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Module 3 is organized into seven sections, and the following sections are summarized briefly below.

*Evolution of Port Institutional Frameworks* provides basic terms of reference and a conceptual framework for defining the respective roles of the public and private sectors in port management. The section also describes a number of public interest issues affecting port planning, port operations, and infrastructure development.

*Port Functions, Services, and Administration Models* defines a number of typical management structures that ports use around the globe.

1. OBJECTIVES AND OVERVIEW

This module, the third of eight comprising the World Bank’s Port Reform Toolkit, lays out an array of alternative port management and control structures, and explains for each structure the respective roles most likely to be filled by the public and private sectors. It provides a framework for all of the modules by defining the characteristics of specific management structures and the tasks and responsibilities to be performed by private and public sector entities. In particular, it identifies the problems facing port managers when adapting their organizations to the challenges of today’s global market place. The solutions and “tools” suggested in this module are adapted as much as possible to the port manager’s specific situations. Examples have been included illustrating approaches that have been successful, as well as those that have been less than fully successful. This module also notes how ports have adjusted organizational and administrative arrangements due to the strategic shifts and competitive pressures affecting the maritime sector. These developments are described in more detail in Module 2.
This section spells out the kinds of tasks that public ports undertake and defines for each of the alternative management structures ways in which discrete elements of these tasks are assigned to various parties.

*Port Finance Overview* focuses on the important subject of port funding, a topic that is dealt with at greater length in Modules 5 and 8. Here, the private sector plays an increasingly important role in providing funds for infrastructure development, in addition to paying for superstructure, equipment, and systems. This has not only a profound impact on management structures, but also on long-term public participation in port development. The analysis assesses various aspects of public versus private investments in infrastructure, including which components of infrastructure are paid for by the government or by the port authority, which investments should be made by the terminal operator, and how governments with limited funds can harness private funding for port-related investments. This section also analyzes the role global terminal operators—both shipping lines and stevedoring companies—play in today’s maritime sector and assesses their impact on port management and finance.

*Port Reform Modalities* presents an overview of various port reform options and describes the strengths and weaknesses of each. There are many ways to change the institutional structure of a port. Traditional methods of operating and management structures have been abandoned, with ports increasingly operating as commercial entities in the global marketplace. The process of structural change can be a painful one, with the potential for making costly mistakes. However, increasingly the international port community agrees on the structural role and function of port authorities. The global market has had a unifying influence on emerging institutional structures. The increasing influence of international finance institutions (IFIs) on port development also facilitates the introduction of efficient models and structures all over the world. Although there is still a large diversity of port management and organizational structures, the trend toward several successful port management models is strong.

*Reform Tools* analyzes the various concession arrangements or tools available to port managers. The role of the public sector in financing port development is eroding and the private sector has assumed more responsibility, not only in port finance but also in port operations. This causes a gradual shift in the balance of power between the public sector and the private sector. It is not clear how far this shift will go, but it is evident that the balance is likely to be shifted from port to port and from country to country.

*Marine Services and Port Reform* analyzes traditional marine services in the context of port reform. Such services include activities that are carried out by both the public and private sector. Marine services ensure the safe and expeditious flow of vessel traffic in port approaches and harbors and a safe stay at berth or at anchor. In every port, the harbormaster (or port captain) is responsible for nautical safety and often also for the protection of the environment. Other services such as vessel traffic management, pilotage, and dangerous goods control are described as well. Finally, the section describes several possible reform approaches that can be applied to marine services.

Upon completing this module, the reader should have attained a better understanding of the various types of port management and ownership alternatives, their respective strengths and weaknesses, and of which alternatives might best fit a port’s particular circumstances.

### 2. EVOLUTION OF PORT INSTITUTIONAL FRAMEWORKS

Private sector investment and involvement in ports emerged as a significant issue in the 1980s. By this time, many ports had become bottlenecks to the efficient distribution chains of which they are an essential component. Three main problems, illustrated by port congestion and consequent chronic service failures, contributed to the gradual deterioration of service quality during this period.
The first problem was restrictive labor practices. Increasingly after World War II, antiquated work practices and methods for matching available labor with occasional work—practices that developed during a previous era characterized by breakbulk cargo handling—needed to be transformed and renegotiated to adjust to modern bulk handling methods, unitized handling, and containerization. All of these developments resulted in a rapid modernization of port handling equipment. At the start of this process, labor unions often refused to accept reductions in the labor force and ignored the need to upgrade skills. Later, however, unions realized that port reform was a necessity. Enlightened labor leaders accepted moderate reforms. As Module 7 describes in greater detail, it is no longer realistic for dock workers and their trade unions to oppose institutional reform and the technological advances that frequently precede and accompany it.

The second reason why many ports failed to respond adequately to the increased demands imposed on them was centralized government control in the port sector. Particularly between 1960 and 1980, central planning (in the port sector as well as in other sectors) prevailed not only as a norm in socialist economies, but also in many western and developing countries where national port authorities were often promoted by international development banks. Slow-paced and rigidly hierarchical planning, control, and command structures often accompanied central planning. Only in the 1980s did the dismantling of communist systems and the increasing introduction of market-oriented policies on a worldwide basis open the way for decentralized port management and for reduced government intervention in port affairs.

The third reason for a lack of port service quality was the inability or unwillingness of many governments to invest in expensive port infrastructure or the “misinvestment” in infrastructure (providing facilities that were badly matched with the needs of foreign trade and shipping). During this period, a number of beautifully constructed port complexes became “white elephants” when expected demand failed to materialize (see Box 1). As a result of systemic failures in managing port development, governments have learned to rely increasingly on private investors to reduce ports’ reliance on state budgets and to spread investment risks through joint undertakings.

### Box 1: “White Elephants” in Port Development

During its early years, the container terminal of the Port of Damietta in the Arab Republic of Egypt was often cited as a white elephant in port development. In the 1970s, the terminal was constructed and fully equipped to handle anticipated container transshipment requirements in the Eastern Mediterranean. Yet, for various reasons, the terminal was without any business for years. Only when the shipping company Scan-Dutch decided to change its Eastern Mediterranean port of call from Cyprus to Damietta did throughput start to increase sharply. Today, more than 25 years later, Damietta is one of the leading transshipment container ports in the region.

During the 1960s, major West European ports such as Rotterdam, Antwerp, and Marseilles developed large industrial sites near their port facilities. These sites became centers for refineries and petrochemical industries. In view of the apparent success of ports becoming industrial centers, the Dutch government created three regional ports to support the ailing economies of their respective regions. Two of these ports, Flushing and Terneuzen, developed fairly well. They are located along the River Scheldt in the vicinity of their large neighbors, Antwerp and Rotterdam. The third port was built along the River Eems near Germany, in the northern province of Groningen. Despite modern port facilities and large government subsidies, the Port of Eemshaven never became a success; it was too isolated and lacked an industrial hinterland. It struggled on for years to gradually develop a few niche markets. The case of Eemshaven shows that the creation of a new port does not guarantee success when there is no natural hinterland generating significant cargo flows and when the port does not attract large scale transshipment traffic.

*Source: Author.*
During this period, fundamental questions arose about the appropriate division of responsibilities between the public and private sectors. “Boundary line” issues came into sharp focus during the 1980s and 1990s. Policy makers became increasingly aware of the need for coordination among various branches of government and for consultation with diverse port interests. They realized clearly that port development had collateral consequences and effects on public interests in land use, environmental impact, job creation, and economic stimulation for economically blighted areas. Moreover, among some leaders, first in the United Kingdom and then gradually in other parts of the world, it became increasingly clear that large-scale government involvement in port operations was self-defeating and destructive of private initiative. They came to realize that the role of government in a market economy should focus on the provision of public goods (goods and services that the private sector has no adequate incentive to provide and, consequently, are undersupplied without some form of government intervention).

In many countries today, still another trend has emerged: the private provision of public services. Increasingly, governments have transferred public tasks to private contractors. Outsourcing of key functions and roles has had a major impact on redrawing traditional boundary lines in the port sector. Hence, in many ports today, the public sector mainly acts as planner, facilitator, developer, and regulator while providing connectivity to the hinterland, whereas the private sector acts as service provider, operator, and sometimes also developer.

Experimentation in shifting the boundary line that divides the public and private sectors has resulted in a healthy pragmatism. Today, best practice is more concerned with results than with ideology, and is intended to achieve:

- Increased service levels for infrastructure users.
- Increased efficiency in operations.
- Improved allocation of limited public funds.

At the same time, various types of port terminals have become highly specialized in the cargo handling services they provide and manifest fewer of the characteristics of a public good. New greenfield container terminals have been built with private capital, and other container terminals have been redeveloped and recapitalized through some form of private sector participation. Box 2 presents two of the institutional formats used in recent years to develop greenfield terminals.

Increasingly, ports are being integrated into global logistics chains, and the public benefits they provide are taking on regional and global attributes. The value of services provided by regional ports increasingly transcends the interests of local users, and benefits businesses and communities located beyond regional and national borders. This global diffusion of benefits poses some interesting challenges with respect to the need for large-scale investments in the sector. At the same time, as discussed in Module 2, private port service providers themselves have become increasingly global in scope and scale. Even more recently, a number of strategic alliances have formed both within the global shipping industry and the port services industry. These alliances have profound implications for the ways ports are financed, regulated, and operated. Confronted with these global shipping and port service powers, port authorities will increasingly have challenges in defending public and local interests. Container terminal operators with global coverage, sometimes in alliance with major shipping lines, may be tempted to take advantage of their dominant position to strengthen their network, thereby reducing the scope of competition mainly at the expense of public interests. Moreover, countervailing powers at an international level that have not yet emerged are expected to do so soon due to the absence of suitable national regulating structures. At port level, a strict organizational separation of the commercial and regulating tasks of port management is required to safeguard public interests.
3. PORT FUNCTIONS, SERVICES, AND ADMINISTRATION MODELS

Ports produce a combination of public and private goods. Public goods include those that are inherently nondivisible and nonconsumable, such as public safety, security, and a healthy environment on the one hand, and coastal protection works necessary to create port basins on the other hand. Private goods are both consumable and divisible and their use entails a minimum of economic externalities.

Most of the value of private goods can be captured in market transactions between private parties. However, a substantial portion of the value of public goods cannot be captured in arms-length transactions. Consequently, private firms have little incentive to produce them. Public goods create positive externalities when they are used; the social benefits they generate are greater than the price that private parties can charge for them. Thus, some form of public intervention is appropriate in their production to make certain that an adequate level of public goods is maintained.

Ports represent a mix of public and private goods. They generate direct economic benefits (private goods) through their operations, as well as additional indirect benefits (public goods) in the form of trade enhancement, second order increases in production volumes, and collateral increases in trade-related services. These “economic multiplier effects” have been used by many ports to justify direct public sector investment. It is in this dual production of both public and private goods that complexities arise, which makes defining roles for and boundaries between the public and private sectors challenging in the ports industry. This is particularly the case in the fields of marine and port safety, port security, and the protection of the marine environment. Box 3 lists a number of areas where ports generate economic multiplier effects.

Both through targeted development policies and the unplanned growth of interrelated industries, many ports have become the location for industrial clusters. Industrial clusters are geographic concentrations of private companies that may compete with one another or complement each other as customers and suppliers in specialized areas of production and distribution. Industrial
clusters represent a kind of value chain, a web of interrelated activities that are mutually supportive and continuously growing. Clustering of related activities improves the competitive advantage of cluster participants by increasing their productivity, reducing transaction costs among them, driving technological innovation, and stimulating the formation of new business spin-offs.

Large ports offer particularly attractive locations for seed industries and distribution-intensive enterprises. Several notable port-centered industrial clusters have developed over the last 50 years, for instance, those in Dubai, Colon, Norfolk, Rotterdam, Yokohama, Antwerp, Hamburg, Marseilles, and Houston, to name but a few. From the 1950s, the larger European ports targeted refineries and chemical industries for colocation and codevelopment, with considerable success. Thus, for example, a large cluster of five refineries and many chemical-processing companies located in the Port of Rotterdam as a direct result of public policies developed in 1950s. A cluster of world-class, specialized marine services likewise established themselves in the Port of Rotterdam as a result of the good hinterland connections and the gas and oil finds in the North Sea. Another example of cluster development is the Port of Colombo; a fashion goods and apparel industry cluster has developed around Colombo, which focuses on reliable, short-transit container services to complete just-in-time (JIT) purchase orders. This development was business-driven and not the direct result of explicit public policy. The lesson demonstrated in Colombo is that quasi-public goods in the form of efficient industrial networks can be created and developed through private initiatives.

As a matter of strategic development policy, many ports encourage the codevelopment of various value-added services through franchising, licensing, and incentive leasing. Today, ports seek to attract enterprises that extend their logistics chains or provide them with specialized capabilities to add value to cargoes that are stored and handled in the port. General services that many ports attempt to develop include chandlering, ship repair, container maintenance, marine appraisals, insurance claims inspections, and banking. Box 4 describes the efforts of one port to expand and develop its ensemble of value-added services.

Many governments are directly or indirectly involved in port development. They often use a “growth pole” argument to justify the direct financing of basic port infrastructure. This growth pole rationale derives from the belief that investments in port assets have strong direct and indirect multiplier effects on the entire national economy and, further, that the commitment of public resources is necessary to encourage coinvestment by the commercial and industrial sectors. These sectors are thus stimulated to make investments that they would not make in the absence of public seed investment in port infrastructure. However, determining causal links between public investment and specific commercial activities and investments is difficult and at times speculative. Still, it is important that governments envision and articulate future development scenarios, maintain frequent consultation with the private sector, and implement public policies that are applied consistently and that enable the private sector
to invest with confidence in projects that support the stated public policy objectives.

On the other hand, port operations are businesses in their own right and should be managed to achieve optimal utilization of capital. Investments in port assets are affected by risk, competition for land and capital, or other factors in the competitive business environment. Subsidies and government-provided incentives distort the allocation of resources for port development and may result in over- or under-investment.

It is the delicate alignment of public and private interests that determines the structure of port management and port development policy. A full spectrum of institutional frameworks is available, differing primarily in where the boundary line is drawn between the public and private sectors. At one end of this spectrum, full public control over planning, regulation, and operations results in a “service port.” At the other end, the almost total absence of public ownership, control, or regulatory oversight results in a “fully privatized port.”

In a clear trend, the alignment of public and private interests in recent years has resulted in a diminishing role for governments in the port industry. The total absence of public involvement in the port sector, however, still remains an exception, limited primarily to specialized ports and terminals.

When governments attempt to increase national economic welfare through port development, they may choose to apply one of two distinct normative frameworks: the market surrogate framework or the public interest framework. In seeking to increase economic welfare, governments may attempt to remedy market imperfections and capture nonmarket externalities within appropriately engineered and contested transactions. Alternatively, they may pursue explicit goals developed through public consultative processes designed to determine demand for public goods.

With respect to the market surrogate framework, the primary task of government is to identify and eliminate market imperfections and anticompetitive behavior or to regulate its undesired effects. For example, competition “for the market” can replace competition “in the market,” and competition “for the market” can be engineered into contestable offers of rights in ways that assure procompetitive outcomes.

It follows that one of the objectives of public policy should be to create contestable market structures for port services and to manage competitive behavior. This might be accomplished through licensing, leasing, concessioning, or other methods designed to bring about an efficient allocation of resources. The market surrogate view is followed in most countries with market-oriented economic policies.

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**Box 4: Value-Added Development Efforts in the Port of Rotterdam**

**Distriparks**

Distriparks are the Port of Rotterdam’s response to the growing demands on shippers and transport firms for just-in-time delivery at lower costs. Distriparks are advanced logistics parks with comprehensive facilities for distribution operations at a single location close to the cargo terminals and multimodal transport facilities for transit shipment. They employ the latest information and communications technology.

Distriparks provide space for warehousing and forwarding facilities, including the storage and handling of cargo and the stuffing and stripping of containers. They also offer a comprehensive range of value-added services.

In distriparks, companies can, either on their own or in partnership with local specialist firms, process their goods according to specific customer and country-of-destination requirements. These value-added services include packing and repacking, labeling and assembly, sorting, and invoicing. The distripark’s on-site customs service promptly handles import and export documentation.

To date, three distriparks have been established within the Port of Rotterdam area.

Source: Port of Rotterdam
The need for some form of government intervention in markets for port services is related to the unique economic characteristics of seaports, some of which tend to make them natural monopolies:

- The provision of port services entails large fixed costs and low marginal costs. The marginal benefits associated with using port services exceed the marginal costs of providing these services.
- A relatively large, minimum initial capacity of basic infrastructure is required for technical reasons.
- The infrastructure is frequently indivisible and, as a result, increases in infrastructure capacity can only be realized in “quantum chunks.”
- Both initial construction and port expansion require large amounts of capital. As a result, the need to develop basic port infrastructure (for example, sea locks, breakwaters, quay walls, and main roads) all at one time creates large capital operating losses and foregone investment opportunities as a result of underused capacity during the earlier phases of a project’s life cycle.
- The life span of port infrastructure projects often exceeds the time horizon acceptable for private investors and commercial banks.
- Basic port infrastructure is immobile and has few alternative uses.

This set of characteristics is the main reason for financial involvement of governments in port construction and expansion projects.

### 3.1. Interaction with Port Cities

Ports and the cities of which they are a part interact across many dimensions: economic, social, environmental, and cultural. Any port reform process should take into account the linkages between city objectives and the port objectives. Transport integration—the smooth transfer of cargo and equipment from land to water-borne systems—is an essential port function, but it does not take place in isolation. A seaport node within a multimodal transport system is frequently associated with the development of an urban center and generates substantial employment, industrial activity, and national and regional development.

