



PORT REFORM TOOLKIT

SECOND EDITION

M O D U L E 6

PORT REGULATION MODULE



THE WORLD BANK

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MODULE

Port Regulation: Overseeing the Economic Public Interest in Ports

SECOND EDITION

1. INTRODUCTION

There is a strong public interest in ensuring that ports operate efficiently and safely, that fair and competitive services are provided, and that ports support and foster economic development locally and nationally. The public interest in ports stems from the vital role that ports play as gateways of economic trade and commerce for most nations. In 2004, international seaborne trade totaled approximately 6.7 billion tons of international commerce, which corresponded to 27,635 billion ton-miles of maritime activities (Review of Maritime Transport, 2005 UNCTAD). With the globalization of the world economy, a nation's economic competitiveness is linked increasingly to its ability to ship raw materials, intermediate goods, and final products efficiently and economically. Excessive port costs or delays can prompt investors to locate new production facilities in other countries or regions. In many countries, high port costs have an economic impact similar to a generalized import duty, increasing the cost of all imported goods.

The public is also interested in having ports operate safely and with minimal environmental impact. An oil spill within a port's harbor can damage the coastal environment and devastate local fishing and tourism sectors for several years. Port operations involve the use of heavy machinery and handling of dangerous cargo

that, without proper systems and safeguards, can result in serious and sometimes fatal injury to port laborers or third persons present in the port.

Ensuring the efficient and competitive functioning of a port in a context of limited or weak

competition is the purpose of economic regulation of ports. Economic regulation typically involves intervention in the functioning of markets in terms of setting or controlling tariffs, revenues, or profits; controlling market entry or exit; and overseeing that fair and competitive behavior and practices are maintained within the sector. The determination of when economic regulation of ports is necessary and how to tailor the intervention to the particular port competitive environment is the principal focus of this module.

While not discussed at length in this module, there are other public interest concerns regarding technical, environmental, and social aspects of port operations. These other areas include:

- Technical oversight of port operations and services, such as navigation and safety (for example, licensing of pilots, berthing rules, or emergency plans).
- Environmental oversight of the disposal of dredging spoils; discarding of hazardous materials and liquids used in port operations and maintenance; contingency planning for environmental and safety incidents; ensuring sound land-use planning and coastal preservation; and monitoring compliance with international standards for vessel wastes (for example, the International Convention for the Prevention of Pollution from Ships [MARPOL]).
- Social or administrative oversight of the equitable and just treatment of port workers, and review of labor contracts, health benefits, and working conditions.

In most instances, guidelines and procedures for oversight of these elements of the public interest have already been established and their effectiveness is not materially altered by port reforms, although they need regular adaptation and updating.

This module is intended to assist public officials in designing an economic regulatory framework that will keep ports cost-effective and responsive

to changing demand. The module provides guidance on how to:

- Identify regulatory requirements and issues to be considered when developing a port reform strategy.
- Design a port regulatory system.
- Formulate an institutional strategy for establishing the regulatory structure and capabilities to perform the relevant regulatory functions.
- Select appropriate regulatory techniques and instruments under a spectrum of port reform options and competitive conditions.
- Prepare a checklist of items that need to be included in port reform concession or operating agreements.
- Specify operational and financial information necessary for monitoring performance of terminal operators.

Public officials can use the module when initially formulating a port reform strategy or for establishing an effective postreform port regulatory system.

2. REGULATORY CONCERNS WHEN FORMULATING A PORT REFORM STRATEGY

The decisions about reform strategy, industry structure, and regulatory frameworks are closely linked. Therefore, regulatory issues, options, and their consequences should be considered at the early stages of the reform process, and not left until other key decisions about reform strategy have been made. As demonstrated by the reform experience in other sectors, to do so can increase the regulatory burden and cost, restrict the range of options that may be available to the regulator, and risk incongruity between regulatory requirements and institutional capacity.

Governments do not need to undertake detailed design of the regulatory framework when they are first considering private sector participation. However, they should take regulatory needs and

costs—and their own regulatory capacity—into account when making choices about private sector participation. And when embarking on the first private sector participation in ports, it is important to consider whether the regulatory system proposed for the first transaction will preclude the regulatory options that might be most appropriate as private sector arrangements become more common. A government that fails to get the structural and regulatory package right from the outset can face an immensely costly, time-consuming, and acrimonious process to rectify matters later.

Considering regulatory issues before formulating the framework of the contract has a number of important purposes:

- To avoid legal challenges to the privatization program or transaction.
- To identify any constraints in the law that would limit the ability to transfer services to private providers or the range of options that might be available for the privatization approach.
- To define the regulatory role of the government in the reform and postreform effort and related institutional framework.
- To anticipate the competitive environment (the extent of competition) of the port sector and the need for competition monitoring or economic regulation.
- To consider the potential for restructuring the port sector to make it more conducive to regulation by competitive forces rather than government oversight.
- To determine the range of strategies that might be available to the regulator to induce competition or discourage anti-competitive behavior.
- To identify the form of interventions that the regulator may take when anti-competitive behavior occurs.
- To determine what issues not specifically addressed in the existing or proposed law

need to be addressed on a transaction-specific basis.

All of these purposes are closely related. For example, as was shown in the Malaysian experience at Port Klang, the failure to have an adequate legal framework in place prior to the privatization effort can impose substantial delays as legislators debate legislative actions to facilitate the privatization process. The continuing refusal of the Sri Lankan government to corporatize or privatize its publicly owned container terminal in Colombo has delayed the necessary port expansion for years. And Colombia's failure to properly define anticompetitive behavior beforehand led to the need for the regulator to constantly solicit legal opinions before intervening.

In many countries, the broad regulatory framework may not adequately support a private sector arrangement. Private sector ownership of port assets may be prohibited by the legal system. Tariff setting responsibility may reside within an operating port authority that would compete with the private operator. But governments can still make private sector participation in ports work by taking one or both of the following actions¹:

- Choose a private sector arrangement that reduces the risks associated with deficiencies in the regulatory framework. For example, a fee-based management contract may bring in technical capability and management expertise if investment risks rule out a private sector interest in a concession.
- Develop appropriate regulatory capacities. For example, if the national law gives responsibility for asset ownership and service provision to a level of government that has limited capacity to regulate or is vulnerable to short-term political interests, consider separating ownership from regulatory oversight and locate the regulatory body at a higher level of government.

Prior to undertaking port sector reform, the public interest in ports has typically been vested in a public port authority. In a traditional port,

the public port authority provided all basic port services and functions (for details see Module 3). There was no need for a separate regulatory agency as the public port authority was the institution charged with operating the port as a public monopoly consistent with the public interest.

Under port sector reforms, many ports have evolved into landlord port authorities where facilities are leased to private operators, who in turn directly provide their services to carriers and shippers. In this situation, private operators may provide services previously provided by the public port authority, such as pilotage, tug assist, vessel stevedoring, cargo handling, storage, and yard services. Private operators will be motivated by profit maximization objectives. They may not necessarily provide facilities or services that are of economic, environmental, or social value if doing so would conflict with profit maximization. This creates the need for regulatory oversight to ensure that the public interest is upheld.

2.1. How Ports Compete

Generally, port-related competition can be defined as one of three types: interport, intra-port, and intraterminal. Interport competition arises when two or more ports or their terminals are competing for the same trades (for example, New York and Halifax; Hong Kong and Singapore; Los Angeles, Long Beach, and Oakland; or Rotterdam, Hamburg, Bremerhaven, and Antwerp). Interport competition may be for origin-destination traffic or for transit traffic. Intraport competition refers to a situation where two or more different terminal operators within the same port are vying for the same markets (for example, Stevedoring Services of America, Evergreen, and Hutchison International Terminals in Manzanillo-Cristobal, Panama). In this case, the terminal operator has jurisdiction over an entire terminal area, from berth to gate, and competes with other terminal operators in the port. See Box 1 for a similar example of intraport competition in Buenos Aires, Argentina. Intraterminal competition refers to companies competing to provide the same services within the same terminal

(for example, the stevedoring companies Estibadora Caribe and COOPEUNITRAP in Port Limon, Costa Rica). However, this type of competition, applied within the framework of the tool port system, in general does not result in stable labor relations and optimum port development (see Module 3).

Competition also helps ensure that the private sector passes savings on to users and reduces opportunities for monopolistic abuses. A private terminal operator can be presumed to be more tempted than a public port authority to exploit any market power that it may have. But one should not forget that experience has shown that public sector monopolies are often stronger, more authoritarian, and noncompromising than private sector monopolies. Moreover, they are often more difficult to fight as they are either claimed not to exist or to be justified for the public good. As long as a market is competitive, private operators cannot price much above their long-run marginal costs; they may be able to do so in the short run if demand temporarily outstrips supply, but only for as long as it takes to provide additional capacity. If the markets are noncompetitive, however, public port or terminal operators are often able to sustain prices well in excess of marginal costs whether they are located in developed or developing countries. In practice, governments consider such ports as “cash cows” and are often reluctant to limit or lower port tariffs and terminal handling charges. Private terminal operators will equally be tempted to raise their tariffs above the level that is economically reasonable. In such a case, tariff regulation by an independent regulator is the answer, although the history of government regulation attests to difficulties in preventing misuse of the dominant position of such operators.

When effective competition can be established and maintained in the relevant markets and activities, privatization has proven to have great potential for reducing costs and improving service quality. Without competition, privatization can still bring some improvements, but the gains are relatively limited.

Box 1: Intraport Competition in Buenos Aires, Argentina

Following the Ports Law of 1993, the Argentine government decided to offer concessions for six terminals at the Puerto Nuevo Port Authority facilities. Bidders submitted separate technical and financial proposals linked to anticipated tonnage. Essentially, those guaranteeing the most traffic with the best technical proposal would win. Five concessions were awarded, but only two concession holders would control facilities capable of handling containers.

