transportation. As an important component of the intermodal transportation chain, ports must respond to intense pressures from shippers to reduce costs and improve service. Furthermore, intermodal services offered through container ports must be tailored to meet not only the needs of shipping lines, but also those of individual shippers.

In considering the role of transportation in enhancing our competitiveness, we must keep in mind that transportation is an input, not an output. The provision of transportation services, therefore, is not an end in itself. Transportation is as much an input cost for producers as any other component of the production process. Once a product is produced, it still has to be delivered to the customer at a competitive price.

Port Rationalization Pressures

Today, both in Canada and in the U.S., containers account for more than 80 percent of all liner-shipping general cargo movements. Containerization has become so commonplace that it is easy to take for granted.

The pace of change that containerization has generated has been fast. In 1956, the first intermodal container movements were initiated on the Atlantic. In 1972, the first containership, 1,200 20-ft equivalent units (TEUs) in size, entered the market. About 15 years later, the first post-Panamax fully cellular containership, 3,800 TEUs in size, was ordered. Today some of the largest container lines are ordering new ships, 5,000 TEUs in size.

The two Asia trade routes, between North America and Asia and between Europe and Asia, are the world's top two trade lanes in both volume and growth. It is also where the most capacity is deployed and where the majority of the 4,000-plus TEU containerships can be found.

Although not all trade routes justify the use of these 4,000-plus TEU containerships, there is a trend toward larger vessels characterizing the liner shipping industry. Between 1985 and 1992, the share of the 2,500-plus TEU vessels among all cellular containerships increased from 19 percent to 43 percent.

To a large extent, new orders for larger containerships are not driven by a lack of carrying capacity in the market, but instead by the improved economics offered by larger vessels. However, the introduction of these larger vessels has resulted in increased competition and has aggravated an overcapacity situation that exists on many trade routes. In addition, the improved economics associated with larger container ships only apply if the vessels operate at, or close to, full capacity.

Faced with this situation, shipping lines have responded by rationalizing their services. This rationalization has included vessel-sharing agreements, alliances, and vessel routing adjustments, all initiated in an effort to increase load factors on the ships being deployed.

There has been a strong demand factor behind these changes. Carriers have had to respond to the increasing use of logistics, particularly "just-in-time" services. To adapt to customers' changing needs, shipping lines have had to increase the frequency of their calls, improve their transit times, and extend their service networks to cater to more world markets.

Reflecting the globalization of markets, there have been a number of major east-west liner carriers that initiated operations not only to serve the fast-growing South American markets, but also to connect these new inter-American services with the major east-west trade lanes.

There also have been new global service configurations, such as the pendulum and tricontinental services that link European, Far Eastern, and North American markets, and the more direct Suez Canal all-water services that operate between the southern Far East and North American East Coast ports. These global and Latin American services are examples of developments that are directly affecting the relative competitive position of North American ports.

For some ports, the combined results of larger vessels and new service configurations has meant being dropped from some shipping lines' itineraries, losing

their designation as conference base ports of call, or both. In addition, as ocean carriers adapt to the increasingly global environment and seek ways to reduce their costs, the inland movement of containers is undergoing a major transformation. In particular, since the second half of the 1980s, rail intermodal services in North America have resulted in more direct and acute competition between North American ports, particularly with the impact of micro- and mini-bridge services.

In 1993 80 percent of all Northeast Asian and 74 percent of all Southeast Asian container trade with North America was handled at Canadian and U.S. West Coast ports. A similar phenomenon has been observed for European traffic. Canadian and U.S. East Coast ports attracted 80 percent of total containerized traffic to and from European countries. U.S. Gulf Coast ports have a market share of 10 percent of the North Atlantic trade route and have been almost eliminated from the Transpacific and Mediterranean trades, where they had a market share of only about 1 percent in 1993.

IMPACT ON PORTS

Today, shipping lines compete on the basis of the overall door-to-door cost and level of service, not just on the marine component of the movement. Because the inland component of most intermodal shipments represents a major portion of the total cost, shipping lines have paid considerable attention to improving their overland connections.