Many big cities trace their roots to the establishment of a port. This does not mean, however, that the port will be extended at the place where it was originally founded. Antwerp and Rotterdam are examples of ports that developed relatively close to the cities’ central cores. Over time, however, they shifted operations away from city centers. The underlying reason was the increase in ship sizes (requiring deeper drafts and longer berths). Another reason contributing to the weakening of links between port and city centers is the rapid mechanization and specialization of port work and the accompanying increase in the operational scale and scope. These shifts led to increased storage space requirements and make ports very space-intensive.

Another factor is the rapid industrialization of most developed country cities. The new industries emerging after World War II required large areas of land, preferably close to deep water, which often could not be found within the original port borders. Therefore, Maritime Industrial Development Areas (MIDAs) were located at some distance from old city centers.

Technological changes and consequential port relocation have left substantial areas available for redevelopment for other purposes. Such areas are often located near city centers because that is where the port (and city) began. Therefore, land values are potentially high, although probably depressed prior to redevelopment because of the presence of decaying port facilities.

Three approaches commonly have been used for the development of surplus port land:

- Retaining it within the port authority for redevelopment as in the case of the Port
of Barcelona. This implies a widening of the port’s function from that of a port into a property developer. Such change may require modifications to the statutes of the public port authority, or of the trust port. The experience of Associated British Ports shows that when the port is in private hands, it is capable of effective development of surplus lands. The Port Authority of New York and New Jersey is an example of a public port authority with wide redevelopment powers.

- Transferring it to the local authority or municipality for redevelopment. In practice this is not always effective because the municipality might lack the resources to realize the full value of the land in question. On the other hand, there are examples (such as Baltimore and Rotterdam) of successful regeneration by the municipality of port lands near the city center.

- Creating a special development corporation for the specific purpose of redeveloping an old dock area. This is most appropriate when the area is very extensive, involves various municipalities, and involves high redevelopment costs. An example of a separate corporation established for this purpose is the Puerto Madera Corporation in Argentina, which is a joint venture by the City of Buenos Aires and the national government for the redevelopment of old city docks for mixed commercial, residential, and recreational use. Probably the biggest and best-known special purpose corporation (SPC) is the London Docklands Development Corporation (LDDC), created to redevelop the old docks of the Port of London. The LDDC was established by the government and endowed with extensive planning powers as a result of the inability of six riparian municipalities to agree on a coherent and feasible plan for the docks’ redevelopment.

Finally, the interests of ports extend beyond local traffic and transport. Hinterland connections, nationally and internationally, rely on road, rail, and waterway links. Both the port authority and the port city should use their influence to establish needed intermodal infrastructure and agreements. In addition, the port authority and the port city should collaborate to efficiently accommodate traffic flows and limit transport costs (including external costs).

### 3.2. Role of a Port Authority

Ports usually have a governing body referred to as the port authority, port management, or port administration. Port authority is used widely to indicate any of these three terms.

The term port authority has been defined in various ways. In 1977, a commission of the European Union (EU) defined a port authority as a “State, Municipal, public, or private body, which is largely responsible for the tasks of construction, administration and sometimes the operation of port facilities and, in certain circumstances, for security.” This definition is sufficiently broad to accommodate the various port management models existing within the EU and elsewhere.

Ports authorities may be established at all levels of government: national, regional, provincial, or local. The most common form is a local port authority, an authority administering only one port area. However, national port authorities still exist in various countries such as Tanzania, Sri Lanka, Nigeria, and Aruba.

The United Nations Conference on Trade and Development (UNCTAD) *Handbook for Port Planners in Developing Countries* lists the statutory powers of a national port authority as follows (on the assumption that operational decisions will be taken locally):

- **Investment**: Power to approve proposals for port investments in amounts above a certain figure. The criterion for approval would be that the proposal was broadly in accordance with a national plan, which the authority would maintain.

- **Financial policy**: Power to set common financial objectives for ports (for example,
required return on investment defined on a common basis), with a common policy on what infrastructure will be funded centrally versus locally, and advising the government on loan applications.

- **Tariff policy**: Power to regulate rates and charges as required to protect the public interest.
- **Labor policy**: Power to set common recruitment standards, a common wage structure, and common qualifications for promotion; and the power to approve common labor union procedures.
- **Licensing**: When appropriate, power to establish principles for licensing of port employees or agents.
- **Information and research**: Power to collect, collate, analyze, and disseminate statistical information on port activity for general use, and to sponsor research into port matters as required.
- **Legal**: Power to act as legal advisor to local port authorities.

Increasingly, central governments implement seaport policies through the allocation of resources rather than through the exercise of wide-ranging regulatory powers.

While central governments should pursue macroeconomic objectives through an active seaport policy, port authority objectives should be more narrowly focused on port finances and operations.

It is a widely accepted opinion among port specialists that a port authority should have as a principal objective the full recovery of all port-related costs, including capital costs, plus an adequate return on capital. The full recovery of costs will help a port authority to:

- Maintain internal cost discipline.
- Attract outside investment and establish secure long-term cash flows.
- Stimulate innovation in the various functional areas to guarantee a long-term balance between costs and revenues, especially when faced with innovations by terminal operators, port users, rival ports, and hinterland operators.
- Generate internal cash flows needed to replace and expand port infrastructure and superstructure.
- Compete according to the rules of the market system, without excessive distortions of competition.
- Put limits on cross-subsidization, which may be rational from a marketing point of view (market penetration, traffic attraction), but which can undermine financial performance.
- Avoid dissipation of the port authority’s asset base to satisfy objectives of third parties (for example, port users demanding the use of land in the port area without regard to the land’s most economic use or port and city administrations using port authority assets to pursue general city goals).

Full cost recovery should be viewed as a minimum port authority objective; once this objective has been achieved, however, the port authority can pursue other-than-financial objectives considered desirable by the government or by itself.

### 3.3. Role of Port Operators

Just as central governments and port authorities play key roles in the port communities, so too do private port operators (such as stevedoring firms, cargo handling companies, and terminal operators). Port operators typically pursue conventional microeconomic objectives, such as profit maximization, growth, and additional market share. Only if port operators are free to pursue such objectives can the benefits of a market-oriented system be achieved.

### 3.4. Roles of a Transport Ministry

In a market-oriented economic system, the ministry of transport typically performs a variety of functions at a national level. With respect to
coastline and port issues, the main tasks and responsibilities of the ministry can be summarized as follows:

- **Policy making**: The ministry develops transport and port policies related to:
  - Planning and development of a basic maritime infrastructure, including coastline defenses (shore protection), port entrances, lighthouses and aids to navigation, and navigable sea routes and canals.
  - Planning and development of existing and new port areas (location, function, or type of management).
  - Planning and development of port hinterland connections (roads, railways, territorial waterways, and pipelines).

- **Legislation**: The ministry drafts and implements transport and port laws, national regulations, and decrees. It is responsible for incorporating relevant elements of international conventions (for example, the International Convention of Safety for Life at Sea [SOLAS], United Nations Convention on the Law of the Sea, the International Convention for the Prevention of Pollution from Ships [MARPOL]) into national legislation for signature members.

- **International relations**: Specialized departments of the ministry represent the country in bilateral and multilateral port and shipping forums. The ministry may also negotiate agreements with neighboring countries relating to water-borne or intermodal transit privileges.

- **Financial and economic affairs**: A ministerial department is usually responsible for planning and financing national projects. In many countries, a ministry of transport also finances basic port infrastructure as well as roads, waterways, and railways connecting ports with their hinterland. It should be able to carry out financial and economic analyses and assess the socioeconomic and financial feasibility of projects in the context of national policies and priorities.

- **Auditing**: These functions should be performed independently from the affected line organization and are usually included in a staff office. The auditors should report directly to the minister.

In many countries, transport directorates are established as independent bodies within a ministry and perform an executive function. They are usually responsible for one of the modes of transport, for example, the maritime and ports directorate (maritime administration). The principal elements of a typical maritime and ports directorate are:

- Ship inspections and register of shipping (oversight of ship safety and manning conditions).
- Traffic safety and environment (safe movement of shipping and protection of the marine environment).
- Maritime education and training (maritime academies, merchant officers exams, and licensing of seafarers).
- Ports (execution of national port policy).
- Hydrotechnical construction (construction of protective works, sea locks, port entrances, and others).
- Port state control on the basis of the Paris and Tokyo memorandum of understanding terms.
- Investigation into and adjudication of any maritime incident, such as fire on board a vessel, collision, stranding, piracy, or similar event.
- Performance of regulatory and licensing functions in respect to structures, partly or entirely founded on the seabed within the territorial waters, in the exclusive economic zone of a country, or in any navigable water or on any beach within the territory of a country.
• Vessel traffic systems and aids to navigation (construction and maintenance).
• Search and rescue.

### 3.5. Port Functions

Within the port system, one or more organizations fill the following roles:

- Landlord for private entities offering a variety of services.
- Regulator of economic activity and operations.
- Regulator of marine safety, security, and environmental control.
- Planning for future operations and capital investments.
- Operator of nautical services and facilities.
- Marketer and promoter of port services and economic development.
- Cargo handler and storer.
- Provider of ancillary activities.

In view of the strategic significance of land, port property is rarely sold outright to private parties because of its direct and indirect effects on regional and often national economy and public welfare, its intrinsic value, and possible scarcity. Therefore, a key role for many port authorities is that of the landlord with the responsibility to manage the real estate within the port area. This management includes the economic exploitation, the long-term development, and the upkeep of basic port infrastructure, such as fairways, berths, access roads, and tunnels.

Port authorities often have broad regulatory powers relating to both shipping and port operations. The authority is responsible for applying conventions, laws, rules, and regulations. Generally, as a public organ it is responsible for observance of conventions and laws regarding public safety and security, environment, navigation, and health care. Port authorities also issue port bylaws, comprising many rules and regulations with respect to the behavior of vessels in port, use of port areas, and other issues. Often, extensive police powers are also assigned to the port authority.

The planning function of the port authority in coordination with the municipality is a complicated affair, especially for large ports located within or near a city. The port planner has to consider:

- The consistency of plans with the general terms of land use that have been set by the competent authority.
- The impact of port development proposals on the immediate surroundings (environment, traffic, facilities, and roads).
- The appropriateness of port development proposals in the context of international, national, and regional port competition.

Actual port services and balancing of supply and demand occur at the levels of the port authority and individual port firms. Hence, the development of realistic investment projects for infrastructure and superstructure should be initiated at these levels. Investment plans of industrial and commercial port operators or projects for specific cargo handling, storage, and distribution should be integrated at the level of the port authority to arrive at a strategic master plan for the port. The individual master plans may then be integrated into a national seaport policy, taking into account macroeconomic considerations. Integration of individual master plans will help to avoid duplication of expensive, technologically advanced facilities when different ports in a national system strive to attract the same customers as well as ensure the selection of the appropriate locations for specific seaport facilities that will interconnect maritime and land transport systems.

To conclude, central governments should establish a national port policy that supports national economic objectives and creates a reasonable framework for port development. The development of plans for specific port projects, however, should remain in the hands of port operators.
Oversight of nautical operations should be within a port authority’s mandate and is often referred to as the harbormaster’s function. It generally comprises all legal and operational tasks related to the safety and efficiency of vessel management within the boundaries of the port area. The harbormaster’s office allocates berths and coordinates all services necessary to berth and unberth a vessel. These services include pilotage, towage, mooring and unmooring, and vessel traffic services (VTS). Often, the harbormaster is also charged with a leading role in management of shipping and port-related crises (for example, collisions, explosions, natural disasters, or discharge of pollutants). In view of its general safety aspects, the harbormaster’s function has a public character.

The cargo handling and storage function comprises all activities related to loading and discharging seagoing and inland vessels, including warehousing and intraport transport. A distinction typically is made between cargo handling on board of the vessel (stevedoring) and cargo handling on shore (landside or quay handling). Terminal operators can fulfill both roles.

There are typically two types of cargo handling and terminal operating firms. The more common structure for terminal operating firms is a company that owns and maintains all superstructures at the terminal (for example, paving, offices, sheds, warehouses, and equipment). Other firms only use the superstructure or equipment that is owned by the port. Such firms typically only employ stevedores or dock workers and have virtually no physical assets.

The port marketing and promotion function is a logical extension of the port planning function. Port marketing is aimed at promoting the advantages of the entire port complex for both the port authority to attract new clients and for the port industry to generally promote its business. This type of broad marketing is distinct from customer-oriented marketing that is aimed at attracting specific clients and cargoes for specific terminals or services.

A variety of ancillary functions such as pilotage, towage and ship chandlering, fire protection services, linesmen services, port information services, and liner and shipping agencies exist within the port community. Large port authorities usually do not provide these services, with the possible exception of pilotage and towage. In a number of smaller ports, however, these are part of the port authority operations because of the limited traffic base.

3.6. Port Administration Models

A number of factors influence the way ports are organized, structured, and managed, including:

- The socioeconomic structure of a country (market economy, open borders).
- Historical developments (for example, former colonial structure).
- Location of the port (urban area or in isolated regions).
- Types of cargoes handled (liquid and dry bulk, general cargo, or containers).

Four main categories of ports have emerged over time, and they can be classified into four main models: the public service port, the tool port, the landlord port, and the fully privatized port or private service port.

These models are distinguished by how they differ with respect for such characteristics as:

- Public, private, or mixed provision of service.
- Local, regional, or global orientation.
- Ownership of infrastructure (including port land).
- Ownership of superstructure and equipment (particularly ship-to-shore handling equipment, sheds, and warehouses).
- Status of dock labor and management.

Service and tool ports mainly focus on the realization of public interests. Landlord ports have a mixed character and aim to strike a balance between public (port authority) and private (port industry) interests. Fully privatized ports focus on private (shareholder) interests.
3.6.1. Service Ports

Service ports have a predominantly public character. The number of service ports is declining. Many former service ports are in transition toward a landlord port structure, such as Colombo (Sri Lanka), Nhava Sheva (India), and Dar es Salaam (Tanzania). However, some ports in developing countries are still managed according to the service model. Under it, the port authority offers the complete range of services required for the functioning of the seaport system. The port owns, maintains, and operates every available asset (fixed and mobile), and cargo handling activities are executed by labor employed directly by the port authority. Service ports are usually controlled by (or even part of) the ministry of transport (or communications) and the chairman (or director general) is a civil servant appointed by, or directly reporting to, the minister concerned.

Among the main functions of a service port are cargo handling activities. In some developing country ports, the cargo handling activities are executed by a separate public entity, often referred to as the cargo handling company. Such public companies usually report to the same ministry as the port authority. To have public entities with different and sometimes conflicting interests reporting to the same ministry, and forced to cooperate in the same operational environment, constitutes a serious management challenge. For this reason, the port authorities and cargo handling companies of Mombasa, Kenya, and Tema and Takoradi, Ghana, were merged into one single entity.

3.6.2. Tool Ports

In the tool port model, the port authority owns, develops, and maintains the port infrastructure as well as the superstructure, including cargo handling equipment such as quay cranes and forklift trucks. Port authority staff usually operates all equipment owned by the port authority. Other cargo handling on board vessels as well as on the apron and on the quay is usually carried out by private cargo handling firms contracted by the shipping agents or other principals licensed by the port authority. The Port of Chittagong (Bangladesh) is a typical example of the tool port. The Ports Autonomes in France are also examples, in particular the container terminals, which are managed and operated along the principles of the tool port, although for more recent terminals the private terminal operators have made the investment in gantry cranes. This arrangement has generated conflicts between port authority staff and terminal operators, which has impeded operational efficiency.

The above-mentioned division of tasks within the tool port system clearly identifies the essential problem with this type of port management model: split operational responsibilities. Whereas the port authority owns and operates the cargo handling equipment, the private cargo handling firm usually signs the cargo handling contract with the shipowner or cargo owner. The cargo handling firm, however, is not able to fully control the cargo handling operations itself. To prevent conflicts between cargo handling firms, some port authorities allow operators to use their own equipment (at which point it is no longer a true tool port). The tool port has a number of similarities to the service port, both in terms of its public orientation and the way the port is financed.

Under a tool port model, the port authority makes land and superstructures available to cargo handling companies. In the past, these companies tended to be small, with few capital assets. Their costs were almost entirely variable. The cost of underuse of port facilities was usually absorbed by the port authority, which minimized risk for the cargo handling companies. Often, the provision of cargo handling services was atomized, companies were small with activity fragmented over many participants. The lack of capitalization of the cargo handling companies constituted a significant obstacle to the development of strong companies that could function efficiently in the port and be able to compete internationally.

However, with the above in mind, a tool port does have its advantages, particularly when it is
used as a means of transition to a landlord port. Using the tool port model as a catalyst for transition can be an attractive option in cases where the confidence of the private sector is not fully established and the investment risk is considered high. A tool port may mitigate this by reducing initial capital investment requirements. Another example could include a government looking to expedite port reform initiatives, but requires extensive amounts of time for legal statutes to be established. Laws and regulations for establishing a tool port may be less extensive since no state assets are being transferred to the private sector, and therefore make it an easier model to adopt in the first phase of reform.