Single operators were charged with operating their respective terminals, controlling the entire berth-to-gate operation. Upon the take-over of the terminals by the successful bidders, the terminal operators had to plan, finance, and commission extensive civil structure improvements and undertake heavy equipment investments. Meanwhile, they became immediately liable for their payment obligations to the port authority. As part of their concession obligations, terminal operators had to pay the port authority concession payments based on \$4 per ton for imports and \$2 per ton for exports. They were also prohibited from pricing collusion, and would have to adhere to safety and environmental legislation. And, in an effort to mitigate the impacts on former port authority employees, the terminal operators had to agree to employ some of the former employees or, alternately, provide a severance payment program. As a result, the terminal operators all began operations with overstaffed work forces.

The concession agreements contained performance guarantees; in the first year, 40 percent of established target volumes would have

to be met before the port authority imposed financial penalties. This percentage would increase in stages to 60 percent and 80 percent in subsequent years. In return, the terminal operators would get the use of the public facilities, could provide whatever services they wanted, and could set tariffs as they saw fit as long as the tariff structure adhered to the one prescribed by the port authority.

While great attention was drawn to the terminals within the confines of the city, another port facility was being developed in South Dock, just outside the city under the jurisdiction of the Province of Buenos Aires. Bidders at Puerto Nuevo were aware of this site and had discounted the possibility that it could be converted to a full-fledged container terminal. However, a consortium of local and foreign investors was granted a 30-year concession for South Dock by Buenos Aires Province on terms far more favorable than those afforded the Puerto Nuevo operators by the federal government (see also Module 4, Box 20).

The Puerto Nuevo bidders were obviously concerned with the entry of another competitor. Container growth was projected to be somewhat modest given available capacity, so competition had already developed to a high level. Due to labor cost savings and lower wharfage fees, the South Dock facility had lower costs than Puerto Nuevo operators at \$40 per move.^a In 1997, the South Dock terminal handled 366,000 TEUs, compared to 600,000 TEUs handled at Puerto Nuevo facilities.

Source: Author.

^a 1997. "Terminal velocity." *Containerization International* June, p. 95.

2.2. Assessing Port Sector Competition

This section presents a conceptual framework for assessing the extent of competition within a port sector. The conceptual framework may be used when deciding the optimal form and scope of port modernization or in determining whether regulatory intervention may be warranted after modernization. The framework is not intended to determine definitively that a particular port or terminal operator is engaged in anticompetitive behavior. Instead, it indicates conditions where

anticompetitive behavior may occur. When these conditions exist, the framework serves effectively as a red flag to indicate to the regulatory authority that the situation should be closely monitored. Alternatively, the framework could be applied when complaints are received to determine if in fact there may exist sufficient grounds for the complaint. Factors indicative of the extent of market competitiveness include:

- Transport options.
- Operational performance.

- Tariff comparisons.
- Financial performance.

Box 2 presents an overview of the key elements of a conceptual framework for considering these factors. Each of the framework's salient features is described below.

2.2.1. Transport Options

The most important indicator of competition is the degree to which a shipper has transport options (substitutes). The choices or options available to a shipper or consignee largely determine the extent of competition within the port sector. In examining options, one should analyze a specific cargo flow as defined by cargo type, shipping characteristics, inland point, and direction (import or export). The number of options is defined according to the technical capabilities of the ports and their available inland connections. For example, there may be situations in which one port has already captured a large share of the cargo market. One might, therefore, label this as a noncompetitive market. However,

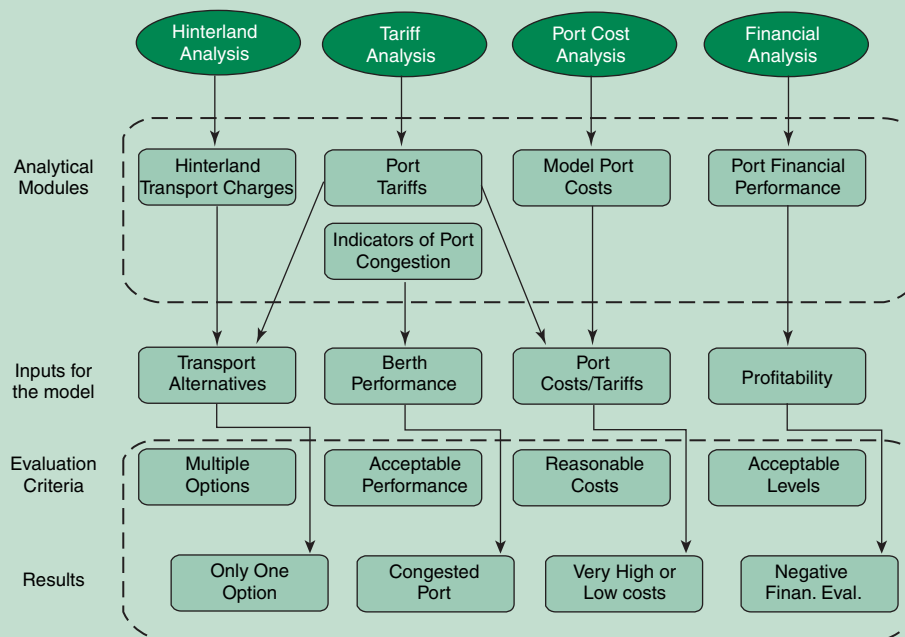
the market power of this port (or its capability to increase the price) would be limited if other ports could provide an attractive alternative and keep competitive pressure on the other port's prices.

The availability of competitive options is based not just on the existence of a physical service alternative, but on overall transport system costs (land and port). Thus, the first step in assessing the competitiveness of the port and transport system is to identify the lowest cost option. Then, the competitiveness of each option is determined by comparing it to the lowest cost option, defined here as cost proximity. A cargo flow that moves through a system with many options and possessing close cost proximity (small cost differentials) faces a highly competitive market setting. Conversely, if there are few options and the cost differentials among the options are large, the market setting is defined as noncompetitive.

2.2.2. Operational Performance

Operational performance indicators can be used to assess the relationship between supply and

Box 2: Port Sector Competition Factors



Source: Author.

demand for port services in a particular country. Presumably, a chronic shortage in supply indicates a possible tendency toward monopolistic practices by a port or terminal operator. However, using the supply-demand relationship itself as an indicator may be inadequate because of difficulties in direct estimation of these two market factors.

Instead of the throughput-capacity (supply-demand) ratio, two measures that can indicate a potential shortage in supply of port services can be used: berth occupancy and ship waiting for berth. Both measures are, in fact, two different aspects of one phenomenon, port congestion. Berth occupancy has a direct relationship to capacity utilization in ports where the berthage is the limiting factor of terminal capacity. This, however, is usually not the case in container terminals, where the limiting factor is often the container storage capacity of the yard. Nevertheless, even in container terminals, berth occupancy provides a good indicator for capacity utilization. To provide a more telling picture of a port's operational performance, berth occupancy should be complemented with the berth utilization ratio, which compares the amount of time ships are worked at berth to the total time that the berth is occupied, and with the berth productivity ratio, relating berth occupancy time and berth throughput.

Ship waiting has a direct relationship with berth occupancy. When occupancy is low, there is usually no (or minimal) ship waiting. However, at a certain occupancy level, waiting begins to increase very rapidly. Thereafter, a small increase in the level of berth occupancy results in congestion and long waiting times for ships. Although these two indicators are closely related, both can be examined to obtain a more comprehensive assessment of port congestion.

The input data for berth occupancy are typically readily available from operational reports generated by the ports or terminal operators. The occupancy indicator should be calculated separately for container, general cargo, and bulk ships. For vessel waiting time, the input data are also typically available from port (usually the harbormaster's office) or terminal operator

operational reports. The ship waiting indicator is calculated as the average waiting hours per ship, by type of commodity. Average waiting time is also sometimes compared to average time at berth to produce the ship-waiting rate. The various elements contributing to the waiting time should be analyzed to allow the port authority to precisely identify cases whereby it was the result of nonavailability of port facilities or equipment. Practitioners should be aware that terminal operators are increasingly seeking to acquire the ability from port authorities to offer guaranteed priority berthing windows to secure long term contracts with some of the larger main line vessel operators.

Berth occupancy and utilization and wait time are strong indicators of undercapacity, which in turn may indicate the absence of significant competition.

2.2.3. Tariff Comparisons

The objective in examining tariffs is to determine if the tariff level of a port is within a reasonable range. Presumably, abnormally high tariff levels in a port indicate a tendency to exert market power and employ unfair trade practices. This inflates total port costs, which include charges to shipping lines and cargo. The calculation of port costs should be based on a representative basket of basic services and their respective charges.

An indication of whether tariff levels are within a reasonable range can be based on three comparisons. The current rates of the port under consideration are compared with: (1) historical rates of the same port, (2) rates (tariff differentials) at other ports in the same country, and (3) theoretical rates based on model port costs. Historic rates measure the difference in port costs between the time of analysis and the past, either in the previous year or before a recent rate increase. Differences in port costs (tariff differentials) are examined by comparing a specific port with the average of the country's ports that handle the same cargo (including the port under consideration). Model port costs measure the difference between the actual and theoretical costs of a specific port based on a port cost

model that generates the model costs for a country's ports in general.

2.2.4. Financial Performance

A variety of financial performance measures can be used to examine whether a port has been earning abnormally high profits. The assumption here is that abnormal profits may indicate a noncompetitive market setting and the possibility that a port is engaged in anticompetitive behavior (taking advantage of dominant market power). Economic theory maintains that suppliers possessing monopoly power tend to charge prices that exceed marginal and average costs.