Liner carriers increasingly focus on overland service enhancements to make the entire container routing more competitive. This has raised competition to a new and higher level. It is no longer a question of individual companies competing for cargo. Instead, entire intermodal networks are now competing with shippers and liner carriers having choices on how cargo is to be routed.

This highly competitive intermodal environment has had major implications for ports and their roles within the transportation system. Intermodalism and the improved transportation services it has spawned have destroyed the traditional concept of a port hinterland. Ports now perform their interface function on behalf of cargoes that may be derived or consigned thousands of miles away from the port. Although this has benefited some ports, others have been bypassed as container gateways.

Moreover, when arranging itineraries for their vessels, which usually involves port rationalization, shipping lines will always consider port facilities, labor stability and productivity, cargo handling rates, and

vessel turnaround times. However, there are limits to what a port can do to increase its attractiveness to a shipping line. The trend toward larger vessels may result in major peaks and lows in intermodal traffic to and from ports. A port's performance, therefore, could be constrained by bottlenecks or inefficiencies elsewhere in the transportation system.

The attractiveness of a port as a port of call for a shipping line's service depends on the port's comparative advantages over its competitors. These advantages are measured in terms of four attributes: the port's geographic and physical characteristics as they conform to a shipping line's fleet and market strategy; its efficient and cost competitive land-side intermodal services; the availability of local cargo; and the possibility of shipping lines to reach, either through overland or feeder services, remote markets from the port.

THE SITUATION TODAY

Based on *The Journal of Commerce-PIERS* statistics and Ports Canada data on loaded international containers in 1993, U.S. Pacific Southwest ports and the Canadian and U.S. Atlantic Northeast ports emerge as the top two North American international gateways. Last year, these two coastal port regions accounted for 61 percent of the total North American international container activity. That is, almost two out of three boxes of the total 11.6 million TEUs passed through these ports.

The Canadian and U.S. Pacific Northwest ports and the U.S. Atlantic Southeast ports, each handled close to 2 million TEUs, or 16 percent of total North American TEUs. Gulf ports, with a volume of loaded international containers of 732,000 TEUs, had a market share of 6 percent in 1993.

Pacific West Coast Ports

In 1993, Pacific West Coast ports handled a total of 5.8 million loaded international containers. Looking at the individual port's performance, statistics indicate that six ports account for 95 percent of all loaded international containers at Pacific West Coast ports. On the Pacific Northwest coast, these ports are the ports of Vancouver, British Columbia, and Seattle, and Tacoma, Washington. On the Pacific Southwest coast, the major ports are the ports of Oakland, Los Angeles, and Long Beach, in California.

By the year 2000, these six ports will likely be the "load center" ports on the North American side of the Pacific. The ports of Los Angeles and Long Beach will

continue to be the leading ports on the Pacific West Coast.

Far East Asian economies are by far the dominant markets served by the North American West Coast ports. Specifically, the northern Far East accounts for 75 percent and southern Far East for 13 percent of total West Coast ports' international container traffic. Europe is the second largest overseas trade lane for Pacific West Coast ports, with a volume of about 300,000 TEUs, or 5 percent of all West Coast ports' traffic.

Australia, India, other Asian countries, and the Americas, including South and Central America and the Caribbean, make up three other trade routes of similar size for Pacific West Coast ports. Each has a market size ranging from 100,000 to 125,000 TEUs, or 1 percent of total Pacific West Coast port traffic. The ports of Los Angeles and Long Beach, and to a lesser extent the Port of Oakland, are handling an increasing share of that traffic moved through all West Coast ports of North America.

This development reflects, to a large extent, the use of larger vessels and the development of global services. Similar service patterns have developed for western Canadian and Pacific Northwest shippers seeking access to markets in the Americas and Australia. Particularly, a number of global shipping lines, with deep-sea liner services, serving these markets, expect operational advantages from the integration of coastal services running between the Pacific Northwest and Pacific Southwest ports. In several cases, this has resulted in a reduction in the number of ports of call.