3.6.3. Landlord Ports

As noted, the landlord port is characterized by its mixed public-private orientation. Under this model, the port authority acts as regulatory body and as landlord, while port operations (especially cargo handling) are carried out by private companies. Examples of landlord ports are Rotterdam, Antwerp, New York, and since 1997, Singapore. Today, the landlord port is the dominant port model in larger and medium-sized ports.

In the landlord port model, infrastructure is leased to private operating companies or to industries such as refineries, tank terminals, and chemical plants. The lease to be paid to the port authority is usually a fixed sum per square meter per year, typically indexed to some measure of inflation. The level of the lease amount is related to the initial preparation and construction costs (for example, land reclamation and quay wall construction). The private port operators provide and maintain their own superstructure including buildings (offices, sheds, warehouses, container freight stations, workshops). They also purchase and install their own equipment on the terminal grounds as required by their business. In landlord ports, dock labor is employed by private terminal operators, although in some ports part of the labor may be provided through a portwide labor pool system.

3.6.4. Fully Privatized Ports

Fully privatized ports (which often take the form of a private service port) are few in number, and can be found mainly in the United Kingdom (U.K.) and New Zealand. Full privatization is considered by many as an extreme form of port reform. It suggests that the state no longer has any meaningful involvement or public policy interest in the port sector. In fully privatized ports, port land is privately owned, unlike the situation in other port management models. This requires the transfer of ownership of such land from the public to the private sector. In addition, along with the sale of port land to private interests, some governments may simultaneously transfer the regulatory functions to private successor companies. In the absence of a port regulator in the U.K., for example, privatized ports are essentially self-regulating. The risk in this type of arrangement is that port land can be sold or resold for nonport activities, thereby making it impossible to reclaim for its original maritime use. Moreover, there is also the possibility of land speculation, especially when port land is in or near a major city. Furthermore, sale of land to private ports may also sometimes raise a national security issue.

The U.K. decided to move to full privatization for three main reasons:

- To modernize institutions and installations, both of which often dated back to the early years of the industrial revolution, to make them more responsive to the needs and wishes of the users.
- To achieve financial stability and financial targets, with an increasing proportion of the financing coming from private sources.
- To achieve labor stability and a degree of rationalization, followed by a greater degree of labor participation in the new port enterprises.

Box 5 summarizes the strong and weak points of the principal port management models. Box 6 outlines the sectors (public or private) and their various responsibilities under the four basic port management models.
3.7. **Globalization of Terminal Operations**

Port authorities are increasingly confronted with the globalization of terminal operations. During the 1990s, a number of terminal operators and major shipping lines merged to invest in and take control of a large number of terminals all over the world. This trend has far reaching consequences for the strategic position of port management in relation to some of their major clients.

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**Box 5: Strengths and Weaknesses of Port Management Models**

**Public Service Port**

**Strength:**
- Superstructure development and cargo handling operations are the responsibility of the same organization (unity of command).

**Weaknesses:**
- There is no role or only a limited role for the private sector in cargo handling operations.
- There is less problem solving capability and flexibility in case of labor problems, since the port administration also is the major employer of port labor.
- There is lack of internal competition, leading to inefficiency.
- Wasteful use of resources and underinvestment as a result of government interference and dependence on government budget.
- Operations are not user or market oriented.
- Lack of innovation.
- No or limited access to public funds for basic infrastructure.

**Tool Port**

**Strength:**
- Investments in port infrastructure and equipment (particularly ship/shore equipment) are decided and provided by the public sector, thus avoiding duplication of facilities.

**Weaknesses:**
- The port administration and private enterprise jointly share the cargo handling services (split operation), leading to conflicting situations.
- Private operators do not own major equipment, therefore they tend to function as labor pools and do not develop into firms with strong balance sheets. This causes instability and limits future expansion of their companies.
- Risk of underinvestment.
- Lack of innovation.

**Landlord Port**

**Strengths:**
- A single entity (the private sector) executes cargo handling operations and owns and operates cargo handling equipment. The terminal operators are more loyal to the port and more likely to make needed investments as a consequence of their long-term contracts.
- Private terminal handling companies generally are better able to cope with market requirements.

**Weakness:**
- Risk of overcapacity as a result of pressure from various private operators.
- Risk of misjudging the proper timing of capacity additions.

**Fully Privatized Port**

**Strengths:**
- Maximum flexibility with respect to investments and port operations.
- No direct government interference.
- Ownership of port land enables market-oriented port development and tariff policies.
- In case of redevelopment, private operator probably realizes a high price for the sale of port land.
- The often strategic location of port land may enable the private operator to broaden its scope of activities.

**Weaknesses:**
- Government may need to create a port regulator to control monopolistic behavior.
- The government (national, regional, or local) loses its ability to execute a long-term economic development policy with respect to the port business.
- In case the necessity arises to redevelop the port area, government has to spend considerable amounts of money to buy back the port land.
- There is a serious risk of speculation with port land by private owners.

*Source: A. Baird and P. Kent (2001).*
This trend toward globalization has affected mainly containerized operations. Today, a handful of major carrier alliances and independent terminal operators increasingly dominate the major global container trades. The global carriers have sought to secure their competitive positions by concluding long-term contracts for dedicated container terminals in major, strategically located ports. Their reasoning is that they believe they need to control all stages of the transport chain to remain competitive. These efforts to establish integrated transport chains pose a challenge for port authorities in their relations with the larger carriers. For example, how should a port respond if a large container operator demands to operate a dedicated terminal and threatens to leave the port when it does not get its way?

It should be emphasized that full control of the transport and logistics chain by one consortium (a global monopolist) is not a desirable development. Because of regulatory measures by the United States and the EU, the complexity of the transport and logistics chain, and the number of players, a carrier’s ability to control of the full chain seems like an illusion. However, some alliances may attain a significant degree of market dominance. Box 7 lists the fleets of the major container carriers, showing the number of vessels operated, the capacity expressed in TEUs, and the number of vessels under construction.

The container shipping market is still much commoditized compared to other industries (energy, rail, and the like) with global market shares of the largest carrier not exceeding 18–19 percent (2005). However, the carrier industry, as well as the terminal operator industry, is moving toward greater consolidation and larger global players and operators are emerging.

Competition between major carriers is intense. The scale of investment in a new generation of container vessels represents a massive commitment. To fill these vessels, the carriers try to secure local control and coordination over inland cargo haulage and feeder operations. In this way, they try to secure their market share and meet perceived service needs. Port handling charges are considered as being of secondary importance in achieving these goals.

Relationships between ports and carriers fall into four broad categories:

- First are ports that face strong interport competition in the container handling sector. Container lines may easily shift operations to other ports if their financial and operational demands are not met. To attract major container lines, the port authority may offer them dedicated facilities while other, smaller lines are accommodated at common user terminals. Without such dedicated facilities, major lines could move to other competing ports. Examples of this category are the Ports of Yokohama and Long Beach.

- Second are ports that derive the bulk of their business from a major container line, and therefore, are dominated by this client. If the dominant line were to abandon the port, 80–90 percent of the traffic could be lost. Examples of such ports are Algeciras and Salalah.
Third are ports where, although no single shipping line may dominate the port’s traffic volume, there is a possibility for that line to pressure the port authority into accepting a dedicated terminal because of competition for transit traffic in the larger region. An example of this type of port is Miami, which is a hub for the Caribbean and Central and South America. Competitors include Kingston (Jamaica) and Freeport (The Bahamas). As the competitive positions of these ports improve, carriers may increase pressure on Miami to grant dedicated terminals.

Fourth are major world ports such as Shanghai, Hong Kong, Singapore, and Rotterdam. Such ports have a very well-developed container sector. Initially, these ports resisted pressures from shipping lines to accept dedicated terminals. However in Rotterdam, the large Europe Container Terminal (ECT) has been acquired by Hutchison Port Holdings (HPH), which was obliged by the European Commission to sell ECT a 33 percent share in the Maersk Delta Terminal. Also at Maasvlakte (Rotterdam), P&O Nedlloyd started the construction of its Euromax Terminal, which is expected to be operational in 2008. Thus the Port of Rotterdam currently accommodates a mix of dedicated and common user terminals. In Antwerp, developments are similar.

The Port of Singapore did not meet the requests of Maersk Line, which resulted in the carrier initiating the development of the nearby Malaysian Port of Tanjung Pelepas with its affiliate A. P. Moller Terminals, which conducts business under the name APM Terminals.

### Box 7: Top 10 Carriers as of June 2006

**Top Ten Container Carriers as of June 2006**

<table>
<thead>
<tr>
<th>Rank</th>
<th>Carrier</th>
<th>Current TEU Capacity</th>
<th>% of Global Fleet</th>
<th>Current Operating Vessels</th>
<th>Vessels Under Construction/Contract</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Maersk Line</td>
<td>1,566,352</td>
<td>14.9%</td>
<td>519</td>
<td>102</td>
</tr>
<tr>
<td>2</td>
<td>Mediterranean Shipping Co SA</td>
<td>892,548</td>
<td>8.5%</td>
<td>297</td>
<td>24</td>
</tr>
<tr>
<td>3</td>
<td>Evergreen Marine Corp (Taiwan) Ltd</td>
<td>530,172</td>
<td>5.0%</td>
<td>193</td>
<td>24</td>
</tr>
<tr>
<td>4</td>
<td>CMA CGM SA</td>
<td>486,453</td>
<td>4.6%</td>
<td>189</td>
<td>56</td>
</tr>
<tr>
<td>5</td>
<td>Hapag-Lloyd Container Linie GmbH</td>
<td>437,954</td>
<td>4.2%</td>
<td>136</td>
<td>10</td>
</tr>
<tr>
<td>6</td>
<td>Cosco Container Lines Ltd</td>
<td>369,531</td>
<td>3.5%</td>
<td>128</td>
<td>20</td>
</tr>
<tr>
<td>7</td>
<td>China Shipping Container Lines Co Ltd</td>
<td>328,245</td>
<td>3.1%</td>
<td>95</td>
<td>19</td>
</tr>
<tr>
<td>8</td>
<td>APL Ltd</td>
<td>325,919</td>
<td>3.1%</td>
<td>104</td>
<td>27</td>
</tr>
<tr>
<td>9</td>
<td>NYK Line</td>
<td>315,865</td>
<td>3.0%</td>
<td>117</td>
<td>25</td>
</tr>
<tr>
<td>10</td>
<td>Hanjin Shipping Co Ltd</td>
<td>313,688</td>
<td>3.0%</td>
<td>78</td>
<td>17</td>
</tr>
<tr>
<td>Other</td>
<td>4,980,735</td>
<td>47.2%</td>
<td>8,024</td>
<td>1,108</td>
<td></td>
</tr>
<tr>
<td>Total Global Fleet</td>
<td>10,547,472</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Share of Global Fleet (by TEU capacity)**

- Maersk Line
- Mediterranean Shipping Co SA
- Evergreen Marine Corp (Taiwan) Ltd
- CMA CGM SA
- Hapag-Lloyd Container Linie GmbH
- Cosco Container Lines Ltd
- China Shipping Container Lines Co Ltd
- APL Ltd
- NYK Line
- Hanjin Shipping Co Ltd
- Other

*Source: Author.*
However, in this particular case it should be noted that the container operations in Singapore are carried out by PSA Corporation, which itself is competing globally in the container terminal market.

The changes in terminal management are fast. Container lines may use a common user terminal with the advantage that they can switch easily to a competing facility when the need arises, which has competitive advantages. On the other hand, major container carriers are increasingly interested in securing berth and throughput capacity, with the larger ones aiming at operating their own dedicated terminals directly or through affiliated global terminal operators. Strategic alliances between global terminal operators and major container lines are likely to continue in the near future.

With such consolidation and alliances increasing in the industry, there is the growing concern of dominant market shares or monopolies or oligopolies developing at both local and regional levels. Governments should be aware of these trends and the impacts.

Apart from the major container lines, a number of global terminal operators have also emerged during the 1990s and the top 10 have distanced themselves from the rest of the market over the last three to five years (see Box 8). These companies operate a large number of terminals all over the world. Their main objective is not to control the transport chain, but to make a profit by offering terminal services. However, when too many terminals within a region are controlled by one operator, the competent authority or government agency may decide that special regulatory measures are needed to protect against the danger of a monopoly. This was the case in Rotterdam when Hutchison Port Holdings (Hutchison – HPH) bought 49 percent of the shares of ECT. The European Commission decided to refuse permission for this transaction on the grounds that this would have allowed Hutchison to establish a dominant market position in Northwestern Europe since Hutchison already owned Felixstowe, Thamesport, and Harwich.

Box 9 lists the portfolio of the largest terminal operators as of June 2005.

### 3.8. Port Management and Competition

Competition within and between ports has a bearing on the management structure of the port and the relations between the port authority and the terminal operators and cargo handling companies.

<table>
<thead>
<tr>
<th>Ranking</th>
<th>Operator</th>
<th>Million TEU</th>
<th>% Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hutchison Port Holdings (HPH)</td>
<td>33.2</td>
<td>8.3</td>
</tr>
<tr>
<td>2</td>
<td>PSA - Singapore Port Authority</td>
<td>32.4</td>
<td>8.1</td>
</tr>
<tr>
<td>3</td>
<td>APM Terminals</td>
<td>24.1</td>
<td>6.0</td>
</tr>
<tr>
<td>4</td>
<td>P&amp;O Ports</td>
<td>21.9</td>
<td>3.3</td>
</tr>
<tr>
<td>5</td>
<td>DP World</td>
<td>13.3</td>
<td>2.5</td>
</tr>
<tr>
<td>6</td>
<td>Evergreen</td>
<td>11.5</td>
<td>1.7</td>
</tr>
<tr>
<td>7</td>
<td>Eurogate</td>
<td>11.4</td>
<td>1.6</td>
</tr>
<tr>
<td>8</td>
<td>COSCO</td>
<td>8.1</td>
<td>1.5</td>
</tr>
<tr>
<td>9</td>
<td>SSA Marine</td>
<td>6.7</td>
<td>1.4</td>
</tr>
<tr>
<td>10</td>
<td>HHLA</td>
<td>5.7</td>
<td>1.3</td>
</tr>
</tbody>
</table>

These changing relations are often cited as an important reason for changing the port management structure. Many port authorities consider the creation of competitive conditions among port operators the cornerstone of their port policy.

One can distinguish between interport competition (competition between different ports) and intraport competition (competition between different enterprises within one port complex). To reduce the risk of monopolies, port authorities usually stimulate intraport competition. However, medium-sized and smaller ports, because of their limited traffic, often accommodate only one port terminal operator. In such cases, port authorities often use their quasi-governmental powers to regulate port charges and tariffs.

Key factors affecting interport competition include:

- **Geographic location**: A port that is strategically located close to well-established transport routes has competitive advantages. A strategic location typically possesses at least the following characteristics:
  - Proximity to one or more major maritime routes.
  - Natural deep water, good protection against waves and currents, large waterfront and landside expansion possibilities.
  - Proximity to major production or consumption areas.
• Good hinterland connections (road, rail, pipeline, and waterway) with high frequency service offering good connectivity.

• **Legal framework**: The well-balanced national and local legal framework applicable to port management greatly bolsters investor confidence. Many countries have enacted specific port laws dealing with powers and responsibilities of the various actors in the sector. Moreover, land and competition laws are equally important, as well as an independent judiciary.

• **Financial resources**: A port with sufficient financial means of its own or the capacity to raise the funds required to develop and improve the port has a competitive advantage over ports with limited resources or no financial autonomy.

• **Institutional structure and socioeconomic climate**: The management structure of the port must be conducive to private sector investment. Related to this is the socioeconomic climate in the port; private investors prefer ports with a sufficient and well-trained labor force and good relations between employees and employers.

• **Efficiency and price**: Various investigations indicate that port costs are an important, although not decisive, factor in making choices, especially for cargo owners or their representatives. In a world where manufacturers seek to trim costs and improve customer service through the adoption of sophisticated logistics processes, efficiency and the price-performance ratio are increasingly important.

• **Image of the port**: The image the port projects is another factor in its competitiveness. The preferred image is an optimum mix of the above-mentioned components.

Box 10 summarizes the key elements influencing port competition.

**3.9. Port Sector Regulator**

When interport competition is muted or absent, port authorities or public or private terminal owners are apt to use their monopoly market positions to raise tariffs (in particular for captive cargoes), which may justify regulation. The need for such regulation may lead to the creation of an independent port sector regulator.

The objectives of the port sector regulator are to ensure fair competition among competing operators in the port; to control monopolies (including public ones) and mergers; and to prevent anticompetitive practices.

A port sector regulator typically has legal powers to counter anticompetitive practices, such as:

- Use of a dominant position to prevent or lessen competition.
- Cross-subsidization by the provider of monopoly services of contestable services, thereby threatening fair competition.
- Price fixing among competitors.
- Use of other practices that are intended to restrict, distort, or prevent competition.

Smaller ports are more vulnerable to anticompetitive abuses because their traffic volumes limit the number of container, bulk, and oil terminals. Generally, when a monopoly or merger situation does not operate against the public interest, it may be permitted provided it is properly regulated. Examples of regulation in such cases could include tariff caps, volume or traffic thresholds to trigger any additional future concession, or expansion limits to incumbent operators that otherwise require an open tender.

The establishment of a port sector regulator should only be effected in the event of serious threats to free competition within the port. It should preferably have the character of an arbitrator instead of a court of law, and be accepted by the port community as being independent. For a more detailed discussion of the economic regulation of ports, see Module 6.