Ideally, a competitive assessment should be based on the comparison of price and marginal cost. However, direct measurement of the difference between price and marginal cost is impractical. The financial profit (net income and earnings) of a port is used as a proxy for the difference between market price and marginal cost. Presumably, abnormally high profits indicate a noncompetitive setting that, in turn, suggests the possibility of anticompetitive behavior. The level of profit is usually compared to some measure of investment. Two common indicators that relate profit to investment are return on equity and return on assets, and both are typically found in port financial statements or can be calculated from data readily available from the port.²

2.3. Costs of an Inadequate Regulatory Framework

Failure to provide an adequate economic regulatory framework can be very costly in terms of inefficient and high-cost port services. In many countries, excessive port costs function like an additional import duty on all goods entering the country and a tax on exports. Excessive port costs reduce the competitiveness of a nation's products in world markets and can stifle economic growth and development. In fact, shipping lines or conferences may further compound the unfavorable effects inefficient ports have on a nation's economy by imposing penalty surcharges to offset the carrier's operating costs and disruptions to its service rotation or itinerary. Unfortunately, the anticipated

benefits of free trade associated with reduction of import duties and removal of trade barriers may be offset by the inefficiencies of an improperly regulated and noncompetitive port sector.

In some instances, port reform efforts have transferred public ports to single private operators, thereby creating private monopolies for local port services. This type of transfer does nothing to lessen the vigilance governments must maintain if abuses of market dominance are to be avoided. Box 3 presents the experience of Israel, which dissolved its national port authority in favor of individual port operating companies for its three ports. Similarly, in Mexico terminal operations at the ports of Veracruz and Manzanillo were transferred to private operators. However, due to the lack of interport or intraport competition, port users have repeatedly complained about high tariffs and have requested that a regulatory institution be established to limit the monopolistic position of terminal operators.³

Due to the nature of the sector, it is common that even when competition for port services is strong, there may be only two or three direct competitors. Thus, market shares and concentration ratios measured by traditional antitrust techniques would typically be high. In most circumstances, a high industry concentration indicates that conditions are such that they may encourage anticompetitive practices (see Box 4). For example, having few competitors invites pricing collusion, agreements to allocate customers or geographic territories, or the establishment of cartels or boycotts, all of which are typically prohibited in a country's antitrust legislation. Having one dominant firm may also encourage predatory pricing, another practice that is typically prohibited.

After pressure from the European Union, Maersk Line (APM Terminals) and P&O Nedlloyd were allowed to operate two competing terminals. The take-over of P&O Nedlloyd by Maersk Line however, has created the next problem, as these large terminals are now owned by one common shareholder which, again, might violate EU competition rules. In Antwerp, competition between the original

Box 3: The Case of Israel: From National Monopoly to Port Monopoly

Israel's Shipping and Port Authority Act of 2004 introduced a new port management structure with the objective of introducing more competition in the country's port sector. The existing Israel Ports Authority, owner and operator of Israel's three commercial ports, was disbanded and various new port authorities were established.

The main elements of the new law included:

- All Israel port authority assets were returned to the government (including ownership of port land, financial assets, equipment, materials, and superstructure).
- All existing employees were transferred to newly created government companies (see below), with existing salary and working conditions guaranteed.
- Port property rights were transferred to the Israel Ports Company (100 percent owned by the government), which would lease or concession port land to port operators while the legal ownership remains with the government.
- All movable assets and facilities and outstanding obligations and liabilities were transferred to the appropriate companies in the various ports.

The new government-owned (limited liability) port operating companies, one for each port (Haifa, Ashdod, and Eilat), were tasked with the management of the existing terminals as well as the maritime services, including traffic control, pilotage, and towage.

The law also created a Shipping and Port Authority as a governmental unit within the Transport Ministry. Its responsibilities include advising the minister on port service levels, infrastructure planning and development, and systems and port facilities, and the drafting of port regulations.

In addition to the above, the legislation and subsequent ministerial regulations created the position of port manager with (harbormaster's) responsibilities such as vessel traffic control, port clearance, aids to navigation, and marine works.

Analyzing this port management structure it is evident that:

- The various port companies in Haifa, Ashdod, and Eilat are virtually monopolists within their respective port areas, and in practice they will allow only limited intraport competition.
- The development of the ports still is a national issue under the Israel Ports Company, which acts as a national landlord.
- The port companies are also responsible for marine operations, which may give rise to a conflict of interest in the event that more intraport competition is allowed in the future.
- The functioning of the port manager is highly impaired as the marine department's activities are part of the respective port companies.
- The entire structure will generate many competence problems.
- Fair competition within this structure is limited.

Source: Author

three major container operators (Hessenatie, Noord Natie and Seaport/Katoennatie) has always existed, but because of the need to gain in scope and scale, the two main operators have merged into Hesse-Noord Natie. To cope with growth, Antwerp has built a new tidal container port, the Deurganck dock, on the left bank, doubling its handling capacity. On the west side of the Deurganck is Antwerp International Terminal – operated by PSA Hesse-Noord Natie – which started operations in December 2005 and will be fully completed by 2007. To the east is the Antwerp Gateway Terminal – operated by DPW-owned P&O Ports, Cosco Pacific, P&O Nedlloyd (now owned by Maersk), CMA-CGM and Duisport – which started work in

September 2005. All in all, major global terminal operators and shipping lines acquired a substantial stake in Antwerp's container terminal business, thus enhancing intraport competition.

It is the growing scale of the users that makes larger scale operations in ports imperative. With this pressure for increased size, one might ask whether any regulatory framework can ensure the continued existence of more than one container terminal operator. One should keep in mind that in the early years of 2000, the top two Antwerp terminal operator consortiums mentioned above, Hesse-Noord Natie and Seaport/Katoennatie, handled more than 1,000,000 and more than 2,000,000 TEU per year

respectively. Thus, the nominal size of their throughput does not explain the merger in itself.

In an unregulated market, profit may be sought through the creation of a stevedoring company cartel to exclude competitors from access to facilities. Controlling anticompetitive commer-

cial behavior requires a regulatory institution to prevent the acquisition and exploitation of excessive market power. Even without cartelization, wherever there is a financially strong incumbent in a market, there is a danger that anticompetitive behavior will occur (see Box 5).

Box 4: Potential Anticompetitive Behavior in the Port Sector

In the absence of economic regulatory oversight, a port operator with a dominant or monopoly position could attempt to engage in the following anticompetitive practices, driving out potential competitors and increasing costs to port users and the economy at large:

- *Price gouging*: Using monopoly power to charge excessive tariffs for port services.
- *Service bundling*: Extending monopoly power in one area of port operations to another potentially competitive area (also referred to as tying arrangement). For example, a terminal operator's extension of a monopoly position in the provision of cargo handling to require use of their tug assist services rather than obtaining those services from an independent provider.
- *Increasing entry barriers*: Constructing hurdles to increase the share of the market needed to operate at maximum efficient scale, raising absolute costs of entry, or by

tending to foreclose competitors from needed resources or outlets.

- *Raising rival's cost*: Increasing the cost of services required by a rival to place it at a competitive disadvantage.
- *Exclusive dealing*: Requiring suppliers to sell only to them and not to any potential competitor. An example would be restricting a tugboat company from providing service to a rival terminal.
- *Predatory pricing*: Selling services below cost to induce a rival's exit from the market, deter future entry, or dissuade a rival from future competition. An example would be temporarily lowering container handling charges below long-run marginal costs to force a rival out of business.
- *Price discrimination*: Similar to predatory pricing in that selective price discrimination by a powerful seller can eliminate competition or otherwise entrench the discriminating seller's monopoly power.

Source: Author.

Box 5: Predatory Pricing and Service Bundling in Cartagena, Colombia

Law 1 of 1991 placed the responsibility for the direct administration of Colombia's public ports in the hands of regional port societies, which were private sector entities with the state entitled to up to 30 percent of the total shares of the society. To induce investment in gantry cranes, the Cartagena Society received permission to provide cargo handling services in addition to the provision of crane services. This would mean that not only would they compete with the already existing stevedoring companies, but that also they had a clearly advantageous position: they could bundle their service charges for an array of services offered from berth to gate, a strategy that could not be matched by the stevedoring companies since they could offer relatively limited services by comparison.

The Cartagena Society felt compelled to offer stevedoring services as their own business because that is what its nonregional port society competition was doing. For example, a private port in Cartagena (El Bosque) offered pilotage, tug assist, stevedoring, and storage services, and could thus price the services at an all-in-one price. It was later alleged that El Bosque was offering tug assist and pilotage at no cost to the carrier to attract their business. If true, this bundling could constitute a predatory pricing practice in Colombia, which the port superintendent would resolve by setting the prices for all of the pilotage and tug companies in Cartagena.

Source: Author.

3. STRATEGIES TO ENHANCE PORT SECTOR COMPETITION

The previous sections presented the important considerations for determining conditions in which anticompetitive behavior may exist. The lack of transport options, congested facilities, relatively high prices, and high profits alone or in combination may encourage terminal operators and other port service providers to breach the threshold of what may be regarded as acceptable competitive behavior. This section provides a discussion of port sector restructuring strategies that can be used to enhance competition within the port sector, an overview of regulatory strategies and remedies to enforce port competition standards, and a decision framework for selecting port competition enhancement strategies and remedies.