East Coast Ports

In 1993 5.1 million loaded international containers were handled at the North American Atlantic East coast ports. Northern Europe and Mediterranean trade are the largest overseas trade lanes for North American East Coast ports, with a total traffic of 2.3 million TEUs in 1993, or 45 percent of all traffic. Asian and the growing Latin American markets are now of equal size, with about 1.1 million TEUs each, or 23 percent of total Atlantic East Coast ports traffic.

In 1993 the trend toward larger vessels, rail intermodal opportunities, and the development of new global services resulted in Atlantic Southeast ports holding a majority, 65 percent, of the total Latin American trade handled at East Coast ports. Nevertheless, some Atlantic Northeast ports, such as Philadelphia and Baltimore, are showing good traffic performance relative to the other Atlantic Northeast ports. Even though about 80 percent of all Far East

trade is now handled at the Pacific West Coast ports, the Atlantic North ports remain the preferred gateways for the balance. Last year, 55 percent of northern Far East trade moving through the Panama Canal was handled at the Canadian and U.S. Northeast ports. Of the southern Far East trade moving by all-water services, the Canadian and U.S. Northeast ports held a market share of 63 percent.

On the trans-Atlantic, Canadian and U.S. Atlantic Northeast ports are playing a dominant role, with an 82 percent market share on the northern Europe trade routes and 73 percent on the Mediterranean trade routes.

The trans-Atlantic route continues to experience fierce competition. In addition to traditional trans-Atlantic services, there are a number of global services that have been operating on the route since the second half of the 1980s. However, an important distinguishing characteristic of Atlantic trade is the strong presence of niche carriers operating between North America and Europe.

Based on past 2 years of Lloyd's Maritime statistics, a small number of carriers control a high proportion of the carrying capacity supplied on the trans-Atlantic. Among the largest carriers serving the Atlantic trade lanes, the total share of the niche carriers, including ACL, Canada Maritime, Cast, Croatia, Lykes, and MSC, is as large as that of the global carriers, including Evergreen, Hapag Lloyd, Maersk Line, the VSA Group, and Zim.

Looking at the individual ports active on the two trans-Atlantic routes—North Europe and Mediterranean trade—shows that eight ports accounted for about 88 percent of the 2.3 million international loaded containers in 1993. These ports include the ports of Montreal and Halifax in Canada and the ports of New York, Baltimore, Norfolk, Charleston and Savannah on the U.S. Atlantic coast. By the year 2000 these eight ports likely will be the load center ports on the North American side of the Atlantic. The ports of Montreal and New York will continue to be the dominant ports in North Atlantic trade.

CONCLUSION

During the past 10 years the liner shipping industry has had an increasing influence on international intermodal

cargo movements. This is a result of shipping lines providing shippers with convenient arrangements for integrated intermodal services and a single, all inclusive freight rate, no matter which modal combination and other transportation services are used.

Today to a large extent, port selection is determined by shipping lines. As a recent article in *International Business* reported, "about 75% of corporate America now surrenders the task of selecting ports to the shipping lines. Before intermodal became hot, about half of U.S. exporters or importers picked which port to use..."

Ports are and will always be a pivotal component of the international intermodal chain. Thus, when a port is selected, it is the intermodal transport network or networks serving that port that also are chosen. These transportation networks, including the port itself, have to match liner carriers as well as the individual shipper's logistics needs.

Logistics management deals with the way in which distribution and transportation services can be best integrated into the production and marketing functions of a business. Thus, with the increasing importance of logistics management among international shippers, it is reasonable to ask whether shippers will reverse this trend by getting more involved in the intermodal transport decisions, including port selection.

I would like to conclude with what can be the key success factors for ports in a period of rapid market changes in both intermodalism and logistics. There are many ingredients that make a port prosper, but the following are among the most important:

- Flexibility in responding to changing conditions;
- A proactive approach to marketing;
- A market strategy that focuses on the needs of shippers and carriers;
- The formation of cooperative transportation alliances; and
- A strategic sense of vision.

As Professor Thomas J. Dowd, of the University of Washington in Seattle, said: "The success or failure of many ports will depend on their ability to understand they are part of the logistics chain. Those that won't, will end up on the sideline."