**3.10. Value-Added Services**

Generally, the function of a port as a node in the transport chain depends on its location and on the economic and technical developments that
exist in its hinterland. Modern production techniques and consumption patterns increase the use of transportation systems beyond levels suggested purely by the growth in trade and commerce. As a result, more specialized handling, storage, and other logistics facilities are needed. More and more, ports are becoming part of integrated logistics chains. This process of specialization and changing demands, which has taken place over the last two decades in most Western countries, is now taking place with even greater speed in new market economies.

From the port’s point of view, creating new services boosts economic performance as well as its attractiveness to existing and potential clients. This, in turn, can help maintain and improve a port’s competitive position. When assessing the wisdom of developing new services, it is important to pay attention to the value-adding potential of the services. This potential can vary product by product and activity by activity. Numerous activities can be classified as value-added services (VAS). Box 11 identifies a number of them.

VAS can be divided into value-added logistics (VAL) and value-added facilities (VAF). VAL has two major components: general logistics services (GLS) and logistics chain integration services (LCIS). GLS are, among other activities, loading and unloading, stuffing and stripping, storage, warehousing, and distribution. These are the more traditional logistics activities and do not directly affect the nature of the product as it moves through the port.

Beyond these traditional activities, more complex LCIS are being developed. To carry out activities that manufacturers do not consider part of their

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**Box 10: Elements Influencing Interport Competition**

**Inland Transport System**

The inland transport system (road, rail, waterway, and pipeline) determines to a great extent the captive area of a port. Improvements to the inland transport system place ports in a more competitive environment. In cases where major ports may have a hinterland that covers a number of countries, their zone of competitiveness overlaps that of other ports. As a result, fierce price competition might exist.

**Transshipment**

Transshipment (sea-sea transfer of cargo) of cargo, particularly containerized cargoes, is a major market chased by many, if not almost all, major ports in the world. Transshipment has the advantage that it generates additional traffic (two moves for one box) and the weakness of being foot loose. Cargo owners and shipping lines constantly look for the port where the price-quality ratio best serves their particular interests. Because the penalty for changing ports of call for transit traffic is not very severe, carriers tend to switch their transshipment ports with little provocation.

**Freight Forwarders and Multimodal Transport Operators**

Freight forwarders and multimodal transport operators (MTOs) play a decisive role in today’s transport evolution, particularly within the framework of the door-to-door transport of commodities. As transport and distribution specialists, they greatly influence port choice and interport competition.

Freight forwarders and MTOs have their own networks in the region that provide up-to-date information about technical, commercial, operational, and social differences between (competing) ports. They contribute to the loss of identification with and loyalty to specific ports on the part of the consignees and shippers. Freight forwarders and MTOs often have representative offices in competing ports.

Switching ports is much easier for transport specialists such as freight forwarders and MTOs than it is for shippers and consignees. In addition, as consolidators of small consignments and shipper representatives, they are relatively strong compared to transport providers and other relevant parties, which makes modification of transport routings easier. Assisted by freight forwarders and MTOs, large shipping lines now can change the ports of call with much less difficulty.

Source: TEMPO—Port of Rotterdam.
core business, logistics service providers may take over parts of the production chain (for example, assembly, quality control, customizing, and packing) and after sales services (for example, repair and reuse). However, LCIS are only appropriate for certain types of goods. The products that have the highest potential to benefit from such services include consumer electronics, pharmaceuticals, chemical products (except for those carried in bulk), clothing, cosmetics and personal care products, food, machinery, and control engineering products.

The second group of VAS, that is, VAF, is very diverse. These types of activities cannot generally be assigned to a particular type of product or freight flow. It is possible, however, to impute a certain VAF potential by analyzing freight flows such as dry and liquid bulk, general cargo, containerized cargo, and roll-on roll-off. A large container throughput might create the economic basis for establishing container repair facilities, handling vast quantities of chemicals requires port reception facilities, and substantial roll-on roll-off traffic might justify truck maintenance and repair shops. Box 12 broadly depicts the potential for both VAL and VAF activities for different types of cargoes.

Containerized and general cargoes typically have the highest VAL potential. GLS and LCIS have the best opportunity to serve these cargoes. The VAL potential for roll-on roll-off is very limited. Trucks with drivers are too expensive to be delayed while the cargo is modified; additionally, these loads are usually customer tailored. VAF, such as tanking, cleaning, repair, parking, security, renting, and leasing facilities have a better potential to serve the roll-on roll-off market. Dry and liquid bulk flows have the lowest potential for both VAL and VAF.

To provide a favorable environment for VAL and VAF, many ports are developing distriparks. A distripark is an area where companies are established to perform trade and transport-related value-added services and can also include locations within the port’s larger hinterland region. There is no standard development plan for a distripark. As can be seen from the
various developments in the Netherlands, France, Germany, and the U.K. for instance, there is a large variety in distriparks. For example, in Rotterdam, there are three distriparks. The oldest one (Eemhaven) is devoted to container cargo distribution, the second one (Botlek) is devoted mainly to chemicals, and the third and most recent one is also dedicated to containerized cargoes, and includes large warehouses containing goods for European distribution (for example, Reebok).

4. PORT FINANCE OVERVIEW

Before 1980, service ports and tool ports were mainly financed by the government. The general infrastructure of landlord ports typically was financed jointly by the government and the port authority, and the terminal superstructure and equipment by private operators. Fully privatized ports were the exception. In the event a government had no funds for expensive port infrastructure, either port development was halted or money was acquired at preferential rates from an IFI such as the World Bank.

Ports require expensive infrastructure to be able to compete successfully. Until recently, port authorities mainly relied on contributions and subsidies from national governments for building or improving basic port infrastructure. Such contributions usually were excluded from port financial accounts and therefore helped ports to exhibit positive financial positions.

Whether national governments finance basic port infrastructure depends on the government’s political and economic policies. For example, if ports are considered part of the general transport infrastructure of the country, then investments in them may be considered to promote the national interest. Research shows that in 63 percent of the top container ports, the public sector (either the national government or the public port authority) was responsible for creating and maintaining (public) basic port infrastructure.

In some countries, financing basic infrastructure is considered a public task (for example, in France, Italy, and Croatia) because this part of infrastructure belongs to the public domain, which is protected by law. To carry out construction activities or port operations in this domain, a public license is required. This requirement could reduce intraport competition if the licenses are granted only on a limited and discriminatory basis.

An often occurring problem with public (thus political) investment decisions is that the decision to invest does not necessarily originate at the same level of government as that of the financing sources and responsibilities. Because of this disconnect, the interest of public officials...
to increase efficiency and profitability of port assets is usually limited because they are not held accountable for the success or failure of their investment decisions.

As mentioned earlier, the increasing role of private enterprise in the port sector exerts a direct influence both on port management and operations, as well as on the way capital projects are financed. The private sector has become interested in financing the construction of entire terminals, including quay walls, land reclamation, dredging, superstructure, and equipment. This has given rise to a large variety of financing and management schemes such as BOT (build-operate-transfer), BOOT (build-own-operate-transfer), and BOO (built-own-operate). Each is designed to mobilize private capital while balancing public and private interests.

Government’s views on ports are evolving. Increasingly, ports are considered separate economic entities, although still subject to national regional and local planning goals. As such, they should operate on a commercial basis. By the same token, subsidies for operational port infrastructure construction, such as port land, quay walls, common areas, and inner channels, should be avoided.

Box 13 summarizes the EU’s views on subsidies, particularly those for infrastructure.

There still is, however, a category of port infrastructure for which it will be hard to find private investors: investments for expensive and long-lived infrastructure (for example, breakwaters and locks, entrance channels and fairways, and coastal protection works). The main stumbling block for private financing of such projects is their life span, which often exceeds 100 years, and the sunk investment aspect of these projects. Cost recovery of such works often cannot be achieved in 20 to 30 years (see Module 4), which is a normal repayment period for long-term loans for infrastructure works by IFIs. Nevertheless, the second- and third-order benefits from such infrastructure investments for national and regional economies may be substantial. Hence, many governments are still willing to finance part or all of long-term port investments as these contribute to the achievement of public policy objectives. Caution is warranted, however, whenever governments contemplate underwriting such investments.

4.1. Financing Port Projects

To further clarify financing approaches, it is important to distinguish among investments in basic port infrastructure, operational port infrastructure, port superstructure, and port equipment. Understanding these distinctions will help in deciding which investments should be paid for by the port and which should be paid for by the local or regional community, the central government, and private investors. Box 14 lists various types of port assets under these four categories.

In addition to financing the construction, rehabilitation, acquisition, and maintenance of physical assets, ports may also need to finance organizational restructuring and associated labor compensation as well as working capital to support operations. Each of these categories and their potential sources of financing are discussed below.

In many countries, the government is responsible for financing basic infrastructure, either directly or through a contribution to offset its cost when the project is conducted, for example, by a highway authority or a port authority. In the Netherlands, construction of maritime access and protection works used to be carried out by and for the account of the government with the port authorities obliged to pay one-third of the relevant costs. In France, this issue is regulated in the Port Authority Law of 1965 (Law No. 65 – 491 of June 29, 1965), which allocates a minimum of 80 percent of the costs of basic port infrastructure of the Autonomous Ports to the national government.

For the government, there are two key issues associated with making large direct investments in port facilities: how to find the necessary funds and how to recover the investment.
The ways in which the government (or any other public body) funds investments are diverse:

- Direct investments coming from the government investment budget.
- Direct investments coming from a special (port) fund.
- Loans from IFIs.

Direct investments, paid for by the investment budget or a special fund, are based on the assumption that they will have a substantial positive effect on the economy, as shown by the positive results of a cost-benefit analysis (always heavily dependent on traffic forecasts). For investments broadly benefiting the entire nation, it is not unusual that a government would not seek direct financial repayment.

However, there are also situations where the government may receive direct reimbursement for the funds it invested via a variety of rates and charges assessed against the beneficiaries of the investments. These may take the form of:

- Compensation paid by the port authority in proportion to the volume of goods transported through a newly dredged channel (per ton or per TEU).
- A fixed amount per year paid by the port authority to the government.
- A percentage of the annual port dues paid by the port authority to the government.

Often, basic infrastructure elements are financed by an IFI under a government guarantee. However, even when IFI financing is made available, ports and governments must still face the challenge of providing matching shares for a period of 30 to 50 years and making interest payments over a period of some 20 years.

When considering financing of operational infrastructure, port authorities have a number of options from which to choose. For service ports or tool ports, governments will usually finance the operational infrastructure, with or without the assistance of an IFI. For landlord ports made up of self-contained terminals, investment in the terminal should be financed...
by the terminal concessionaire or the lessee, while the port provides the land (often in a condition ready for construction). The port may also provide the quay wall with the land, but, increasingly, private concessionaires have been willing to invest in this infrastructure.

Other financial arrangements are also common. For example, in U.S. public ports, the port authority may have access to “cheaper” money than a private sector operator. In this case, the authority has the option to issue tax-free port revenue and general obligation bonds. Both give ports access to capital markets; the former relies on the revenues generated by operation of the new facility to repay debt, the latter assures purchasers of the debt that the government will make good on any repayments should revenues from operation of the new facility prove inadequate.

The most attractive situation, both from the point of view of the landlord port authority as well as of the operator, is the conclusion of a long-term lease contract with the operator (running for a period of 20 to 30 years) for the use of part of the port area. This type of long-term lease has the legal character of a property right and has four advantages:

- At the end of the contract, possession of the land reverts to the government or port authority.
- The contract represents a property right that under certain conditions can be transferred to a third party. There usually is a clause in such contracts stating that such transfer of property rights requires prior permission from the port authority.
- All superstructures (buildings and equipment) may be financed and owned by the operator.
- It can be used as security for a bank loan.
For the financing of common areas (all areas within the port area not being part of a terminal or other port enterprise), the port authority may make use of retained earnings, issue its own bonds (where permitted to do so by its statutes and legal system) or make use of bonds, or simply take a bank loan. Except in the first case, the associated risk is with the borrower. The problem confronting public ports is what to use as collateral or guarantees for the lender, particularly since there may be restrictions with respect to the use of the port’s assets.

In the event of a major reorganization program for the port authority, substantial amounts of money may be required for compensation payments to personnel. (See Module 7 for a detailed discussion of labor issues affecting port reform.) Such payments often have a short payback period. Nevertheless, traditional sources of finance may be unwilling to lend money specifically for this purpose. There is, however, a possibility for “triangular” financing, that is, lending the money for some other transaction on condition that the funds thus liberated are used to compensate displaced workers. Moreover, a national government might be willing to provide funds for labor redundancy schemes with or without the involvement of an IFI.

Port operators and providers of services who take over existing installations and equipment from a port authority may have a greater need for working capital than investment capital, especially in their start-up periods. With respect to debt financing, operators face the problem of providing security because installations and equipment often may be leased under conditions that prevent them from being mortgaged. Since port operators are essentially private companies, an attractive alternative to debt financing is through the flotation of equity shares, the success of which will depend largely on the degree of confidence prospective shareholders have in the newly founded company and in its management.

Supplier credit, provided that it includes the financing of necessary spare parts over a period of at least three years, offers another potential source of funding for the procurement of equipment, with the usual limitations of this type of financing.

Finally, a joint venture between the port authority and the operator offers what may be an attractive source of finance for the operator. For a specialized terminal, where the likelihood of a competing terminal being constructed is remote, a joint venture may be reasonable. In most circumstances, however, the likely effect of a joint venture between a port authority and an operator is to obscure the transparency of the relationship between the different port functions and, more pragmatically, to discourage the entry of new operators to the port. Box 15

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**Box 15: Multiple Terminal Ownership in Sri Lanka**

The Sri Lanka Port Authority (SLPA) faces a number of challenges. In 1999, the government of Sri Lanka entered into a 30-year concession for the South Asia Gateway Terminal (SAGT). SAGT is operated under a BOT scheme by P&O Ports (now owned by Dubai Ports World – DPW), with other partners including Evergreen Marine Corporation and John Keels (Sri Lanka). SLPA has retained a role in the terminal as well. The Port of Colombo is currently a service port, and its lead container terminal, Jaya Container Terminal (JCT), is and will continue to compete actively with SAGT.

Given SLPA’s stake in both JCT (100 percent) and SAGT (7 percent), as well as in many services in the port area including inter-terminal transfers, SLPA’s position as a neutral landlord is compromised. Looking into the future, a major expansion, the South Port, will require that the role of SLPA become one of a nondiscriminatory landlord without a direct hand in operations. This should improve efficiency and minimize the conflicts of interest. However, port reform in Sri Lanka is stalling. Despite official government plans, JCT is not corporatized and no port sector regulator has been established on or before October 2004, as required by the concession agreement with SAGT.

Source: Christiaan Van Krimpen.
describes the challenges mounted by such relationships in the case of the Sri Lanka Port Authority.

4.2. Financing Ports: From a Lender’s Point of View

Port authorities or port operators seeking to finance new facilities or equipment typically have to offer some sort of security to a prospective lender. Generally, they have assets and other support from political and business circles for the project they want to undertake. In many ports, however, land is government-owned and cannot be used to secure financing. And, when a port needs money to dredge a channel entrance to remain attractive and competitive, the channel itself does not constitute credible security for the lender. There are however, various options for ports to provide lenders “comfort.”

Prospective lenders will examine closely the position of the borrower, which might be a port authority or a port enterprise. In the vast majority of cases, the latter are structured as limited liability companies. In the case of loans to a public port authority, the state or municipality usually provides a guarantee. A port authority might also be corporatized with the state or the port city as main shareholders. In both cases, the lender will assess the financial strength of the port authority and the public bodies owning it. This is often sufficient to ensure financing of the venture without too much regard to the assets supporting it. In Anglo-Saxon jurisdictions, a borrower may create a “floating charge” (similar to a mortgage) over all assets. This avoids the need to consider specific elements of the port assets as collateral.

A port’s most valuable asset is its land; however, land’s value as a security for financing varies significantly. Generally the land is owned by a public body or by the port authority itself. In landlord ports, the land is concessioned or leased to private operators, with the exception of common areas, which usually have a low commercial value. In the majority of cases, port land cannot be mortgaged under a concession agreement. Sometimes it is legally possible to mortgage superstructure on the terminal. Using the land itself as collateral is therefore complicated. The land must have inherent worth and a user should be able to exploit it. If a right to use the port area concerned does not accompany the mortgage on port land, its value is considerably diminished. Another problem might be that the national legislation grants only limited rights to a mortgage. Lastly, in the event of a public port authority, the lender might be confronted with political processes complicating its ability to exercise rights under a mortgage. This makes the security less valuable to a lender.

In most ports, the concession or lease to private operators is the principal security for lenders, provided that the conditions of the concession or lease allow transfer of the contractual rights to another party. In the case of a full-fledged concession (including a BOT scheme), the financier often desires to have the ability to arrange for the operation of the terminal itself if the operator defaults. In the case of a concession or land lease, a port authority is usually obliged to transfer the concession or lease to a third party, such as transfer to another port-related firm, when certain conditions are met. This might be a cargo handling firm or terminal operating company, or a port-based industry such as a refinery or a chemical plant. Conditions attaching to the transfer typically require the new firm to use the facilities in accordance with their initial assignment and to generate sufficient seagoing traffic.

A port complex comprises a large variety of other assets that might be mortgaged or used as collateral, such as warehouses, quay cranes, offices and other buildings, tugs, dredged channels, and others. Some of these assets might provide security to a lender, especially when the assets can be used in other ports (for example, cranes and tugs). Others, because they are immobile or have few alternative uses, constitute little or no security (for example, dredged channels). An important aspect of securing financing is the legal right of a port operator to own buildings on land leased from the port
authority. Lenders are usually prepared to finance buildings and certain types of equipment in view of their intrinsic value.