Port sector reformers have two general strategies to choose from when considering how to enhance port sector competition (Box 6): structural and regulatory. Clearly, the preferred strategy is the one that results in more competitors. In a perfect market, characterized by a large number of buyers and sellers, the extent of competition is optimized so prices reflect market efficiencies. Therefore, port sector reformers, in contemplating port reform, should strive toward structural enhancements that increase the number of competitors before resorting to regulatory enhancements. Regulatory enhancements (particularly economic regulation) are

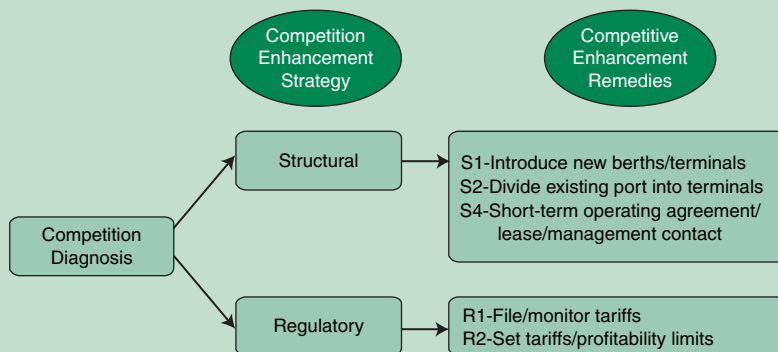
intended to improve efficiency by correcting various market imperfections; essentially, they are aimed at forcing ports to behave as if they were competing in a competitive market. Due to high market concentrations, some form of regulation is often appropriate regardless of the structural strategy.⁴ Box 6 shows how structural and regulatory approaches give rise to potential competition enhancement strategies.

3.1. Structural Strategies

Experience suggests that many of the benefits from involving the private sector stem from competitive pressures, not just the presence of a private owner.⁵ Competitive pressures also affect the amount and appropriate form of sector regulation needed: the more competitive pressures are brought to bear on private operators, the less regulation may be required. So governments—even those with substantial regulatory capacity—stand to gain a great deal from introducing as much competition as the port's traffic and facilities allow.

Competition becomes increasingly likely as an industry becomes more disaggregated. The more the system can be structured to allow entry at different levels, the more competitive pressure can be introduced. And the more competitive pressure there is, the less the need for regulatory intervention.⁶ As discussed later, extensive unbundling may mean sacrificing efficiencies the operator may gain through the bundling of

Box 6: Competition Enhancement



Source: Author.

services, particularly within the terminal area (defined as the area between the berth and the gate). For this reason, “terminalization,” where a single operator controls the berth-to-gate operation, is frequently the preferred approach (with the level of economic regulation depending on the competitive setting, either within the port itself or coming from the outside).

Establishing competition for port services requires three steps. The first step is to examine closely the structure of the sector, assessing market conditions and how the services may be restructured. The next step is to implement the port sector restructuring, creating opportunities for competition in one or more segments of the port sector. If unfettered competition is possible, the process ends. If only limited scope for competition exists, the third step involves establishing regulatory oversight to maintain fair competition and to protect port users. The extent of restructuring, the exact nature of competition, and the objectives of regulation depend upon the physical, institutional, and market characteristics of the sector.

Port restructuring involves trade-offs. Where economies of scope exist, it may be cheaper for a single terminal operator to produce and deliver two or more terminal services jointly than for separate entities to provide services individually. A bundled sector, where all services are organized under one umbrella, also known as a master concession as discussed in Module 4 of the Toolkit, allows exploitation of economies of scope and eases coordination and efficiency among intermediate input suppliers and final service providers. An argument against restructuring also applies when a single provider benefiting from economies of scale is split up to induce competition. However, even in such cases, gains from economies of scope and scale need to be weighed against benefits of cost-minimization due to competitive pressures.⁷

Typically, the private sector would prefer to engage in interport or intraport competition rather than intraterminal competition, and this is understandable because modern cargo

handling techniques most often do not actually allow for efficient intraterminal competition. Even though the private sector investment would normally be greatest under these competitive circumstances, the private sector also has the ability to capture a wider range of revenues. For example, in interport competition, ports will compete for the entire handling charge of perhaps \$200 per container, which captures revenues from the sea buoy to the gate. The value of the handling charge when intraport competition is present might decline to perhaps \$150 per container (berth to gate), and even further to \$100 per container when intraterminal competition (berth only) is present. Competitors in an interport context have a much greater span of pricing strategies for capturing their markets, meaning that at the lowest level (intraterminal competition) rivals will have a much smaller range of pricing flexibility when it comes to their ability to formulate strategies for capturing the activity. In short, competition at this level is vying for a much smaller piece of the pie.

Also from an efficiency standpoint, having a single operator per terminal tends to be preferable because of the direct control the operator would have over the range of activities from berth to gate. In addition, because of greater revenue capturing ability, a greater investment can be leveraged from the operator assuming a concession period adequate for full investment cost recovery. However, if cargo volume is sufficient to support only one operator, then government has to weigh the trade-offs between granting a monopolistic position to the sole operator versus the potential loss of efficiency resulting from intraterminal competition. For the intraterminal competition option, mainly prevailing in the tool port system (see Module 3) for general cargo traffic, revenues are collected only from vessel stevedoring. In France, intraterminal competition was promoted and terminal areas were dedicated to different operators. The result, however, was a very inefficient operation. Ultimately, because of competition from more efficient European ports, this arrangement was abandoned.

3.2. Structural Remedies

There are a number of actions governments and port authorities can take to enhance competition. Several key issues are discussed below.

One way to improve competition is to introduce new berths or terminals. The availability of this option is largely dependent on the existence of a suitable site for port expansion as well as sufficient volumes to justify capacity expansion. Many ports do not have expansion possibilities adjacent or in close proximity to existing facilities for a variety of reasons, including limitations imposed by terrain or urban encroachment, or lack of sufficient land. Alternative expansion possibilities may also be relatively costly, requiring substantial cargo volumes for cost recovery. This is particularly true if the port expansion is to be achieved via land reclamation, or if the new facility is a greenfield, requiring additional investments in land access and utility infrastructure.

Dividing an existing port into competing terminals, or terminalization, is another way of enhancing competition. Terminalization involves dividing existing port facilities into separate terminals, each leased or concessioned to a different operator. The facility's configuration and structure may limit the ability to pursue this option, particularly for purposes of establishing gate access for each operator, and building heavy load bearing structures⁸ and berths (Box 7). This measure, of course, generally assumes there is sufficient volume to support more than one terminal handling the same cargo type (for example, two dedicated container terminals). For further information, Box 8 presents an example of how the terminalization may be implemented when traffic volumes do not justify two container terminals, and Box 9 discusses how subsidy bids may be used for management contracts when low cargo volumes would not otherwise generate bids.

Competition from the market occurs when private sector operators bid for a concession, lease, or management contract. Indeed, contracts typically contain minimum performance standards, which if breached, may result in contract termi-

Box 7: Dividing the Port into Terminals to Induce Competition

A port can be divided into terminals through the allocation of berths (for example, one terminal per berth). Berth length in older ports may not allow for this, however, depending on the characteristics of vessels calling at the port. For example, assume that an older port consists of two berths, each having a berth length of 122 meters. The two berths together can accommodate 2,400 TEU vessels, the typical feeder vessel size today; but one berth alone cannot accommodate such vessels, thereby negating the possibility of dividing the port into separate terminals. The anticipated future fleet characteristics, therefore, are important factors in deciding whether to divide a port into separate terminals.

To overcome this limitation, the port can still be divided into terminals, say one for container, and the other for breakbulk, where priority is given to one type of operation over another. For example, the breakbulk operator under the terms of its contract could be required to forfeit its rights to its berth area when a container vessel calls. Typically, container vessels are given first-berth rights in ports due to their relatively high cost of operation, the higher revenue impact on the port, and the sensitivity of delays on their remaining itineraries.

Source: Author.

nation or could bar the incumbent from rebidding at contract expiration.

Where markets consist of large cargo volumes, countries will not encounter difficulty in generating interest in concessions by the international maritime community. While there is a relatively small number of companies today engaged in operating terminals outside their native countries, there are also instances of smaller companies within a region that are seeking investment opportunities elsewhere. For example, smaller-scale companies from Argentina and Colombia are seeking port investment opportunities elsewhere in Latin America. At the same time, both large international companies as well as their smaller regional counterparts will often seek local joint venture partners due to political con-

Box 8: Terminalization in Limited-Volume Ports: The “Overlapping Competition” Strategy

Many ports may have facilities that are well suited for pursuing a terminalization strategy. Whether this strategy can be executed depends on the size of the market for a particular cargo type. Large container markets, for example, of 1.5 million TEUs can typically justify five single-berth terminals served by two gantry cranes each. But how can a port induce competition where the volume (for example, 150,000 TEUs) can only justify one container terminal? One method is to use the “overlapping competition” strategy.

Here’s an example of how it can work: The port’s facilities can be divided into two single-berth terminals; one can be dedicated to container handling and the other to breakbulk. Each terminal is concessioned to an operator. The concession agreements can be structured so that either operator can handle the other’s cargo. Certainly, each terminal’s cargo will be dominated by the type of cargo for which the terminal is dedicated. Nevertheless, the breakbulk operator can attempt to compete for the container business as well.

Although most breakbulk facilities are not designed to accommodate gantry cranes, the

breakbulk operator can encroach successfully on the container business. Why? Because to reduce the cargo handling charges, a vessel with its own gear may prefer to call to a terminal not offering gantry services. Moreover, the load-bearing capacity of most breakbulk terminals can accommodate mobile cranes; many ports today have the mobile cranes working alongside the ships’ gear. Though overall handling productivity is not as high as gantry services, it is sufficient to divert some cargo from fully dedicated container terminals for vessels not requiring the more expensive handling equipment. Though not commonly done, it is also possible for the container terminal to encroach on the breakbulk business. If the container terminal has excess capacity and low berth utilization, it can fill the revenue void by handling breakbulk cargoes as long as it does not interfere with its core business.

Source: Ashar, Asaf, and Paul E. Kent. 1996. *Diseo de Plan de Expansin Portuaria en Buenaventura* (Design of a Port Expansion Plan in Buenaventura). Sociedad Portuaria Regional de Buenaventura, Buenaventura, Colombia (this strategy was recommended as part of an effort to induce competition at the Port of Buenaventura, Colombia).

siderations as well as the local partner’s clearer understanding of the peculiarities of the local law, culture, and operating environment.