Port firms, and sometimes privatized or corporatized port authorities, typically take the legal structure of a joint stock or limited liability company. The equity of such enterprises does not constitute security in itself, but may help to attract investment funds. Rights of equity holders to repayment usually rank immediately behind the rights of a lender. When balance sheet financing is undertaken, a high level of equity (in relation to debt) means that more funds are available to absorb losses before lenders come under threat.

One of the most important elements of financial security is the cash flow generated by the port or terminal. A lender almost always wants the earnings of the project to provide security for the loan. Estimation of such earnings is highly complex because it involves assessing elements such as future traffic levels, port revenues and expenses, the expected general economic development of the country, potential exchange rate risks, the future political climate, and other factors. The more accurate and reliable the traffic and financial forecasts are perceived to be by prospective investors, the higher the probability that a port authority or port operator will be able to attract risk capital and obtain loans.

Governments may also guarantee commercial loans against political risk and possibly use the guarantee programs offered by the IFIs. In the port sector, lenders often take security via assignment of port charges. However, much will depend on the terms of the concession or lease agreement, terms of earlier financing, and the rights of third parties. Finally, financing can be affected by the provision of additional government support. A government may invest equity in a firm it deems essential for the general development of the port. It may also provide subordinated loans. Direct financial involvement of governments and public port authorities is increasingly common, despite potential conflicts of interest. Sometimes a government may assign certain rights or grant concessions such as a duty-free status (as was the case at Jebel Ali) to enhance the success of the venture. Properly focused government support can be very important to provide additional comfort to lenders.

4.3. Public-Private Partnerships

As private sector involvement in financing port and other infrastructure works has increased, the tools for financing these facilities have become increasingly sophisticated and the legal conditions to be satisfied by the project more strict. The private sector evaluates its participation in port infrastructure and superstructure projects based on the following elements:

- Expected yield.
- Adequate debt/equity financing structure (for example, 65/35, 70/30, 75/25).
- Strong sponsorship.
- Solid legal contracts.
- Transparent legal framework.
- Fair and open bidding procedures.
- Credible feasibility analyses (technical, institutional, financial, economic, and environmental).

Funding large infrastructure investments in greenfield port projects is more risky because of certain complicating factors, including:

- The large proportion of necessary equity contributions (for example, a minimum proportion of 60 percent) due to the high risk associated with long construction and payback periods.
- The difficulty of projecting future traffic volumes.
- The capital-intensive nature of the investments.
- The continuing risks associated with operations, such as a refusal of requests for tariff adjustments, changes in tax policy, or introduction of new handling techniques that make existing facilities obsolete.
5. PORT REFORM MODALITIES

Today, the term port reform connotes the changing institutional structure of the port business and the much greater involvement of the private sector in the exploitation and financing of port facilities, terminals, and services. Port reform, therefore, results in changing relationships between the public and private sectors.

The sharp increase in world trade over the last 60 years focused the attention of national governments on the economic importance of ports. This was especially the case in major ports developing large industrial sites within their domain. In the 1950s and 1960s, many nations introduced institutional changes with the aim of coordinating port development at national and regional levels and preventing overinvestment in expensive port infrastructure. For example, the United Kingdom established its National Ports Council for this purpose.

In the former Soviet Union, Eastern Europe, and in many socialist-oriented developing countries the situation was entirely different. Ports were considered part of the national state structure (for example, as an element of the ministry of merchant marine or ministry of transport) and were often controlled by national shipping companies. Every matter involving maritime policy was decided centrally, with port authorities carrying out the various day-to-day nautical and operating functions.

At the beginning of the 1980s, the belief in the management and operating capacities of national governments faded in most market economy countries. Central structures came under fire and often lost some of their powers. The privatization wave launched in the late 1970s and early 1980s by Margaret Thatcher in the U.K. also affected the port sector and resulted in a reassessment of the role of the government and private enterprise.

The demise of the communist system in the beginning of the 1990s resulted in the virtual collapse of centrally controlled port systems in the former socialist countries. They too embarked on port reform and adapted the institutional and financial structure of their port sectors to market conditions.

Despite the social and economic reforms of the past 35 years, the public sector has retained a strong role in port development. Generally, in a market-oriented economy a government continues to be responsible for the development of public goods, goods that have a social utility, but that cannot be provided by the private sector because of low profitability. Moreover, another reason for continuing government involvement in the port sector is the strong ties to government responsibilities in the areas of land use planning, environmental protection, job creation, and the economic stimulation of underdeveloped areas.

Box 16 is a compilation of a considerable num-

Box 16: Reasons for Pursuing Port Reform

General Reasons:
- Improve port efficiency.
- Decrease costs and prices.
- Improve service quality.
- Increase competitive power.
- Change the attitude with respect to port clients (become more client friendly).

Administrative and Managerial Reasons:
- Depoliticize the public port administration.
- Reduce bureaucracy.
- Introduce performance-based management.
- Avoid government monopolies.

Financial Reasons:
- Reduce public expenditure.
- Attract foreign investment.
- Reduce commercial risks (investments) for the public sector.
- Increase private sector participation in the regional or national economy.

Employment Reasons for Change:
- Reduce the size of the public administrations.
- Restructure and retrain the port labor force.
- Eliminate restrictive labor practices.
- Increase private sector employment.

ber of surveys seeking to summarize the most frequently cited reasons for change in the management or ownership of ports.

5.1. Strategies and Reform Options
Many port managers and government officials believe that the only way to improve the performance of public port organizations is through the process of privatization. They hold this view because they believe that certain characteristics of the private sector are indispensable to achieve commercial success. The term privatization has therefore become synonymous (and confusingly so) with port reform. Privatization, however, more accurately refers to one aspect of port reform—the introduction of the private sector into areas previously reserved to the public sector, finally resulting in the transfer of port land into full private ownership.

Governments and port managers can select from among a variety of strategies for improving organizational and operational performance, including:

- Modernization of port administration and management.
- Liberalization or deregulation port services.
- Commercialization.
- Corporatization.
- Privatization.

Each of these options may be equally valid and successful forms of port reform, depending on the setting of the port in question. Each of these options is defined below.

Modernization of port administration assumes that performance can be improved by introducing more suitable systems, working practices, or equipment and tools within the existing system of bureaucratic constraints. The advantage of this strategy is that certain changes in the organization can be made without the requirement to change laws or national policy.

Liberalization and deregulation are the reform or partial elimination of governmental rules and regulations that enable private companies to operate in an area where previously only the public sector was allowed to operate.

In the case of commercialization, although the public port is not transformed into a private company, it is given more autonomy and made accountable for its decisions and overall performance. A commercialized port authority applies the same management and accounting principles as private firms and can adopt private sector characteristics and practices to become more customer oriented as well as more efficient and profitable.

In the case of corporatization, a public port enterprise is given the legal status of a private company, although the public sector or government still retains ownership. All assets are transferred to this private company, including land lease rights. Land ownership usually remains with the port authority.

The most complex form of reform is privatization. A useful definition of this term can be found in the UNCTAD publication of 1998 Guidelines for Port Authorities and Governments on the Privatization of Port Facilities: “Privatization is the transfer of ownership of assets from the public to the private sector or the application of private capital to fund investments in port facilities, equipment, and systems.”

More specifically related to the port sector are two more variations of privatization:

- Comprehensive privatization: A scheme in which a successor company becomes the owner of all land and water areas as well as of all the assets within the port’s domain (this is equivalent to the sale of an entire port to a private company).
- Partial privatization: A scheme in which only part of the assets and activities of a public port body are transferred to the private sector (such as the sale of existing berths, the transfer of pilotage or towage functions, or a concession by a public port authority to a private company to
build and operate a terminal or a specialized port facility).

Hence, privatization expands the role of the private sector in the ownership or operations of existing port facilities and services, as well as in the development of new port facilities. In the following sections, the various port reform options are described in greater detail.

5.1.1. Modernization of Port Administration

The strategies of liberalization, commercialization, corporatization, and privatization all attempt to improve the efficiency of the port administration and the operations through the introduction of a business-like environment. Although these strategies can be effective, some governments are reluctant to implement them because they fear that such institutional modifications may lead to a disruption of services or loss of government authority, prerogatives, and power. As a result, governments sometimes prefer other less sweeping methods to improve organizational performance, such as the modernization of the port's administration. Such a strategy assumes that the performance can be improved even in the prevailing environment of bureaucratic constraints. The advantage of this strategy is that certain changes in the organization can be made without the necessity to make legal or policy changes.

Examples of improvements that can be introduced without legal or policy changes are:

- Adoption of corporate planning practices.
- Application of human resources development (HRD) planning.
- Use of computer applications and management information systems (MIS).
- Development of electronic data interchange (EDI) and information and communication technology.

Many ports have refrained from introducing corporate planning (strategic management or strategic planning) because port managers fear that its positive effects may be undermined by bureaucratic or cultural considerations.

Effective corporate planning is dependent on strategy formulation involving group interaction. While group-based strategic decisions often can offer the best available alternatives, strict hierarchical organizational structure places the majority of important decisions in the hands of a single executive. In such cases, the success or failure of port development and policy is dependent on one person only, which is a risky situation. But this is precisely the most frequently observed form of management in traditional ports.

Career planning and management development are important elements in a port modernization strategy. Many ports have failed to introduce career planning and career development in the organization, or omitted to link the two activities. As a result, such organizations are characterized by low employee motivation levels, high absenteeism, and high turnover rates at management level positions. Efforts to improve the administrative environment and performance should include the rational use of computer applications and the application of modern communication technologies. Such developments are perhaps the most significant technological efforts undertaken by ports. Many have developed advanced computerized management information systems. EDI and information and communication technology are excellent tools to improve port administration and communication.

In the final analysis, the modernization option generally has not led to fundamental changes in the port sector, which is what the reform process sets out to do. It should, therefore, be considered as a stepping stone toward a more comprehensive reform program.

5.1.2. Liberalization

Liberalization sets the stage for a private organization to carry out certain port activities previously reserved exclusively for the public sector (public monopoly). With this reform, the private sector is authorized to provide selected port services to users in a competitive environment with the intent of increasing efficiency and improving port-client responsiveness. The essential feature
of the liberalization option is implementing legislation that permits the private sector to provide facilities and services and to compete with the existing public port organization. The most important advantage of this system compared to other port reform systems is that the public port operator, even if inefficient, will continue to exist as a form of insurance against disruptions in service, while unsuccessful private port operators can be replaced.

Since liberalization may temporarily introduce competition between public and private port operators, the two must be able to compete effectively and fairly. This might require the introduction of an independent port sector regulator. Actually, the logic of liberalization should lead the public port authority to fully withdraw from commercial activities and concentrate on any necessary regulatory functions.

Liberalization is often opposed because of the existence of internal as well as external cross-subsidies. This, for instance, occurs when ports with a statutory monopoly cross-subsidize unprofitable services in competitive markets with profits earned in monopoly markets. For example, in many ports the most profitable activity is the container terminal operation, the revenues of which frequently support bulk or general cargo facilities and services. Other forms of cross-subsidy occur when a public port organization realizes substantial revenues from nonmaritime-related activities, such as real estate development, and uses these revenues to underwrite port-related costs. With this type of support to draw on, the public organization has a competitive advantage over its private counterpart.

On the other hand, the price advantage that the public port body may have had diminishes as competition erodes its monopoly power and prices are set in a more competitive environment. Its price levels cannot match those of the private sector if it has to rely on inflated prices to subsidize other port services. The former monopoly may, as a consequence, be forced to scale back or cease the unprofitable activities (which, although unprofitable, may be vital to the nation) to compete effectively with the private sector.

On many occasions, the public sector continues to rely on public subsidies, thereby undermining fair competition between the public and the private sectors. This strongly argues for the clear separation of the regulatory and commercial roles in a port, with the port authority taking on the former and the private operator the latter.

Another potential problem associated with the liberalization option is the possibility that the public port organization will use other unfair practices to compete against private operators. The port authority, for example, may take actions that are beneficial to the public terminals, but are disadvantageous to the private terminals. One example is the dredging of certain Asian ports; often, the government ministry or the public port authority provides exclusive dredging services. This public entity can refuse to offer this service to the private operators, thereby putting those operators at a competitive disadvantage. Another possibility is that the service would be provided to the private sector at a higher price than the one charged to the public sector. To avoid such potential conflicts of interest, the government may also decide to liberalize or privatize these essential complementary services to create a level playing field.

Because of these situations, the logical conclusion for the liberalization option is for all commercial activities of the port to be ultimately transferred to the private sector.

### 5.1.3. Commercialization

Commercialization is the introduction of commercial principles and practices into the management and operation of a port authority or part thereof, requiring it to operate under market disciplines. The process can be achieved through negotiated performance contracts between the government, acting as the owner of the port, and the port management. The agreement specifies the port’s objectives in terms of performance goals, service quality, and social obligations. Commercialization is characterized by the following:
Decentralization of the decision-making process.

Relaxation of the hierarchy of the port organization, thereby allowing port management to exercise much greater control over:
- Budgeting.
- Procurement and purchasing.
- Maintenance strategies and programming.
- Salary scales and employment conditions of labor and staff.
- Hiring and firing.
- Setting objectives and performance targets.
- Formulation of strategies.

Essentially, commercialization aims to create an environment in which the port authority runs on a commercial basis. This involves a variety of business-type decisions. The chief executive typically has a certain freedom of action and refers only specific matters relating to overall policy or strategy to the controlling body (the relevant ministry or city council). Commercialization is designed to allow port management to conduct, to a large extent, its own affairs and at the same time imposes on it responsibility and accountability for its decisions and performance. In practice, however, a common problem has been that governments continue to interfere in port decisions, undermining the authority of port management.

Commercialization seeks to provide port managers with decision-making authority and responsibility similar to that existing in private sector organizations. However, since the port enterprise may still have substantial monopoly power, managers may not be confronted directly with the hardships and necessary discipline imposed by market competition. Therefore, a commercialized government organization often will not be as efficient as a comparable private firm, unless it is subject to competition.

Since the essence of commercialization is to require and empower port management to perform as well as the private sector, changes in the institutional and legal structures of the port organization are required to remove bureaucratic obstructions. A common first step in the process of commercialization and the elimination of bureaucratic inefficiencies is to transform the port organization into a truly autonomous port authority. Box 17 notes that the governments of China and Mexico followed this course.

Commercialization should result in the creation of a port authority board to oversee the organization’s activities, removing that responsibility from the central government ministry or city. At the same time, however, the government may still need to exercise some form of oversight to safeguard the public interest. Commercialized port authorities should:

- Be financially independent (own their assets, establish their own budgets, and make their own investment decisions).
- Have their own personnel schemes separate and distinct from the national civil service, patterned on the schemes of private companies.
- Have a management that is responsible for and held accountable for the port’s performance by a board. Board members can be appointed by the national or local government, port users, or representative labor organizations.

In many countries, the process of commercialization is only partially implemented because procurement and contracting practices remain subject to national government regulations.

A weakness of the commercialization process is that during its introduction, the acting public sector manager becomes the chief executive responsible for pushing through the changes in the organization. The manager’s performance and commitment to the commercialization of the port authority greatly influence the management team and the shape and pace of reform.
In other words, managers accustomed to civil service procedures and practices have to drastically change their management styles. This has proven to be a difficult transition and is the reason why, in many such processes, managers with private sector experience soon replace the former civil service senior management. A well-thought-out training program may be an effective tool to change attitudes and prepare management and staff for the different style and culture commercialization brings.

5.1.4. Corporatization of Terminals

The next gradation on the path to full privatization is corporatization. Corporatization goes further than commercialization in that it involves the transformation of the public port authority or part thereof into a corporation. This means that the port authority or one or more of its constituent parts, such as a port authority–operated container or general cargo terminal, is converted into a legally and financially independent legal entity with its own board of directors. The government or public port authority retains ownership in all shares of the venture. By applying market principles, the corporatized port authority is expected to function more efficiently. A corporatized port authority may also accommodate both national and local interests, as in the case in Poland. In the case of a publicly managed terminal, corporatization is usually the first step onto the road to privatization. Thus, a corporatized port authority, especially when based on a specific law, can be considered a permanent organizational structure while a corporatized terminal usually is a transitory organization.

Corporatization, then, is the process in which a public sector undertaking, or part thereof, is transformed into a company under private corporate law. This is achieved by selling shares in a new company that conducts the port’s business and holds its assets, although the shares are issued and may be owned entirely by the government (or port authority). The main objective is to decrease direct government control over the company and to make it more responsive to market forces. Similar to privatization, corporatization can include financial
Corporatization is, in effect, privatization without divestment. For political or legal reasons (often both), comprehensive or partial privatization may be neither appropriate nor possible. In such cases corporatization may offer an effective alternative for achieving more efficiency and greater market orientation. Corporatization usually features most of the following characteristics:

- A complete separation of the public management and regulatory functions from the commercial activities that are being corporatized.
- Clear and nonconflicting objectives for the new firm, set by the government.
- Greater management responsibility and autonomy for decisions on operations, investments, revenues and expenditures, and on commercial strategy.
- Where no market-based scrutiny is possible, performance measurement against a range of financial and nonfinancial criteria.
- Rewards and sanctions for managers based on performance.
- Government ensures that the corporatized firm does not have any comparative advantages or disadvantages relative to private port firms operating under similar market risks and conditions (for example, with respect to tax and interest rates).

Corporatization can be implemented either through incorporation under a commercial code as a limited liability company or as a statutory authority under its own articles of incorporation. The statutory option is the most common approach for corporatizing port authorities. In view of the public interest involved, it is also the most appropriate one.

During the initial phase of the corporatization process, the following principal actions are required:

- Preparation and enactment of any needed legislation, such legislation often serves to eliminate the state monopoly within the affected sector.
- Development of the company charter (for example, the memorandum and articles of incorporation) for the corporatized port enterprise, and its subsequent incorporation.
- Development of a corporate plan including traffic forecasts, a business development plan, and pro forma income statement and balance sheet.
- Capitalization and vesting of part of the assets and liabilities of the former public company in the new corporation.
- Creation of a new labor statute, provision of financial and social measures to cope with excess personnel (such as pension fund guarantees, redundancy payments, or retraining), and transfer of personnel from the former public entity.
- Retraining of management and staff to increase commercial orientation and improve managerial procedures.

The key difference from the other reform options discussed is that the goal of corporatization is to constitute the corporatized firm as a single, self-contained entity. The corporatized company’s management should be free from direct government interference or control (bureaucratic constraints) to allow them to operate the company on commercial terms. At the same time, management should also be held accountable for its actions.

The new corporation can be organized with clearer lines of communication and responsibility. Distinct targets can be set and adhered to. Stricter internal financial controls can be introduced and, where necessary, information and accounting systems established. This all seeks to make the business more aware of market and client requirements.

One of the corporatized terminal’s greatest strengths is its financial autonomy. This means that tariffs should no longer require approval from the government or ministry (unless it is a
monopoly environment and the government wishes to exercise strict control) and that the company should be allowed to establish its own procurement, contracting, and hiring and firing practices. In addition, such companies do not rely on government support for investments and have the authority to negotiate loans directly with commercial banks. The government, however, typically will continue to exert some measure of political control. Usually this is achieved through the appointment of board members.

### 5.1.5. Corporatization of a Port Authority

Among the reasons for pursuing corporatization over other alternatives are:

- To allow time for the management to settle into its new role before contemplating full privatization (as is the case of the Rotterdam Municipal Port Management, until January 1, 2004, a commercialized port undertaking).
- To overcome the reluctance of private capital suppliers to invest in the company.
- To protect the public interest.

Having completed the corporatization of port operational activities, subsequently one can consider the corporatization of the port authority as a regulatory body (for example, the case of the port enterprise of Antwerp).

Negative aspects of corporatization include:

- In a majority of cases, the new corporate entity still has a monopoly over the port land.
- Unless competition is created, the corporation may not be as efficient as anticipated.
- Governments are still able to politicize the corporatized firm by retaining the right to appoint board members and executive directors.
- There will often be a need to introduce a port sector regulator to create a level playing field among competing service providers.

However, the most problematic issue affecting corporatized port authorities is the mix of public and private objectives. The rationale behind this type of reform is the expectation that corporatized ports operate as viable and effective businesses. However, while part of the ports’ enabling legislation may state that they should pursue commercial objectives and operate as effective businesses, the public shareholders (ministers, commissionaires, aldermen, or council members) have responsibilities other than strictly commercial ones, such as the delivery of public goods.

There are two types of corporatization models. The first model’s goal is to transform former statutory authorities into government-owned enterprises. This means that a corporatized port authority would have a constitution consisting of a memorandum and articles of association that define the nature of the company and the manner in which the affairs of the company are to be conducted based on the “companies act” or “corporations act” in force. A regulatory body in existence should oversee performance of the newly formed port authority and ensure that conditions of the company’s constitution and of the applicable companies act are met. This model has been applied to Rotterdam Municipal Port Management.

The second model involves the creation of a statutory government-owned enterprise (corporation) by specific legislation. This would mean that there is the potential for some degree of public (national, regional, or municipal) input and scrutiny. It also means the introduction of tailor made provisions, such as those relating to accountability and public control.

The distinction between the models focuses on the issue of whether the organization is subject to corporate law or to the conditions of the statute and specific legislation. The difference between a company incorporated under corporate law or by or pursuant to a statute is that the company’s constitution spells out the nature of the company as well as regulations for the internal government of the company. This requires a rigid operating framework and a regulatory regime that ensures
that the conditions of the company’s constitution are neither breached nor abused to suit political or other gains.

Corporative port authorities established by law as government-owned enterprises, on the other hand, are quasi–private sector companies. They are expected to operate like their private sector counterparts, but are not subject to corporation’s law, instead they are subject to the provisions of the statute under which they were enacted. Under this model, the public sector holds a pivotal role in the structure and operation of the organization.

Ultimately, the choice of one of the alternative models when corporatizing a public port authority is a political issue. In some countries, (larger) ports are considered part of the public domain, representing vital public interest. Other countries view ports mainly as commercial entities. The quality of governance also plays a role. Stable and democratic countries will be less inclined to corporatize their port authorities, unless for very specific reasons, which often have little bearing on efficiency. In Poland, the ports were corporatized to combine state and municipal ownership of port land. In Australia, the policy for port reform was an endeavor to improve efficiency in the port environment, notably by distancing government from day-to-day operations. Box 18 describes the process of corporatization for the Aqaba Container Terminal in Jordan.

5.1.6 Privatization

Privatization can be either comprehensive or partial. The latter takes the form of a public-private partnership and is usually combined with the introduction of a landlord port authority. Comprehensive privatization remains an exception and is not a preferred option for major ports.

The reasons that might prompt governments or a port authority to enter into the privatization process are discussed below.

Removal of trade barriers. Outdated work practices, obsolete facilities, inadequate institutional structures, and excessive charges in ports cause inefficiencies that can create obstacles to foreign trade. Indirectly, the entire population of a country pays for port inefficiencies, which are reflected in the prices of both import and export commodities.

Harnessing the efficiency and expertise of the private sector. Increasing specialization in the shipping and port industry requires highly trained personnel, advanced systems and equipment, and capital-intensive cargo handling techniques to meet the fast changing demands of port users worldwide. Government-owned firms, with their cumbersome administrative procedures, poor cash flow generation, inflexible payment schemes, and lack of market orientation usually cannot cope with these requirements.

Elimination of political interference. Although there are countries with well-balanced political systems and minimal political interference in the functioning of the state- or municipal-owned port enterprises, the appointment of political nominees with inadequate experience to high level positions in government-owned ports is a well-known phenomenon. In contrast, privatization of port operations often results in the selection of professional port managers with an undiluted focus on the market and its changing needs.

Reduced demand on the public sector budget. Partial privatization does not necessarily mean a total withdrawal of the government from port investments. However, a large (often major) part of port investments can be undertaken by the private sector without compromising wider social and economic benefits. Development of a modern port still requires a balanced public-private financial package with balanced risk sharing.

Reduced expenditure on port labor. Government-owned enterprises traditionally have been a large source of direct employment; in the port sector, the greatest employment is in cargo handling services. A privatization scheme that maintains restrictive working practices cannot be effective. In the long run, creating an internationally competitive port system, with all its direct and indirect economic spin-off effects,
is more valuable than the short-term objective of maximizing local dock labor.

Other objectives. Governments sometimes pursue privatization for other reasons, such as raising revenues for the state treasury, disposing of assets, and encouraging competition and broader citizen participation in share ownership.

In its many variations, privatization usually includes the following core features:

- Divestiture (selling off government-owned assets).
- Deregulation.
- Competitive tendering.
- Private ownership of operational assets with market-based contractual arrangements.

In theory, privatization provides the same flexibility to management as commercialization.
Unlike under commercialization (where in the worst case scenario the government is likely to subsidize the company if it fails to perform adequately), a privatized terminal operation can be permitted to fail, provided other facilities can handle its traffic. Or, existing facilities may be taken over by a new operator who continues the operations. The management determines its own fate, free from significant government influence, as long as it complies with regulatory requirements.

6. REFORM TOOLS

Before deciding on a port reform process, governments should articulate clearly the ultimate goals of reform. Broadly, there are two alternatives:

- The public authority in charge of the port sector (either a service port or a tool port) wants to restrict its public role by privatizing cargo handling operations and other nonlandlord activities. In this case, existing operations have to be privatized or corporatized and service or tool ports reconstituted as a landlord port. Partial privatization is the goal.

- The public entity that has final responsibility for the port sector (most probably a national government) wants to privatize the entire sector, including responsibilities that generally are considered belonging to the public domain. Ownership of port land, planning, investment and management are all transferred to private sector entities, which have no formal commitments to any public institution. Comprehensive privatization is the goal (see Box 19 for an example of this type of privatization process).

This section focuses on the implementation of partial privatization, since that approach has been used successfully to balance public and private interests and still meet the objectives of port reform. Box 20 shows the spectrum of port reform tools that will be discussed in greater detail in this section.

6.1. Contracting Out and Use of Management Contracts

One tool available to governments to improve port efficiency and performance is contracting out to the private sector certain functions previously executed by the public port management. A public enterprise may decide to contract out certain of its operations through a tender-bid procedure instead of conducting them in house when the following circumstances apply:

- The functions can be performed at a price that is substantially lower than the cost of conducting them in the public sector.
- There is a large field for competitive bidding.
- Government policy is to transfer gradually certain noncore activities of the public sector to the private sector.

Contracting out, however, should be handled with caution as it involves several risks:

- If the number of potential bidders is limited, a meaningful comparison of the bids may not possible.
- Potential bidders may form a cartel or otherwise collude when bidding for a contract.
- Contracting out may create a monopoly for those activities, which would be contrary to the public interest, unless there is a proper regulatory oversight framework.

Also within the framework of commercialization, a separate contract for the management of the public port authority or public terminal operator may be awarded. Use of such a tool may be appropriate in cases where a port authority has experienced poor management for an extended period of time; the financial condition of the port authority needs to be substantially improved with a view to its corporatization or privatization at a later stage on terms favorable to the ministry of finance of the country concerned; or the port authority would generally benefit from the introduction of private management.
The usual practice is for the government to agree on a management contract with a private sector operator. The operator agrees to employ the existing port staff and to provide adequate and efficient service to all customers. This former requirement (retention of existing staff), however, often emerges as the main reason for the failure of management contracts (for example, the Port of Mombasa). The management company may be saddled with excess labor and labor costs that cannot be sustained in a competitive market.

A management contract is usually entered into for a specified period, generally between three and five years. Upon expiration of the contract period, it may either be renewed or awarded to another party. A management contract may also be used as a stepping stone toward the granting of a more extensive concession. It is important when entering into a management contract that the government or ministry has the right to impose financial penalties or terminate the contract in case the private operator does not meet specified minimum levels of efficiency, financial performance, or throughput.

6.2. Concession Arrangements

In concession agreements, governments are still widely involved in port management, mainly...
through public landlord port authorities. At the same time, the role of private enterprise in the sector will continue to grow. Service and tool ports will gradually disappear and be transformed into landlord ports; in some cases, fully privatized ports will emerge. For landlord ports, public bodies will retain the ultimate ownership of assets (especially land), but will transfer a major part of the financial and operational risks to the private sector. Governments will act mainly as regulators and land developers, while private firms will assume the responsibility for port operations. The main legal instrument used to achieve this realignment of public and private sector roles and responsibilities is a “concession.”

Concessions are widely used in the port sector today. A port concession is a contract in which a government transfers operating rights to private enterprise, which then engages in an activity contingent on government approval and subject to the terms of the contract. The contract may include the rehabilitation or construction of infrastructure by the concessionaire. These characteristics distinguish concessions from management contracts on one end of the reform spectrum and comprehensive port privatization on the other. Concessions, by permitting governments to retain ultimate ownership of the port land and responsibility for licensing port operations and construction activities, further
permit governments to safeguard public interests. At the same time, they relieve governments of substantial operational risks and financial burdens.

There are two main forms of concession used in ports today: lease contracts, where an operator enters into a long-term lease on the port land and usually is responsible for superstructure and equipment, and concession contracts, where the operator covers investment costs and assumes all commercial risks. Such contracts are often combined with specific financing schemes such as BOTs.

Lease contracts and concession contracts share the same principal characteristics:

- The government or public port authority conveys specific rights to a private company.
- They have a defined term (10–50 years).
- They are geographically delimited.
- They directly or implicitly allocate financial and operational risks.

6.2.1. Leasehold Agreements

Landlord ports derive a substantial part of their income from leases. Typically, only land or warehouse facilities are leased. Berths may be included or excluded from the lease rent. If excluded, the port authority collects and keeps all revenue derived from berthing fees. There are two basic forms of leases most commonly in use today: flat rate and shared revenue leases. Both types of leases can be used for multiuser as well as single-user (dedicated) terminals or berths.

Flat rate leases give the lessee the right to use a fixed asset for a specific period of time in exchange for periodic payments of a fixed amount. In the case of a land lease, this can be a fixed payment per year per square meter. Lease rates may vary depending on the degree of port site development (for example, unpaved versus paved land or land with or without structures). The main advantage of this form of lease is that the lease rent is known to both parties in advance. The flat rate lease also provides to the lessee the greatest incentive to fully use the available capacity of the terminal.

The main characteristics of the flat rate lease are:

- A specific sum of money is paid per square meter of port area for a specific period of time.
- In principle, the lease represents a fair return to the port authority on the value of the property.
- Lease payments may be adjusted for inflation over the life of the lease.

To set lease payments at the proper level, the port authority must be able to forecast accurately the level of business (and, hence, the wear and tear on port infrastructure and the traffic from which the lessee will benefit). It should also try to assess the true value of the land (for example, in its best alternative use) and attempt to recover this value through the anticipated level of business transacted by the lessee. Because the lessee must make the same lease payment regardless of the revenue his business generates, he has a strong incentive to make full use of the leased land and structures. A flat rate lease is often the preferred form of lease for a port whose primary objective is to maximize throughput and benefits to the local economy.

In a shared revenue lease, the lessor also gives to the lessee the right to use a fixed asset for a fixed period in exchange for a variable amount of money. With a shared revenue lease there is a minimum payment regardless of the level of activity, but no maximum payment. The main characteristics of the shared revenue lease are:

- A minimum level of compensation.
- No established maximum level.
- Maximum compensation depends on the facility's capacity.
- Minimum compensation may not fully cover the interest and amortization of the lessor (port authority) for the lease area.
A shared revenue lease represents true partnerships between the port authority and the lessees. Under this arrangement, the port must carefully determine the minimum lease payment, taking into consideration its financial obligations, its own forecasts of traffic volumes, and its statutory and business tolerances for risk. Once minimum throughput levels are attained, the lessee and the port share the benefits deriving from any additional activity. The shared revenue lease is the only approach in which the port authority can maximize revenues, employment levels, and throughput. Along with this potential for added rewards, however, come added risks.

Box 21 shows how the two different forms of lease would work for a notional terminal.

Potential lease partners for a port authority are:

- Terminal operators.
- Cargo handling companies.
- Dedicated terminal operators and shipping lines.
- Forwarding agents.
- Inland transport operators.

Today it is increasingly common for shipping lines to lease terminals from port authorities. For these leases to succeed for all parties, however, two key conditions should exist: the shipping line lessee should generate a large volume of cargo at the port (that is, it should be a major customer), and the port should possess additional facilities of the same type leased to the shipping line to prevent creating a monopoly (a public access facility should be available).

If the port does not have other similar facilities (and other customers), the creation of a monopoly may conflict with the interests of both the port and the national economy. In this respect, the following points should be kept in mind:

- Shipping lines may, at any point in time, decrease, reroute, or altogether halt their services as a result of changes in financial conditions or shifts in patterns of trade. A well-known example of this is the cancellation of the round-the-world service of United States Lines in the 1980s.
- Shipping lines often merge or enter into cooperation agreements (alliances) with other shipping lines. Such practices may result in changing sailing schedules or the establishment of special ties with other ports.
- Shipping lines may reorganize their sailing schedules for reasons of internal policy.

Box 21: Comparison of Lease Systems

![Diagram showing comparison between flat rate lease and shared value lease based on lease payment and traffic volume.]

Source: Author.
Signing a lease contract with an operating company may be less risky than with a shipping line because the operating company usually does not rely on a contract with one single user, but will spread the risks and safeguard its business interests by having contracts with several clients, and in the case of a contract with a locally incorporated port operator, should a legal (contract) issue arise, it is generally easier to enforce liens and other measures needed to compel lease compliance than in the case of a company whose home base is in another country.

Which form of lease is to be preferred? In general, one may conclude that if the port’s principal objectives are to maximize throughput and provide maximum benefits to the local economy through increased employment, a flat rate lease may be preferable. This is often the case when a port is newly established and wants to develop its business. Or if the port’s principal objective is to maximize revenues, with an initial need to subsidize the terminal lessee, the shared revenue lease may be the optimal choice.

### 6.2.2. Concession Agreements

A landlord port for the most part does not involve itself directly in port operations. Instead, private port operators and service providers conduct their business independently and compete in the market. The port authority acts as a neutral landlord promoting the port as a whole. Together, they represent the interests of the entire port, with the port authority in the lead.

Relations between the port authority and the private sector cover two areas: commercial relations based mainly on concession and lease agreements, and relations based on the public oversight functions of the port authority, such as enforcement of port bylaws, dangerous goods regulations, and vessel management.