Because of the mutual benefits accrued from joint local-international partnerships, governments should encourage such partnerships by minimizing overly stringent prequalification criteria. For example, some countries have in the past imposed the same qualification criteria on all parties of a joint venture when, in fact, it is only necessary for one of the partners to satisfy the minimum qualification standard.

Countries should also be aware that vessel operators might emerge as part of the responding bidders. Today, increasing numbers of carriers are emerging as terminal operating companies (for example, Maersk, COSCO, MSC, CMA-CGM, and APL). Although these carriers may create subsidiaries to operate terminals, there is an inherent conflict of interest in their participation in both shipping and terminal operations activities because there is the potential to engage in service or

pricing discrimination: in the former, terminal operators owned by carriers (or their holding companies) may offer preferential berthage rights to their own carriers, while in the latter case they may offer discounts to their own carriers. More importantly, a carrier-operated terminal will have access to proprietary data (for example, cargo manifests) that identify shippers (importers and exporters) served by another carrier calling at the terminal. Carriers are thus reluctant to call at carrier-operated terminals if other options (other terminals) exist. Governments should be aware of such potential practices of carrier-operated terminals and can discourage such behavior in the concession agreements (for example, operator billings being subjected to audits). Box 10 presents a summary of some of the key issues and analyses that should be addressed when preparing a strategy for port sector restructuring.

3.3. Regulatory Strategies

Even when structural strategies are employed to enhance competition in the port sector, regulatory

Box 9: Subsidy Bids for Management Contracts in Low-Volume Ports

Under certain circumstances, cargo volumes may be so low that solicitations will not generate any responses to tenders. Regulators in these circumstances can take a lesson from the approaches used in the utility sector where the government awards a concession for utility services in a low demand environment (for example, telephone services in rural areas) through what is called a “subsidy” bid.

In the port sector, management contracts typically obligate the port authority to pay a charge per unit cargo handled by the operator. The port authority bills the shipper and carrier, and these revenues would be used to offset the cost of paying the operator. But in low-volume ports, the revenues derived may not be sufficient for the operator’s full cost recovery plus profit.

Under these circumstances, port authorities may have received subsidies to cover the cost of their operation (particularly true for life-line service or cabotage and interisland service ports). Therefore, the solicitation may consist of two bid items: the first setting out the charges the operator would impose on shippers and carriers on a per unit or volume basis, the second setting out the subsidy payment that the operator would expect from the port authority. Offers consisting of a combination of the lowest charge and subsidy would be awarded the contract.

Source: Author.

Box 10: Checklist for Port Sector Restructuring or Unbundling

The following are issues to consider when assessing the suitability and potential benefits of port sector restructuring:

- Is there current or potential interport competition?
- Is there a specialized private port facility nearby that could compete for public traffic if granted permission to handle general cargo or containers?
- Is the inland transport network adequate to provide competition from another regional port?
- Is port traffic sufficient to permit intraport competition? Is any of the terminal owned or operated by a shipping line that might not provide universal service to other carriers?
- Is there more than one firm capable of providing cargo handling services?
- Can licensed, private operators provide vessel services such as pilotage, towing, and berthing?
- Can private providers compete for cargo handling and storage contracts?
- Is the port layout sufficient to support competing yard operations?

Source: Author.

measures may still be required. Economic regulatory measures typically used within the port sector fall within two categories:

- Tariff filing (or R1 in Box 6) would be required by the regulator to monitor for anticompetitive behavior.⁹
- For other operational settings, setting tariffs¹⁰ (or R2 in Box 6) may be necessary if there is a high risk of monopolistic behavior.

In contemplating the need for regulation, it should also be emphasized that regulators should communicate with port planners to determine what regulatory and operational measures are most appropriate given the port’s

operational setting and market outlook. Establishing a productive relationship between regulators and planners can be problematic given the sense of ownership that many port authorities have over their facilities. The port planner’s most efficient operational strategy may run counter to the antitrust concerns of the regulator. At the same time, the port planner and potential operators should be made aware of the regulatory environment that they can expect after contract award. The ultimate strategy selected would logically reflect a balance between the need to promote operational efficiency (the planner’s perspective) and the need to avoid antitrust behavior (the regulator’s perspective). This, in turn, reflects the conflict between the goal of efficiency gains from the scale of economies (size) versus increasing the number of competitors by dividing them into

smaller units (for example, single port operator versus multiple terminal operators).

3.4. Decision Framework for Selecting Port Competition Enhancement Strategies and Remedies

Box 11 presents a decision framework for selecting port competition enhancement strategies for a variety of port conditions and competitive environments. The decision framework includes three major elements:

- “Setting” refers to the operational environment in which the port exists, specifically regarding the port’s relative size, number of berths, and cargo volume.
- “Diagnosis” refers to the criteria described earlier in this module that serve as indicators for measuring the extent of competitiveness existing in the sector. These include transport options, berth utilization, tariff competitiveness, and profitability.
- “Solutions” refer to the previously described structural and regulatory measures

that should be undertaken given the port’s operational environment and extent of competitiveness.

Each of the elements of the decision framework is discussed in more detail below.

Setting. This is the port’s operational and physical environment as it pertains to the port’s relative size, the scale of its facilities, and the cargo volume handled. The scale of facilities is presented in terms of number of berths, but it should be emphasized that this is intended to represent only an order of magnitude. That is, while a port with only one to three berths is certainly small, a five-berth port could be small as well. Similarly, a 22-berth port can be considered large, but so is a 50-berth port. The competitive conditions encompassed in the three elements are the same, be it a 22-berth port, or a 50-berth one.

For example, in determining if the relative volume of a port is low, the port planner will know the extent of excess capacity (if any) the port may have in quantitative terms given the existing throughput and projected outlook for a specific cargo type (for example, containers).

Box 11: Decision Framework for Port Competition Enhancement

| Setting | | | Diagnosis | | | | Solutions | |
|-------------------------|------------------|--------|----------------------------|-------------------|---------------------------------|--------------------|----------------------|------------|
| Operational Environment | | | Competitiveness Indicators | | | | Competitive Remedies | |
| Port Setting | Facility Setting | Volume | Transport options | Berth utilization | Relative Tariff competitiveness | Port profitability | Structural | Regulatory |
| small port | 1 berth | low | 1 | low | N/A | low | S4 | R1 |
| | 1 berth | medium | 1 | medium | N/A | medium | S1 | R1 |
| | 2 berths | high | 3,4 | high | N/A | high | S1 | R1 |
| | 3 berths | high | 1,2 | high | N/A | high | S2 | R1 |
| medium port | 3 berths | medium | 1 | medium | N/A | medium | S2 | R2 |
| | 12 berths | low | 1,2 | low | N/A | low | S2 | R1 |
| | 12 berths | medium | 1,2 | medium | N/A | medium | S2 | R1 |
| | 12 berths | high | 1,2 | high | N/A | high | S1, S2 | R1 |
| large port | 12 berths | high | 3,4 | high | N/A | high | S2 | N/A |
| | 22 berths | low | 5 | low | similar rates | medium | S2 | N/A |
| | 22 berths | high | 1 | low | N/A | low | S2 | N/A |
| | 22 berths | high | 3,4 | high | N/A | high | S1, S2 | R1 |
| | 22 berths | medium | 5 | medium | similar rates | medium | S2 | R1 |
| | 22 berths | low | 5 | low | lower | low | S2 | N/A |

Transport option codes:

- 1 - No other ports or intermodal options
- 2 - No possibility for facility expansion/construction of a new port
- 3 - Possibility to expand existing facility
- 4 - Possibility to construct a new port/terminal nearby
- 5 - Other port or intermodal options

Structural codes:

- S1 - Introduce new berths-terminals
- S2 - Divide existing port into terminals
- S4 - Short-term operating agreement/lease/management contract

Regulatory codes:

- R1 - File/monitor tariffs
- R2 - Set tariffs/profitability limits

Source: Author.

If there is significant excess capacity, then cargo volume is low relative to the port's capacity and is so described in Box 11. If there are, or potentially could be, capacity shortages, then cargo volume is described as high.

Diagnosis. This identifies the most important criteria for assessing the extent of competition that exists. Recall from earlier in this module that the lack of existing or potential transport options, high berth utilization (as a measure of congestion), high tariff levels (relative to competitors), and high port profitability are conditions that may indicate or encourage anticompetitive behavior.

Solutions. The diagnosis of the competitive environment in light of the port's setting defines the potential operational and regulatory solutions for enhancing port sector competitiveness. This represents the course of action that the port planner and regulator may take.

The decision framework can be used to select port competition enhancement strategies and remedies. Referring to Box 11, consider a small port consisting of three berths and high volume. This is the only port serving its particular hinterland; there is no potential for adding capacity, and there are no intermodal options. Berth occupancy is high and profitability is high. Here, we have a classic monopolistic setting—high volume, high berth occupancy, high profitability, and no competition. The preferred strategy is to divide the port into terminals (indicated by solution S2) and to impose tariff filing and limits, with the possible need for tariff monitoring (solution R2).

Looking at the other extreme, a one-berth, low-volume setting, with low occupancy, no competition, and low profitability suggests entering into a short-term operating or management contract (solution S4), with the possibility for a subsidy bid.

Other scenarios include:

- For a medium-sized port with a low-volume setting and a lack of existing or potential transport options, low berth occupancy and low profitability point to

the need to even close some berths and place them into reserve. Placing excess capacity into reserve status reduces the port's maintenance costs while at the same time facilitating ease of entry as volumes increase.

- The situation changes in a scenario of a medium-sized port with a high-volume setting and interport or intermodal competition, excess capacity (as indicated by low berth utilization), competitive rates, and medium profitability. Here, the preferred solution is to divide the port into competing terminals.
- A large port with no competition, high volume, low berth occupancy, and low profitability points to terminalization (again, with possible berth closures) without the need for tariff filing as the excess capacity allows for easy entry if pricing becomes monopolistic.
- A setting with medium volume, medium berth occupancy, medium profitability, and similar rates to competitors' offers the possibility to terminalize the port with complementary tariff filing requirements.