Relations between landlord port authorities and private port operators have become increasingly complex, and the alignment of responsibilities have further shifted. One of the valued features of a landlord port is its clear division of responsibilities. Each party is distinctly aware of its rights, liabilities, and financial responsibilities. Moreover, many governments today are seeking to diminish their financial involvement in ports and to use private sources to finance new port development, including construction of basic infrastructure such as quay walls. This implies not only an increased role for the private sector in port development, but also increased financial exposure. In such situations, a simple and straightforward lease contract often is not sufficient to cover all responsibilities and liabilities. As a result, a more complex contractual relationship, a concession agreement, has been developed.

The primary objective of concession agreements is to transfer investment costs from the government to the private sector. Concessionaires are obliged to construct and rehabilitate infrastructure and operate a facility or service for a fixed number of years. Concessions may be “positive,” when a concessionaire pays the government for concession rights, or “negative,” when the government pays a concessionaire for the services it provides under the agreement.

The benefits of concessions in the port sector include:

- Better and more efficient port management (especially port operations) performed by private operators.
- Avoidance of the drawbacks associated with monopolies through the inclusion of detailed concession conditions.
- The application of private capital to socially and economically desirable projects, freeing up government funds for other priority projects.
- Under certain circumstances, the creation of new revenue streams for governments.
- The transfer of risks for construction, finance, and operation of the facility to the private sector.
- The attraction and use of foreign investment and technology.
Disadvantages associated with concession contracts include:

- The need for continuing close government regulation and oversight.
- The system requires a legal framework that permits transfer of land rights to a private party.
- Winning bids are sometimes based on unrealistic financial projections, placing the sustainability of the concession agreement in jeopardy.
- The danger that a concessionaire will not properly maintain the facilities under concession, returning them to the government in bad condition, or the danger that the concessionaire and the port authority disagree on the operational need for and financial feasibility of critical investments.

Concession agreements are often developed as a part of a BOT scheme and represent specific agreements between a government or port authority and the special purpose company (SPC) established by the concessionaire to carry out construction and operation of a port development project. Under concessions, the ultimate ownership of the affected assets is retained by the national or local government, or by the port authority. At the same time, part of the commercial risks of providing and operating the assets is transferred to a private concessionaire.

In agreements involving an SPC, a port authority should ensure that:

- The SPC provides adequate service throughout the term of the concession.
- The SPC observes relevant safety and environmental protection standards.
- The charges levied on port users are reasonable and do not endanger the competitive position of the port.
- The SPC performs proper maintenance and repair of all assets to ensure that on their return at the end of the concession, the port authority receives an operational project and facilities in good working order.

The port authority may (depending on legal strictures) hold a financial interest in the SPC created by the concessionaire, or it may not. If the port authority chooses not to participate financially in the SPC responsible for developing the port assets under a concession contract, then its role as an independent and impartial public entity does not significantly change. The only real change is in the shift in responsibility for investments from the port authority to the concessionaire.

If a port authority not only enters into a concession agreement with the SPC, but also participates in the company as a shareholder, then the port authority’s role changes more dramatically. By investing risk capital, the port authority becomes more directly involved in port operations. Sometimes this situation is prohibited by law (Poland). If the venture has a monopoly in the port (such as having the only container terminal), the situation might be acceptable, although a conflict of interest may arise between the roles of port authority as an investor and as the regulator of the monopoly. If the venture competes with other terminals in the port, however, participation of the port authority in the SPC will give rise to a serious conflict of interest and will undermine its independent, neutral position.

Depending on the specific situation, a concession agreement may consist of a combination of contracts including:

- A leasehold agreement on nondeveloped land, the formal document under which the port authority grants the SPC possession of the concession area.
- A terminal access agreement, which regulates the SPC’s access to the concession area, and also the access by the port authority to the area.
- A port services agreement, which regulates the provision by the port authority...
to the SPC of various port services such as pilotage, towage, and dredging.

• A sponsor’s direct agreement, which is an agreement between the government or port authority and the SPC dealing with the issue of competition.

• A design contract between the SPC and a technical consultant for the design of new facilities (the port authority usually has no direct control over who does the design work or the terms of appointment, but often retains the right to review any design).

• A building contract between the SPC and a construction company for construction or development work (with the port authority typically exercising some form of quality control).

• Financing documents drawn up between the SPC and its lenders to provide finance for port development; a port authority may provide partial financing.

• A management contract between the SPC and its chosen manager (operating company) for provision of management services in operating the port.

Generally, a typical concession agreement will clearly set out the terms relating to:

• The land, facilities, and cargo handling equipment included in the concession.

• The functional requirements of the port or terminal, the proposed design solution for any construction, the construction program, and time schedule, including milestones.

• Rights and responsibilities of the concessionaire and port authority (concession sponsor) with respect to the completion of the construction program.

• Human resources development and the employment of former port authority employees, if applicable.

• Activities permitted to be carried out in the concession area.

• Equal access to common areas in the port.

• Payment of fees, royalties, revenues, and canon (lease rental) to the port authority.

• Maintenance requirements for infrastructure, superstructure, and sometimes equipment.

• Termination of the concession.

• Return of land, facilities, and equipment after the concession period has expired.

• Other issues as may be required.

It is common practice that during construction, the concessionaire and the port authority use an independent test certifier to certify that all work has been carried out in conformity with the requirements of the concession agreement. Upon the return of facilities, the SPC should be required to carry out any work needed to bring them up to an agreed-on standard. Accordingly, provisions must be included to inspect facilities and identify any deficiencies.

A concession agreement for a greenfield project is less complicated than the takeover of an existing terminal or port. In such a case, no personnel or existing facilities are acquired by the SPC. However, a terminal access agreement still must be drawn up between the government or port authority and the SPC to cover such things as the building of access roads and rail, the provision of water and electricity, and other facilities.

6.2.2.1. Master Concession. In some instances, port reform is implemented through a master concession contract, which enables a private operator to carry out many of the port functions. This type of contract has rarely been used, but it is an option. Usually, the principal choice is between granting a full master concession, in whatever form, and implementing a landlord port structure comprising the public port authority and private terminal operators. The choice between the two options considerably influences further port privatization process.

When choosing a master concession, the government leaves the unbundling of port activities for a large part in the hands of the concessionaire.
It might also be expected that retrenchment costs resulting from granting a concession would primarily be borne by the government.

The government should allow the concessionaire enough freedom to structure its business according to its own requirements, otherwise the exercise does not make much sense. Lack of freedom will lower the concession’s attractiveness. To make a master concession attractive for a private investor, the concessionaire should be allowed to unbundle the port business in the way it thinks fit. On the other hand, introducing a landlord port system will require a much more active role for the government in structuring the various concessions of terminal and marine activities, as well as reorganizing the port authority.

6.2.2.2. BOT Arrangements. A landlord port authority is typically responsible for constructing fairways, quay walls, and terminal areas. Such construction is usually based on a port master plan and carried out in close consultation with the future operator. Sometimes construction of such facilities has already started before agreements have been concluded with the prospective operators. This may be the case when the market demand is strong and the port authority is confident of finding clients and is prepared to take the risk that port capacity will go unused. As a rule, port authorities should permit private operators to finance most of the additional capacity (including the quay wall expansion). The port authority can then concentrate on access infrastructure and protective works relating to port extension and on renovation projects. Port authorities may sometimes have difficulties amassing the investment funds from dues or retained profits. In such cases, they have sought to acquire funds either from an IFI (such as the World Bank) or from private lending institutions. For specific port facilities, such as container or bulk terminals, private funding can be arranged through a concession agreement as described above. BOT schemes are a specialized form of concession designed to increase private financial participation in the creation of port infrastructure and superstructure without changing the landlord structure of the concerned port (see Box 22).

When designing BOT schemes, it is important to consider carefully which parts of the port can be concessioned and which parts should remain with the port authority. Generally, BOT schemes can be applied to all assets that can be exploited as a separate business. Key among these are:

- **Fairways and channels**: This part of the port infrastructure can be concessioned under a BOT scheme to require the concessionaire to dredge and maintain the fairway (and, optionally, to operate aids to navigation) for a specified period during which it derives an income from vessels using the fairways under an agreed fare system (for example San Martin-Rosario Fairway, Argentina, described in Box 23).

- **Terminals**: BOT schemes are usually applied to specific terminals. There are many examples of such terminals, such as the former P&O terminal at Nhava Sheva, India; the South Asia Gateway Terminal at Colombo; the Aden Container Terminal; and the Port of Buenos Aires, Argentina.

- **Entire port complexes**: A BOT structured as a master concession contract could cover an entire port complex comprising various terminals. Here, the SPC (or port operator) assumes de facto the role of a landlord port authority for the assets it has agreed to construct. The master concessionaire then offers subleases of various terminals to third parties. Such a scheme can approach comprehensive privatization. The only real distinctions are that under a BOT and master concession, the transfer of assets is temporary and the concessionaire has no regulatory responsibility for marine safety, environment, or vessel traffic management. There are no examples of effective implementation of this type of BOT master concession scheme, but new legislation in Madagascar provides for une concession globale, which is the equivalent to a master concession for small ports of local interest.

Other port assets cannot be easily concessioned as individual items. The most important of
these are assets such as breakwaters, piers, connecting channels, intraport roads, and other common areas. These assets, however, can be part of a master concession agreement or a comprehensive privatization scheme.

A carefully crafted concession is central to the implementation of a BOT scheme. The concession contract gives the concessionaire the right to run the facility (with limited and clearly defined government oversight) and earn a commercial return on investment. The concession or BOT agreement, with the required business plan, will set out estimates of the likely revenues, costs, debt repayment, and profit for the SPC. This information is necessary to assess the project’s financial viability and its debt repayment capacity. Many planned BOT projects fail because their terms are negotiated without taking into account whether or not the project is bankable. Governments often try to negotiate a BOT arrangement at an early stage in the project preparation cycle, before the full scope of the project is known and before a regulatory oversight regime has been decided. While this might generate significant revenues for the government in the short run, it may saddle the concessionaire with an impossible-to-complete project. There are many variants of BOT-like schemes, including:

- **Build-own-operate** (BOO): Full privatization of the terminal because the port land and the facilities built on it are not returned to the government or port authority.
- **Equip-operate-transfer** (EOT): Port infrastructure already exists, but superstructure is supplied by the SPC.
- **Build-transfer-operate** (BTO): New port facilities are directly transferred to the competent authority (government or port authority).
authority) immediately after construction. Under BTO schemes, the ownership of the assets being financed has been an issue for lenders who require asset-based collateral to secure bank loans. With BTO schemes, the only collateral is the concession contract itself, which may be insufficient. BTO schemes are necessary in countries where legal strictures do not permit private ownership of main port infrastructure (for example Croatia, Italy, Costa Rica, and the Republic of Korea).

- **Build-own-operate-transfer (BOOT):** Ownership of land and facilities conveys to the concessionaire, but is transferred back at an agreed-on price at the end of the concession period.

A special case is the wraparound BOT (WBOT); this scheme is used in the case of expansion of a government-owned port facility by the private sector, which would hold title to the expansion only. Under such a scheme, the SPC would:

- Operate the entire port facility under a project development agreement.
- Manage the government-owned section under a management contract.
- Expand the facility under a BOT contract.

**In many cases, the government effectively becomes a partner in a BOT arrangement by investing in certain portions of the infrastructure.** Private parties appear to be reluctant to invest in basic port infrastructure, not only because it makes it more difficult to price use of infrastructure in a manner that permits the concessionaire to realize a reasonable return on the investment, but also because these assets

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**Box 23: San Martin-Rosario Waterway Concession**

To export its products, particularly grains and cereals, Argentina depends largely on its waterways. Before 1995, the main Argentine waterway, the River Plate to Santa Fe (some 589 kilometers), was a hazard to navigation. The water was not deep enough and the river was poorly maintained. The depth of the waterway had silted up from 32 feet to 24 feet, and navigation at night became impossible.

To improve the waterway, the Argentine government issued a concession contract to deepen and maintain a 700 km plus stretch of the river and to provide aids to navigation according to IALA (International Association of Marine Aids to Navigation Lighthouse Authorities) standards. After a lengthy tendering process, Hidrovia SA (a joint venture between the Belgian dredging contractor Jan de Nul and Empema SA, an Argentinean industrial group) signed a concession contract to upgrade the waterway. The 10-year contract represents a total value of around $650 million, of which a significant part will be realized from tolls on vessels using the safer and deeper fairway.

The first phase of the work included deepening the River Plate from Punto Indio to the Parana River and up the Parana Inferior to Puerto San Martin to a depth of 28 feet. A second part of this phase consisted of deepening of the Parana Medio up to Santa Fe to a depth of 22 feet. Finally, this phase included reinstallation and conversion of some 500 buoys and beacons to enable panamax-sized ships to navigate safely through some particularly difficult stretches of the river.

The second phase included deepening the river channel from 28 to 32 feet.

An important feature of the project was the toll, which could be applied to the entire waterway once phase 1 was completed. The toll is calculated on a vessel’s net registered tonnage and maximum draft, taking into account the services actually offered by the concessionaire. The toll is levied on all ships with a draft greater than 15 feet and is set at $1 per net register ton. Ships with a draft less than 15 feet are charged every three to six months at a reduced rate. The waterway is divided into sections and subsections, and a ship is charged only for the sections and subsections actually transited. The concessionaire is responsible for collecting the tolls, while the Prefectura Naval has the authority to deny port clearances to any vessel failing to make payment.

*Source: Author.*
are largely immobile and have no comparable alternative use. Political instability, change of control, antiprivatization backlashes (nationalization), unexpected new tax regulations, and other governmental actions could make comprehensive BOT schemes much less attractive.

6.3. Comprehensive Privatization

Comprehensive port privatization has, until now, been developed only in the U.K. and in New Zealand. Outright sale of port land combined with a transfer of traditional public port tasks, such as safety and environmental oversight (for example, harbormaster’s tasks), remains an exception. Other countries have introduced significant privatization schemes, but mostly with respect to port and terminal operations.

Comprehensive port privatization often requires the enactment of new laws, both to regulate the transfer of ownership and functions from the public to the private sector and to define the borderline between redrawn public and private responsibilities and tasks. Such legislation should establish:

- Authority for the port authority to establish a new successor company or companies to take over all or part of the authority’s business.
- The right of the successor company to issue shares, either to the authority or to a third party.
- The time and manner for selling or otherwise distributing the shares to third parties, as well as for a payment to the successor company from the proceeds of the sale.
- The basic authority and mechanisms needed for the government to shape and direct the privatization.
- A levy on the proceeds of the disposal of shares of the successor company (in the U.K. this levy was set at 50 percent of the net proceeds of the sale).

- A levy on profits accruing to the successor company as a result of the disposal of port land transferred under the privatization scheme (in the U.K. this levy was set at 25 percent of the profit during the first five years, 20 percent during the next two years, and 10 percent during the last three years of the levy period).
- Provisions for the transfer of port authority personnel to the successor company (for example, the number and categories of personnel, salaries, benefits, and pension rights) or their dismissal (for example, separation package, retraining allowance, rehiring preferences).
- Terms for the transfer of public tasks, such as aids to navigation, pilotage, handling of dangerous goods, and protection of the environment to the successor company or other entity.
- The tax regime applicable to the successor companies.
- Authority for the government to dissolve the port authority once it is satisfied that the objectives of the enabling legislation have been met and to transfer all remaining property, rights, and liabilities to the successor company.

Privatization legislation may include additional elements, depending on the local situation, the structure of the former port authority and the specific legal, institutional, and socioeconomic situation in the country concerned.

In the U.K., the benefits of comprehensive port privatization most often cited are:

- The generation of revenue for the treasury.
- The ability of privatized companies to diversify their businesses.
- Greater access to capital markets.
- The removal of restrictions on investment and borrowing.
- The introduction of new industrial relations practices.
A more commercial and entrepreneurial approach to management of the business.

Greater competition.

These features, it was argued, would result in improvements to the port system’s financial and operational performance. Note, however, that not all of the above-mentioned benefits are due exclusively to comprehensive privatization; other port reforms may generate similar benefits.

A vast majority of maritime nations considers comprehensive privatization to be incompatible with national and regional interests. Specific reasons why governments and port authorities have refrained from pursuing full privatization are diverse, but often include one or more of the following:

- A public monopoly can easily become a permanent private monopoly.
- The macroeconomic benefits of large port complexes to the regional and national economy are perceived to be threatened by comprehensive privatization.
- The danger of discriminatory treatment of customers.
- The risk that, in practice, privatization may undermine competition.
- Fear of overinvestment in and duplication of dedicated terminals for major clients, which could unbalance demand for additional public transport infrastructure.
- Neglect of the port’s public service function.
- Reluctance of labor unions to abandon government protection and their fear of losing jobs.
- Reluctance of public authorities to lose political control, including patronage.
- Reluctance of public authorities to lose income generated by the port business.