As demonstrated, the decision framework can be a useful tool for the port sector reformer to optimize the design of a competitive setting. It can also serve to curtail the government's natural inclination to tightly regulate in circumstances where it is not needed. Overregulation would have the unintended consequence of constraining efficiency. Indeed, as Box 11 shows, only rarely is it necessary to actually set tariffs or profitability limits (solution R2) because of the structural remedies that are available.

4. DESIGNING A PORT REGULATORY SYSTEM

The shift in the role of the public sector from port services provider to landlord and regulator will require that the public sector develop new skills, institutional capabilities, and practices. These include regulating unfair or anticompetitive practices; designing and negotiating contracts

with private providers of port services; monitoring performance and enforcing compliance with general standards; and creating processes for wider participation in developing and implementing transport policies and programs.¹¹

Changing the role of governments from having direct control over state-owned and operated ports to exercising indirect guidance through appropriate regulation and pricing policy is likely to put greater demands on institutional capabilities in developing and transition economies than can be satisfied immediately. In some cases, improving regulations is largely a matter of strengthening the existing monitoring and enforcement capability. In other cases, it involves setting up participatory development and appeal processes. In yet others, whether there is a need for transport-specific institutions will depend on how these issues are dealt with at an economywide level.¹²

Regulation, however, must not become a strait-jacket that stifles initiative. This would be a return to the past, where the port authorities were often so heavily regulated by the supervising authority that they could not take any initiatives or soon lost their drive to innovate, invest, and improve efficiency.

To help design an economic regulatory policy and avoid the pitfalls of heavy handed regulation, the following guidelines will be helpful:

- Government should have a clear understanding of the competitive environment of the port sector.
- A decision on economic regulation should be based on the risk of anticompetitive behavior or on evidence that monopolistic behavior is occurring and that other methods of intervention (for example, cease and desist orders, sanctions, or fines) are not feasible, adequate, or appropriate.
- The regulator should clearly define what form of economic regulation (for example, rate of return or tariff setting) is to be applied and under what circumstances.

- Responsibilities for regulation of port operations¹³ and competition should be formally separated. Because of the risk of “agency capture” and the potential conflict of interest between the two forms of regulation, they should be separated and assigned to two different entities.
- In the event that economic regulation is imposed, regulators will need to have a reasonable understanding of the cost structure of the operation; this means that regulators will need proprietary financial information and will have to weigh the tradeoffs between the need for information and the burden of the reporting requirements on the operators.¹⁴
- When a determination is made that economic regulation is not necessary, but instead tariff monitoring or approval is warranted, then the regulator will need to clearly set out the tariff reporting requirements, the review process, and impose a time limit on itself as to when an approval decision is to be made.
- The entire competition regulation policy should be conveyed to the port and shipping community, as should the disposition of antitrust cases and regulatory policy decisions.
- Policy and case deliberations should include the opportunity for affected parties to present their views.
- Any decisions made by the regulator should be enforceable with recourse for appeal.

In designing a port regulatory system to protect customers and the general public interest, governments need to keep several broad principles in mind. First, it is important to be realistic; a balance must be struck between what is ideal (that is, as close as possible to perfect competition) and what is achievable. Second, regulation should not be too restrictive or controlling. Overly restrictive regulation could deter private companies from providing services or limit their ability to introduce innovative and efficient practices. Regulation that seeks to control in detail

how the private port operator runs its business risks defeating the central purpose of private sector participation—improving service delivery at the lowest possible cost to the user. Third, a regulatory system must be consistent with the institutional capabilities and resources of regulators.

Designing a port regulatory system to accommodate private sector participation can be broken down into eight basic steps¹⁵:

- Step 1.* Specify the essential regulatory objectives and tasks.
- Step 2.* Determine how far existing laws go toward assigning these tasks.
- Step 3.* Determine institutional arrangements for regulatory oversight.
- Step 4.* Consider how much regulatory discretion should be allowed.
- Step 5.* Consider what regulatory tools and mechanisms will be used.
- Step 6.* Specify port operating and financial performance indicators.
- Step 7.* Establish an appeal process and procedures.
- Step 8.* Incorporate regulatory details into laws and private sector contracts.

Presented below is a discussion of issues to be considered in completing these steps, along with checklists and illustrations to provide guidance for the design of a port regulatory system.

4.1. Step 1: Specify Regulatory Objectives and Tasks

Economic regulation of the port sector may have multiple objectives. These include:

- Promotion of efficiency.
- Satisfaction of demand, notably by promoting investment.
- Protection of consumers and users, particularly against monopolistic or other abuses by the operator(s).

- Protection or even promotion of competition, including protection of those competing against a dominant operator.
- Prevention of pricing or service discrimination.
- Protection of investors against unfair or unreasonable government action.

The primary purpose of economic regulation is to control anticompetitive behavior resulting from shortcomings in the marketplace. It should be distinguished from technical, safety, environmental, and other forms of regulation, although in practice these may often be intertwined.¹⁶ Regulators typically have the power to adjudicate disputes between port operators or between port users and operators. This may be the most important function of a regulator when a sector is liberalized and an operator engages in anticompetitive behavior.

Competition regulators are normally in charge of verifying and enforcing compliance with antitrust legislation. Monitoring compliance with concession and lease terms and conditions is normally assigned to the port authority as the lessor of the facilities (or land). The port authority is also given the power to enact general norms and regulations governing operational practices within the port.

The competition regulator's legislated powers typically authorize the regulator to require periodic submittals of tariff, financial, operational, and any other data necessary to support the regulator's industry monitoring responsibilities; receive and issue complaints about alleged anticompetitive behavior; compel operators to provide proprietary and other data during investigative (discovery) proceedings; deliberate over cases of alleged violations of antitrust legislation; and impose remedies in the event that the regulator determines a violation occurred.

The objectives of regulation in most developing and transition countries, however, frequently are different. The level of profits earned by the private operator should be of secondary importance. The main challenge in many underdeveloped markets

is to meet existing and latent demand for services. Hence, the primary objective of regulation should be to ensure that the operators (public or private) meet minimum performance standards, thereby taking action to close the gap between supply and demand. Consumers in most of these countries often prefer a high-priced service to no service at all. Furthermore, distributional objectives or concerns can, if needed, be addressed through subsidies or other mechanisms.

Depending on the objectives to be met, regulation may focus on tariff policy; direct and indirect subsidies; access to congested facilities; investment levels; performance targets; service quality and continuity; and so on. Most countries use a range of regulatory instruments (including specific stipulations in concession agreements or licenses and general rules) to govern the award of licenses, the oversight of the licensees, and more generally, the rights and obligations of users, competitors, and other parties.¹⁷

4.2. Step 2: Conduct a Legal Review of the Regulatory System

In assessing how the broad regulatory framework will affect the design of a port reform regime and the attractiveness of that regime to the private sector, governments need to consider a wide range of constitutional provisions, laws, rules, regulations, and activities of government agencies. These include:

- The constitutional and legislative division of responsibilities for service among national, regional, and local governments.
- Responsibilities and relationships of relevant government entities.
- General legislation affecting private sector involvement, including by foreign companies.
- Issues relating to land use titling.
- Competition law, and competition or antitrust enforcement agencies.
- Environmental laws.

- Contract and concession law.
- Labor law.

The minimum requirement for effective regulation is a framework of law pertaining to property rights, liability, conflict resolution, and contracting. There must also be capacity to enforce the laws and credible assurances that the laws will not be changed by political whim.

Box 12 presents the review and revision of port regulatory responsibilities in the state of Victoria, Australia. Further discussion of the legal aspects of the port regulatory system is presented in Module 4 of this Toolkit.

4.3. Step 3: Determine Institutional Arrangements for Regulatory Oversight

A key element in the design of a port regulatory system is determining the appropriate institution or institutions that should have primary responsibility for competition oversight. Items that need to be considered include:

- Should the regulatory entity be multisectoral or specific to the port sector?
- How can the regulatory entity best encourage direct participation or input from port users?
- Should it be centralized or decentralized?
- How can the regulatory entity's independence be protected from short-term political pressures and from the undue influence of port operators and service providers?
- How should the regulatory entity coordinate with other regulatory institutions?
- How can requirements for staffing and technical capabilities be met?

Should governments set up a regulatory body for the port subsector, as has been done in Argentina, Colombia (Box 13), and the United Kingdom; a single agency for the transport sector as in the U.S. Surface Transportation Board; or a multisectoral agency for all or

Box 12: Reviewing Port Regulatory Responsibilities in Victoria, Australia

In January 1995, the State of Victoria announced its intention to reform Victoria's ports. Until 1993, the chairmen of the port authority boards were also the chief executive officers of the port authorities. As a prelude to port reform, so-called "reorganizing boards" were established for each port authority, and the positions of chairman and chief executive were separated under the State Owned Enterprises Act of 1992. The port authorities continued, however, to exercise their considerable statutory powers to regulate, administer, and fund the operation of each port. In essence, while they remained under government control, the port authorities were regulating both their customers and themselves, and the Minister for Roads and Ports, to whom many of the statutory powers were deferred, was both the "regulator" and the "shareholder" of the businesses the port authorities conducted.

Examination of the statutes indicated that significant shifting of regulatory responsibilities

was necessary to ensure that a framework for regulation of the ports was in place prior to their sale, out-sourcing, or reorganization. First, it was necessary to provide for the orderly retirement of the port authorities' existing functions and powers as these were superseded by the new legislation. Second, new entities would have to be created to provide for the management of the Port of Melbourne and the shipping channels, since it had been determined that the channels should remain under public management but with a commercial focus. Third, environmental and occupational health and safety issues would need to be devolved to the most appropriate government body. Fourth, land and planning statutes would need to be altered to make possible the definition of each of the ports as a saleable entity or an entity whose operation could be outsourced. The revised responsibilities for regulation of the ports under the port reform regime are summarized below.

| Responsible Authority | Revised Responsibilities |
|---|--|
| Regulatory powers relating to harbormasters, direction of shipping, maintenance of certain aids to navigation, promulgation of standards for the dredging of channels, and responsibility to coordinate compliance. | The Marine Board: Significant amendments to the Marine Act of 1988 enlarged the powers and responsibilities of the Marine Board, making it the principal point of reference for navigational safety and containment of marine pollution. Some of these powers were transferred from the various port authorities in anticipation of the repeal of the port authority statutes. |
| Pollution of waters. | The powers previously residing in the port authorities under the POWBONS Act were transferred to the Environment Protection Authority. |
| Economic regulation of marine services. | The Office of the Regulator-General. |
| Transfer, handling, and storage of dangerous goods. | The Victorian Work Cover Authority. The Dangerous Goods Act of 1985 was extended to cover the transfer, handling, and storage of dangerous goods in ports. |
| Management of the Port of Melbourne. | Creation of Melbourne Port Corporation and Melbourne Port Services. |
| Management of channels in port waters, including dredging and maintenance of navigation aids. | Creation of the Victorian Channels Authority. |

Box 12: Reviewing Port Regulatory Responsibilities in Victoria, Australia (Continued)

| Responsible Authority | Revised Responsibilities |
|---|--|
| <p>The Governor-in-Council, on the recommendation of the Minister for Conservation and Lands, to issue title to the relevant port authority.</p> <p>The Minister for Planning was given facilitative powers to prepare specified amendments to the planning schemes so far as they affected the port areas.</p> | <p>Revocation of reservations, surrender of Crown land, issue of freehold title.</p> <p>Amendment of planning schemes.</p> |

Source: McCallum, Elizabeth. 1999. "Privatising Ports: A Legal Perspective." *Privatisation International*, November, pp. 53–55.

Box 13: Establishing a Port Sector Regulatory Agency in Colombia

During its prereform days, Colombian ports were known for low productivity and poor efficiency. Average length of stay for a vessel was twice that of other ports in the region. Colombia's institutional framework was typical of the prereform situations in Latin America. The port sector was highly centralized in an organization known as COLPUERTOS, whose responsibility included the administration, operations, management, and planning of the country's four primary ports: Cartagena, Santa Marta, Barranquilla, and Buenaventura. Private terminals were permitted, but could not be offered as public use facilities. COLPUERTOS also controlled the tariffs for each of these ports. In addition to having separate administrations for each port, COLPUERTOS had a central administration office in Bogotá. The total number of public sector employees was nearly 11,000.

Law 1, passed in 1991, sought to liquidate COLPUERTOS and create the Superintendencia General de Puertos (SGP) to:

1. Oversee COLPUERTO's liquidation.
2. Implement a new system of port societies and operating concessions.
3. Prevent monopolistic abuses among the port societies and operators (primarily through tariff review, tariff setting, determining the number of concessions to be awarded, and imposing fines and sanctions).

4. Establish technical norms for port operations. The SGP became part of the Ministry of Public Works and Transport as an independent entity with financial and administrative autonomy. Its costs are covered through the assessment of a supervision fee to be paid by the port societies and port operators.

In exercising its supervisory function, SGP established offices at the regional port societies' facilities. Total SGP employees originally numbered just over 100, including employees charged with monitoring operations at each port. By 2000, SGP employees had increased to more than 200. Regional port societies have the freedom to issue subcontracts for port services. For instance, in Cartagena, more than 25 private stevedoring companies licensed by the SGP compete for contracts with ship agents.

The approach to port sector reform in Colombia created a competitive environment that goes beyond the competition between stevedoring companies. Interport competition for container cargo was promoted among the Atlantic Coast ports of Cartagena, Santa Marta, and Barranquilla. Law 1 also permitted privately owned terminals to become public use facilities and to compete with the regional port societies.

Source: Kent, P., and A. Hochstein. 1998. "Port Reform and Privatization in Conditions of Limited Competition: The Experience in Colombia, Costa Rica, and Nicaragua." *Journal of Maritime Policy and Management* 25(4): 313–333.

most infrastructure sectors, as in Australia? On the other hand, perhaps there should be no special regulatory body at all, as in New

Zealand, where the Commerce Commission, the national competition agency, is in charge of economic regulation of the infrastructure

sectors on the basis of the country's general competition rules.

A strong case can be made for a multisectoral regulatory agency. A multisectoral agency should contribute a greater degree of coherence and consistency in the regulation of different sectors. It also allows lessons from one sector to be applied to others, creates administrative economies of scope, and may limit the risk of corruption or undue influence by a particular enterprise or ministry. It is particularly well suited for countries that lack the necessary financial, human, and administrative resources to equip separate agencies. Some argue that that it does not promote the development of in-depth sector expertise, but this can be addressed by a degree of technical specialization within the agency. Basic legal, economic, and financial skills and experience are, in fact, largely common to various infrastructure sectors.

A new generation of transport agencies is being introduced, inspired by the integrated U.S. model and led by Bolivia and Peru. Both countries have regulatory agencies that are much more independent from policy makers. The agencies cover all transport sectors and have their own sources of funding. They rely on this funding to subcontract for skills that they do not have in house. To ensure good coordination between the agency monitoring competition and the transport regulator in Peru, one of the members of the Transport Regulation Board is also a member of the Competition Commission.¹⁸

A typical regulatory approach is one in which countries monitor the port sector through an agency established to monitor and enforce antitrust law generally. Mexico, for example, has the Federal Competition Commission as the agency with primary responsibility for competition law. The Swedish and British counterparts are the Swedish Competition Authority and the Office of the Director General of Fair Trading, while in the United States it is the Federal Trade Commission.

The nonsectoral emphasis of these countries assures uniform application of competition policy across all sectors and allows consideration of

the impact of corrective or enforcement action within one sector on another. Moreover, antitrust monitoring and enforcement is distinctly separated from other sector-specific regulatory aspects; this assures neutrality or objectivity and reduces the possibilities of regulatory capture sometimes associated with sector-specific regulatory agencies.

In spite of such advantages, having an antitrust agency responsible for all sectors is a significant burden on the agency itself because of the array of cases that it may need to pursue. Moreover, specialists assigned to particular cases may not have specific industry expertise; specialists with backgrounds in commercial advertising practices, for example, may be assigned to pricing collusion cases related to the automobile industry; individuals who are experts in grocery store pricing practices may be assigned to maritime terminal operator cases. This approach means that a cadre of specialists will not be developed to the extent that assurances can be given that they will make a decision based on analyses reflecting a thorough understanding of the sector. An alternative approach, therefore, could be to establish an antitrust practices office within an agency already responsible for planning, development, and regulation of the sector, but with ratemaking independence.

How can the regulatory entity best encourage direct participation or input from port users?

Consumers, both individuals and businesses, are not typically heavily involved in the port regulatory process, even though their input can be critical to efficient service when the regulator has only limited means of acquiring information. Final consumers are often the best monitors of service quality. Ways to obtain consumer feedback include establishing user advisory boards or having user representatives on port authority boards.

While providing a formal basis for user feedback can be useful to operational regulators, applying it to an antitrust regulator should be discouraged. User input, or input by other interested parties, will often be sought by regulators during the investigation associated with an alleged

Box 14: A Simple Port Regulatory Structure for Sri Lanka

As part of the port modernization process undertaken in Sri Lanka in 1998-1999, a simple but effective proposal was formulated and embedded in the signed concession agreement for Queen Elizabeth Quay, which includes the establishment of a small regulatory Commission to resolve competitive issues concerning public and private port operations. The establishment of the commission in a period of 5 years (before 2003) will provide private port operators and private sector participants/investors with reassurance that a fair and transparent process would be available to resolve competitive issues. The objectives of the Commission are:

- To encourage and promote fair competition between all port operators, be it public or private, and to create an atmosphere of confidence for investors in port services and facilities;
- Upon complaint of any interested party, to judge disputes concerning these parties in an impartial and non-discriminatory manner taking into account the particular conditions of Sri Lanka, principles of equity and equal opportunity, revenue adequacy and common practices in the industry and other criteria the Commission shall deem appropriate;
- In response to complaints from interested parties, to regulate tariffs of port services based on transparent and objective criteria of rate reasonableness, in the event that specific tariffs are proven before the Commission to be incompatible with the principles of fair competition or with the common practice of the industry. The Commission would not interfere, at its own initiative, in the tariff setting of public or private commercial legal entities carrying out activities in any port area in Sri Lanka;
- To act upon complaints from users of Sri Lanka port facilities that carry out legal commercial activities related to shipping, transport of passengers and transport

and/or storage of goods, regarding the way public services are being provided by SLPA and to direct under threat of penalty that SLPA correct the way it provides public services.

The Commission will consist of six regulators who will serve a single, six-year term. The terms of the regulators shall be staggered so two new regulators will be appointed every two years. The Minister for Ports, Rehabilitation and Construction will appoint the regulators based on nominations received. The Chairman and one regulator shall be appointed from lists nominated by the Sri Lanka Ports Authority; one regulator each from nominations by a representative organization of shipping agents, an organization of private terminal operators, the Sri Lanka Chamber of Commerce and the Arbitration Institute of Sri Lanka.

Proceedings will be advocative. Interested parties shall have an opportunity to present facts and arguments in support of their interests before regulators. Proceedings will be open to the public and transcripts of evidence presented and discussions held during proceedings will be maintained for public review. The decisions of the Commission will be reached by majority decision. Each decision will be accompanied by a set of findings that explain the basis of the ruling and clarify issues of administrative law and precedent.