Background on the U.K.’s port privatization is provided in Box 24. After more than 10 years of experience, some conclusions can be drawn concerning the U.K.’s implementation of comprehensive privatization. Generally, the U.K. model of port privatization is highly determined by local factors and ideological considerations that are unique to the British experience. However, it appears that:

- The valuation of port assets sold to private parties was judgmental because there was no established market during the time of privatization. Subsequent trading of port shares suggests that the original prices were only 25 percent of their true market value.
- Ports were sold at significantly discounted prices. Discounted sales (in addition to the ruling that 50 percent of the sale proceeds from disposal of Trust Ports should be returned to the buyer) significantly reduced the original debt of the new port company. Certain privatized Trust Ports, therefore, realized very high profits (as high as 20–30 percent of turnover) at the expense of port users and taxpayers. Although difficult to prove, privatization via a concession, rather than outright sale, would probably have raised considerably larger revenues for the public treasury.
- Transfer of port regulatory functions to the private sector has raised serious issues. The new privatized ports are essentially self-regulating and have little incentive to safeguard and enhance inter-port competition. The driving force behind the new port owners is corporate interest rather than public interest. The question, then, is who protects the public interest?
- In terms of investments and profits, privatized U.K. ports have done better than the still-existing public ports. Privatization led to an injection of cash, but only for purchasing existing assets. Former Trust Ports claimed that investments were hampered by financial institutions looking only for short-term returns.
The United Kingdom (U.K.) is the only example of a country with lengthy experience in comprehensive port privatization. A number of ports in the U.K., however, still operate in the public domain. It is instructive to analyze the U.K. experience to discern the circumstances leading the U.K. to adopt a comprehensive privatization approach.

The U.K., an island where no significant city is more than 100 miles from at least two ports, has strong competition among its ports. Thus, there appears no need for antimonopoly controls specifically for the ports industry, other than those provided generally by the Monopoly and Mergers Commission for Industry.

Over the last 50 years, British port structures have evolved in response to three principal needs:

- To modernize institutions and installations, many of which dated back to the early years of the industrial revolution, to make them more responsive to the needs of users.
- To achieve financial stability and improve financial performance, with an increasing proportion of financing coming from private sources.
- To achieve labor stability and a degree of rationalization followed by a greater degree of labor participation in the port enterprises.

In the U.K., chronic labor unrest and outmoded work rules constituted major reasons for port reform. In fact, the Ports Act 1991, which started the full privatization process, was introduced and could be successful only after the abolition of the National Dock Labour Scheme of 1989. This scheme gave port workers a virtual guarantee of lifetime employment, contributing heavily to inefficiency and subsequent poor financial performance in the port sector.

One of the main structural problems of the port system in the U.K.—especially among Trust Ports—was the composition of their boards, which were defined in statutes. These boards tended to be strongly representative of port users, who were by nature reluctant to authorize tariff increases sufficient to generate the revenues needed to allow for depreciation and subsequent reinvestment in port facilities. Those tariff increases that were authorized tended to be offset by increasing labor costs, which increased steadily as a result of pressure from organized labor, supported by the National Dock Labour Scheme. The ports, therefore, operated with inadequate surpluses and with depreciation allowances based on historical costs. Without substantial surpluses, the ports had to raise the money they needed for their modernization from fixed interest loans and bonds. The net result of these factors was that the port operated with net deficits, leading to decapitalization over the postwar period, up to around 1970.

The main instrument for port privatization in the U.K. is the Ports Act 1991. This law provides for the formation of harbor authorities of limited companies under the Companies Act, and for the subsequent sale of their shares. All property, rights, liabilities, and statutory functions are transferred to the new port companies. Ministerial approval is required for the sale of shares and for the subsequent dissolution of the harbor authority. The company has to pay the government 50 percent of the proceeds of the sale of shares, less any amount set aside for assistance to maximize employee participation. If the company later sells port land, a 25 percent levy is charged on the proceeds of sales during the first 5 years, 20 percent for the next 2 years, and 10 percent for the years 8 through 10.

Under the Ports Act, after July 1993 the Transport Secretary could, in the case of harbor authorities with annual revenues of more than £5 million, initiate privatization of an unwilling harbor authority, unless that authority articulated compelling arguments against it.

Privatization began before the Ports Act 1991. The Thatcher administration privatized the British Transport Docks Board (BTDB) under the Transport Act 1981. Subsequently, the Associated British Ports was established, floating 49 percent of its shares in 1983. The BTDB’s management formed the first management of the new company. The privatization of BTDM was notable for its vigorous development of national resources.

Another form of privatization was applied to another group of nationalized ports, the Sealink Harbours (British Railway Board). These ports were sold to Sea Containers Ltd. by negotiated tender.

These experiences encouraged discussions among the management of a group of Harbour Authority ports in favor of privatization by means of a management buy-out (MBO) or
Box 24: Impetus behind Full Privatization in the United Kingdom (Continued)

management/employee buy-out (MEBO). The legislative mechanisms needed to implement such reform are complicated, requiring the promotion of a private bill. This is costly and time consuming and may—in the event of opposition by interested parties—result in unwelcome modifications to the original bill. As a result of the perceived uncertainties associated with this process, only a few ports opted to pursue this course.

Source: Author.

- The abolition of the National Dock Labor Scheme had a more profound effect on labor stability than the selling of port land.
- Where terminals were already privately operated (landlord ports), selling the underlying port land made little difference. For example, port land at Dover (a former Trust Port) or Portsmouth (a municipal port) did not affect port output because port operations in both ports were already in private hands.
- Some nationalized and Trust Ports were sold under a M(E)BO scheme to former public officials. These managers reaped windfall profits by selling their shares at a later date.
- There are limited possibilities for port cities to redevelop obsolete port land. On the other hand, land speculation by privatized ports has become a reality because older port facilities are often situated near the valuable real estate of city centers.

The U.K. experience, therefore, has yielded very mixed results and provides few arguments supporting comprehensive privatization (the sale of port land and transfer of all public functions to the private sector) when other, less radical reforms can achieve the same objectives.

6.4. Ports as Transport Chain Facilitators

Increasingly, major terminal operators are trying to secure their strategic position by offering complementary terminal facilities located either in the foreland or hinterland. This practice is most apparent in connection with containerized cargoes. In the event that an operator engages in operating other facilities such as inland terminals, rail facilities, or even entire port complexes abroad, its objectives and motivations are broader than those of a localized operator.

The phenomenon of supply chain management can for instance be well observed in the Port of Rotterdam, where very large crude carriers (VLCCs) discharge crude oil from various oil producing countries. Rotterdam has a virtual monopoly in this traffic in Northwestern Europe as a result of its very deep access channel to the North Sea (78 feet). Pipeline systems have been constructed to connect the port with various refineries in the hinterland, such as in Belgium and Germany. Thus, the inland transport chain is effectively controlled by one port, creating a stable environment for the transport of crude oil as well as an attractive location for balancing refineries. The Rotterdam Municipal Port Management was instrumental in developing the pipeline systems.

Some port authorities also seek to attract customers to their port facilities by facilitating or cofinancing terminal facilities outside their port area. This more expansive view of a port authority’s role has the potential to influence traditional port management structures, particularly in ports structured on the landlord model.

A port authority’s involvement in terminal operations beyond its homeport may not be focused solely on improving logistics chains. The main objective might be to maximize the port authority’s revenue by making more widespread use of its operational expertise and management, especially in the case where the port authority acts as terminal operator as well.

Port authorities seeking to become transport chain facilitators should be aware of possible conflicts of interest and the potential loss of their neutral position. Managing a port area, including attendant public functions, is different from optimizing a logistics chain, which can be considered a supporting function for the ports.
industry, and for that reason essential from a competitive point of view.

The PSA Corporation is a prime example of globalization of terminal operations. Since its establishment, it has become a leading player in the global terminal operating business and today owns, manages, and operates a chain of container terminals and logistics hubs throughout the world. Before taking on this expanded role, PSA had to change thoroughly its legal structure. Box 25 describes this transformation.

7. MARINE SERVICES AND PORT REFORM

This section discusses a variety of marine services and how they are affected by port reform.

Special emphasis is placed on how these services might be outsourced, concessioned, or privatized. Marine services are port-related activities conducted to ensure the safe and expeditious flow of vessel traffic in port approaches and harbors and a safe stay at berth when moored or at anchor. “Safe” means that port conditions ensure that vessels using the port, the port environment, and the marine environment are protected from danger. “Expeditious” means that vessels are not unduly delayed and that the vessels’ port transit times, as a part of the total turnaround time in the port, are kept to a minimum.

Although ports may define marine services differently, and may have different methods of providing them, in this section the term is used...
to refer generally to services having a nautical bearing, be it maritime safety, vessel traffic efficiency, or marine environment protection.

Other services (for example, fire fighting, immigration and customs services, security, and port state control) may also affect port efficiency and safety. While important to the overall operation of a port, these other services are not dealt with in this section.

The specific marine services rendered by a port authority depend largely on the scope of the port’s marine responsibilities and jurisdiction. The scope of the ports’ marine jurisdictions does not follow a general rule, and there exists no international legislation or standard practice that defines the responsibilities of port authorities. Usually, marine services rendered by a port authority are geographically delimited by the area directly under control of the authority, which may encompass only the waterfront of riparian berths (the port’s domain). However, there are countries where the port authority is also responsible for managing lighthouse services outside its immediate area of control. This extended area may cover harbor waters and approaches as far as the open sea.

### 7.1. Harbormaster’s Function

Generally, the harbormaster (or port captain) manages port activities relating to maritime safety and the protection of the marine environment. The legal basis of the harbormaster’s function is usually embedded in a port bylaw or, in the case of a state-owned port, in a specific law or ministerial decree. The harbormaster often has specific legal powers to act in emergency situations. Typically, the harbormaster is part of the port authority organization and heads the marine department. In some countries, the harbormaster may work for an independent public entity such as the coast guard.

The harbormaster is responsible for ensuring the efficient flow of traffic through port and coastal waters (including allocation of vessels to public berths) and—on behalf of the government or port authority—for coordinating all marine services. The harbormaster operates out of a port coordination center (or Captain’s Room), which is often part of an elaborate vessel traffic management system.

Frequently, harbormasters have police powers and act as head of the port police. The main functions of such police are enforcement of the port bylaws, especially with respect to traffic regulations, protection of the environment, and accident prevention. When part of a port authority, the harbormaster also usually serves as head of the pilotage service. In the event that the pilotage service is not part of the port authority, the harbormaster is responsible for coordination between this service and port users. Finally, the harbormaster is sometimes responsible for regulatory oversight of the carriage and storage of dangerous goods in the port area as well as for ensuring the proper use of port reception facilities.

In view of the public character of the harbormaster’s responsibilities, this function is rarely privatized. To do so would raise a conflict of interest between the public interest (safety, environment, and equal treatment under the law) and private interests from the port industry. For example, since port time of ships is an important cost and operational factor, the harbormaster will always be under pressure to grant preferential treatment to shipping lines. Impartial and consistent application of operational safety measures for ships carrying dangerous or environmentally sensitive goods such as gas carriers, chemical parcel tankers, and VLCCs is essential to the safe functioning of any port. The harbormaster, therefore, should not function within a purely commercial environment, but must have freedom of action to carry out public tasks in an unimpeded and unbiased manner.

Although the harbormasters might be part of a port authority’s management team, they should be free to operate in their jurisdiction as independently as possible from the commercial management of the port. In carrying out emergency measures in the event of accidents and industrial disasters, the harbormaster should
have full freedom of action and possess the ultimate authority and responsibility for directing all necessary activities. In a fully privatized port, the harbormaster should not be part of the port management, but should be employed by a national or regional maritime administration.

7.2. Pilotage

In a port reform process, pilots often are the first ones to demand privatization. Pilots usually constitute a closed group of professionals (often master mariners), who are keenly aware of their unique position in the port environment. Successful vessel management relies heavily on the efficient functioning of the pilot organization, a fact that pilots may use to maximum advantage during port reform.

In many countries, pilots (or pilot organizations) have been more or less successfully privatized. This type of privatization, however, carries the risk of creating a private sector monopoly in pilotage services, especially when pilots are privatized on a national or regional scale. Pilotage is an essential part of traffic management, and safe passage of vessels through a port area requires expert teamwork of a vessel traffic management organization (Captain’s Room), tugs, mooring gangs, and pilots. A private sector pilot monopoly that has the ability to bring port operations to a complete and rapid stop represents a significant risk for ports, carriers, and shippers alike. As a consequence, retaining pilots as part of a port authority’s marine department may be desirable even when other aspects of port management and operations are privatized (see Box 26).

There are two ways of privatizing the pilotage function. Pilots can be self-employed and work under the oversight of a maritime authority that serves as the regulator and licensor of the individual pilots, or pilots can organize themselves into a private company.

The pilotage company should have its own infrastructure and facilities, such as pilot boats, communication equipment, and pilot stations. Sometimes a pilot organization (especially in smaller ports) might also operate a vessel traffic management system (radar). The port authority or maritime administration should regulate the privatized pilot organization regarding:

- Training requirements and pilot qualifications.
- Standards for obtaining a certificate or license, and its revocation.
- Roles and responsibilities of the organization for operation of a vessel traffic management system.
- Communication equipment and channels.
- Investigation of incidents and follow-up actions.
- Pilotage tariffs and financial record keeping.
- Medical fitness and continued proficiency.
- Reporting requirements to the relevant port authority.

7.3. Tugboat Operations

Tugboat operations are typically carried out by private firms. If the volume of vessel traffic is not sufficient to support a tugboat service on a commercial basis, a port authority may be obliged to provide such service itself. Sometimes neighboring ports can share tugboat services to reach volumes sufficient to sustain a commercial operator.

In many instances, traffic density allows for only one private tugboat company to operate in the port area. In such cases, the port authority should regulate the service regarding:

- Minimum crew size.
- Minimum bollard pull.
- Communication equipment and channels.
- Roles and responsibilities relating to the vessel traffic management system.
- Tariffs.

The optimum situation would be a number of tugboat firms competing vigorously in the port. In that event, the port authority should not have to regulate tariffs. Regulation of other
aspects of tug operations such as manning can be at the discretion of the port authority and will depend on the local situation.

### 7.4. Mooring Services

Mooring services in smaller ports can be provided by the local stevedore. In larger ports, a mooring service is usually performed by a specialized private firm. Especially in a complicated nautical situation (for example, single point mooring buoys, specialized piers for chemicals or gases, or ports with large tidal differences), mooring activities require expert skills and equipment. A port authority may choose to regulate this activity when only one specialized firm exists. Regulations should include:

- Minimum manning requirements.
- Communication equipment and channels.
- Number of mooring boats and their characteristics.
- Tariffs.

### 7.5. Vessel Traffic Services and Aids to Navigation

Vessel traffic services (VTS) are usually part of a port or a maritime authority. Such services are provided in port areas and in densely used maritime straits (such as the Dover Channel) or along a national coastline (for example, the coast of the Netherlands). In principle, it is possible to privatize VTS under a concession
agreement. VTS that should be regulated by the competent authority should include:

- System functions, such as vessel management and control, emergency functions, and information and communication functions.
- Types and specifications of radars and tracking software.
- Manning levels and qualifications.
- Reporting duties.
- Tariffs.

Responsibility for aids to navigation usually rests with a national maritime authority in port approaches and in coastal areas, and with a port authority in port areas. Often, provision and maintenance of buoys and beacons are contracted out. Because aids to navigation are generally part of an integrated maritime infrastructure, the costs of providing these services are included in the general port dues. Therefore, it is difficult to privatize them.

### 7.6. Other Marine Services

The control of dangerous goods for maritime cargoes is usually performed by a specialized branch of the port authority. The same goes for the handling of dangerous goods in port terminals. Oversight and regulation of land transport of dangerous goods is normally a responsibility of the central government. The highly sensitive and technical nature of this work makes it inadvisable for privatization.

Waste management services in ports often are privatized under strict control of a port authority or another competent body. Privatization carries risks, however, especially with respect to the disposal of dangerous chemicals. Proper waste management can be expensive for shipping lines. With high costs, ship captains might be tempted to dump waste into the sea or into port waters. Control of such dumping practices is extremely difficult, especially for chemical cargoes. To spread waste management costs, ports can include all or part of the waste management costs in the general port dues. Transport of waste from the ship to a reception facility also poses a challenge, especially in larger port areas. Port authorities should directly provide or organize the provision of transport barges or trucks for this purpose.

The entire waste management system, including personnel and facilities, should be closely controlled by the competent authority. When private firms are engaged in waste handling, the authority should employ experts from its organization to ensure compliance with all relevant laws, rules, and regulations.

Generally, emergency response services are carried out by a variety of public organizations such as the port authority (harbormaster), fire brigade, health services, and police. Some ports have sophisticated tools available to aid in crisis management, such as prediction models for gas clouds. Such tools are often integrated in a traffic center of the local vessel traffic management system (VTMS). Private firms (for example, tugboat companies) may play a subsidiary role in crisis management in the event that they are equipped with fire-fighting equipment. Larger ports use patrol vessels and vehicles for a variety of public control functions. In some ports, such patrol vessels also have fire-fighting equipment on board. When a port does not have patrol vessels available, a contract with a tugboat company should be arranged to guarantee availability of floating fire-fighting capability. Port patrol services are part of the harbormaster’s resources and, therefore, should not be privatized.

Control of dredging operations by a port authority is of utmost importance. Often, the port authority or the competent maritime administration does not have enough expertise to exercise sufficient control over both maintenance and capital dredging. Port authorities with large water areas under their control should employ sufficient competent personnel to prepare dredging contracts and oversee dredging operations. Sounding is an activity...
**Box 27: Prevailing Service Providers under Different Port Management Models**

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<th>Nautical infrastructure</th>
<th>Port infrastructure</th>
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<td>Private sector port</td>
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Source: Author.
that should preferably be carried out (or contracted out) by the port authority itself. Dredging is usually carried out by private firms. It might be cost effective for some ports to use their own dredges, especially when continuous and important maintenance dredging is required.

Box 27 summarizes the prevailing approaches for handling the most important port functions.

REFERENCES


McDonagh, Stephen. 1999. Port Development International.