Decisions are binding on parties to disputes. An appeal of the findings and directives may be submitted to the Chairman of the Commission; the sole basis for appeal shall be the failure of the Commission to uniformly and equally apply its principles of its own administrative law. The Commission shall have the power to apply civil sanctions and penalties which devolve from the power of the Minister for Ports, Rehabilitation and Reconstruction.

violation. Under these circumstances, alleged violators, complainants, and other interested parties are typically given the opportunity to express their views and present evidence during the case disposition process. If a port user sits as a regulator, as the Sri Lankan legislation proposes,

this creates the potential for a user to sit in judgment over a customer or another competitor, giving rise to conflicts of interest (Box 14).

Advisory bodies should be considered seriously as sources of input to the port regulatory entity.

They offer a degree of transparency and inject analysis and debate in discussions that previously would have taken place in the secrecy of a ministerial cabinet. The advisory body can see its role and influence increase when the authority competent to make a specific decision is not only forced to seek its advice and take it into account, but also to justify any departure from such advice. Furthermore, for certain matters, the competent authority may not be allowed to reach a decision going against the opinion or advice received.

How can the regulatory entity's independence be protected from short-term political pressures and from the undue influence of port operators and service providers? The independence of a regulatory body is worth little unless it is upheld against undue influence by the regulated industry or by unreasonable political intervention. Cases of regulatory capture by the industry are not uncommon. The problem is particularly acute when regulatory agencies are set up as part of the civil service in countries where staff is not adequately compensated. By removing regulatory staff from civil service constraints, governments may remunerate them in ways that better protect them from industry capture and that allow the agency to attract qualified candidates, hence enhancing the “professionalization” of the regulatory function.

Rules need to be laid down concerning potential conflicts of interest among the regulator's staff (for example, by prohibiting former staff of the regulatory agency from working for a regulated operator for a specified period after leaving the agency). If independence from undue industry influence is to be achieved, then competition and operational regulation should be assigned to two different entities.

Traditionally, a public port entity had full responsibility for administration and operation of the port sector. This included regulating operational practices applicable to navigation and vessel calls as well as providing the full range of cargo handling and vessel services. In a privatized setting, the port authority (landlord form) will retain operational regulation responsibility

in a privatized setting, along with other functions associated with its ownership of facilities (for example, infrastructure maintenance, lease management, and monitoring for compliance).

Today's modern port authorities have a certain degree of independence, many having the authority to engage in contracting and leasing, setting their own capital and operating budgets, tariff setting (for port authority charges), and hiring and firing, all without the need for approval from other government entities. In the discharge of many of these duties, port authorities are in contact with port operators on a frequent basis.

Similar independence can be accorded the competition regulation agency. Box 15 enumerates a number of strategies that can be used to ensure a more independent agency culture. Two of the most critical factors are independence relative to budgeting and case disposition. As Box 15 notes, it is imperative that the competition agency develop budget independence, as the power and independence of the agency can be limited by the budget process itself. Agencies require funds to operate, and executive and legislative review can exert powerful influence over agency actions. Retribution, in the form of budget cuts, can be taken against regulators if their decisions or functions are politically unpopular. It is possible, therefore, for the competition regulatory body to enhance its independence by securing at least a portion of its budget from fees assessed on port operators.

A critical aspect of regulatory independence is the ability to reach decisions on cases based on a fully developed public record. Such decisions should only be affected by the evidence and data collected in the course of the agency's monitoring responsibilities and in investigating complaints, which may include testimony as well as data collection and review of proprietary information that may be requested of the alleged violator. This suggests also that the industry need not be informed of which professionals within the agency are assigned to do the analysis of a particular case, although the

Box 15: Safeguards for Creating an Independent Regulatory Body

Creating an independent agency, no easy task in any setting, is even more challenging in countries with a limited tradition of independent public institutions and limited regulatory experience and capacity. Measures that can aid in establishing an independent agency include:

- Provide the regulator with a distinct legal mandate, free of ministerial control, with an independent board.
- Establish minimum professional criteria for appointment.
- Involve both the executive and the legislative branches in the appointment process.
- Appoint regulators for fixed terms and protect them from arbitrary removal.
- Stagger terms so that they do not coincide with the election cycle, and for a board or

commission, stagger the terms of the members.

- Exempt the agency from civil service salary rules that make it difficult to attract and retain well-qualified staff.
- Provide the agency with a reliable source of funding, usually earmarked levies on regulated firms or consumers.

In addition, persons appointed to these positions must have personal qualities to resist improper pressures and inducements. And they must exercise their authority with skill to win the respect of key stakeholders, enhance the legitimacy of their role and decisions, and build a constituency for their independence.

Source: Smith, Warrick. 1997. "Utility Regulators—The Independence Debate." In *The Private Sector on Infrastructure: Strategy, Regulation, and Risk*, p. 23. Washington, DC: World Bank.

agency would assign a contact person during the course of case disposition. This anonymity can contribute toward the independence of decisions related to a case and reduce the opportunity for industry and political forces to unduly influence them.

Independence needs to be reconciled with measures to ensure that the regulator is accountable for its actions. Checks and balances are required to ensure that the regulator does not stray from its mandate, engage in corrupt practices, or become grossly inefficient (Box 16).

How can requirements for staffing and technical capabilities be met? Many developing countries confront a challenge in assembling experienced professionals to staff a regulatory agency. Regulatory agencies have limited resources and are often unable to attract qualified people. The ability of independent agencies to sidestep civil service salary restrictions and to have access to earmarked funding makes it possible to recruit and retain better-qualified staff and to hire external consultants. Much of the work traditionally performed by regulators lends itself very well to contracting out to private experts. Complex regulatory functions need to be performed professionally. When limited administrative capacity is

a constraint, at least in the short and medium term, contracting out of regulatory tasks should be considered.

Governments and regulators can, and often do, hire consultants, advisers and experts to assist them in all aspects of their regulatory tasks. Such contracting out can be taken one step further and formalized through, for example, performance audits or certifications performed by independent verification companies under contract with the regulator. Auditors could be asked to certify that information provided by the regulated port operators (including performance targets) is fair and reliable. The verification company will base this opinion on checks that they have performed and on their assessment of the systems the companies established to produce the required information. In addition, they could be asked to certify that the regulated company is in compliance with the legislation in effect, and if not, to determine the degree of noncompliance and the factors that may have contributed to it. Their task could also include surveys of port user satisfaction.

Finally, verification companies could measure the regulated companies' performance against key parameters, prepare time series showing

Box 16: Reconciling Independence with Accountability

Striking the proper balance between independence and accountability is notoriously difficult, but the following measures to do so have been adopted by a growing number of countries:

- Mandating rigorous transparency, including open decision making and publication of decisions and their rationale.
- Prohibiting conflicts of interest.
- Providing effective arrangements to appeal the agency's decisions.
- Providing for scrutiny of the agency's budget, usually by the legislature.
- Subjecting the regulator's conduct and efficiency to scrutiny by external auditors or other public watchdogs.
- Permitting the regulator's removal from office in cases of proven misconduct or incapacity.

Source: Smith, Warrick. 1997. "Utility Regulators—The Independence Debate," In *The Private Sector on Infrastructure: Strategy, Regulation, and Risk*, September, p.23. Washington, DC: World Bank.

trends, and compare these results with international norms. But, performance comparisons require highly knowledgeable experts to do proper performance benchmarking. For example, to explain why a terminal achieving 20 container moves per hour may be a much better performer than a terminal achieving 25 container moves per hour requires in-depth knowledge of the business and full availability of all required information.¹⁹ None of these functions imply any discretionary decision making on the part of the auditor. What such audits would do, however, is provide the decision makers with a sound analytical basis for their decisions.²⁰

4.4. Step 4: Determine Degree of Regulatory Discretion

A key question in designing a port regulatory system is to determine how much discretion should be granted to regulators. Discretion helps regulators respond flexibly to changing conditions, but it also creates regulatory risks for private partners and may, therefore, discourage

their participation or raise the price of their involvement. A delicate balance needs to be struck between allowing regulatory discretion and developing very tightly specified contracts that will have to be renegotiated when unexpected changes occur.

Once a contract has been awarded to a private company, it is that company's job to run the business. This may seem an obvious point, but experience suggests that great care is needed to ensure that regulators do not interfere in the day-to-day management of the port.

Regulations should focus on desirable public interest outcomes, not on the specific steps taken to achieve these outcomes. For example, it is the regulator's task to monitor whether the stated performance standards are met. It is the operator's task to decide what technical measures and operating practices are needed to meet the standard. When a government specifies the regulator's duties and decides on the appropriate staffing and skill mix for the regulatory agency, it must have a clear understanding of the dividing line between regulation and operational management.

When discretion is retained on tariffs or other issues of concern to investors, the challenge is to manage it in a way that minimizes the risk of misuse. The exercise of discretion needs to be insulated from short-term political pressures and other improper influences and to be based on competent analysis. Entrusting regulatory discretion to ministers with broad authority often will not meet these tests, particularly when the government continues to own other port enterprises. In this case, there will be no arm's-length relationship between the regulator and the government-controlled firm, and there may be concerns that, in exercising discretion, ministers will favor the state enterprise over rival private firms. But even if the government has no ownership role, ministers will still be subject to short-term political pressures and changes in regulatory policy. Restrictive civil service rules in many countries also make it difficult for ministries to attract and retain well-qualified professional staff. What is required is

an agent at arm's length from political authorities, regulated port firms, and consumers. Organizational autonomy helps to foster the requisite expertise and preserve those spatial relationships.²¹

Before they can calculate the price they are prepared to offer, investors will want to know the regulatory system under which the company will operate. They will also form a view on how this regime can be expected to evolve in the years ahead. To reassure investors, the government may have to promise not to alter the regulatory system substantially, or at least not to do so to the detriment of the investors. To be effective, however, this commitment needs to be credible. Credibility could be enhanced by provisions in the privatization agreements allowing the company to automatically adjust its tariffs based on a given formula, or by a provision that the government will compensate the operator for any negative impact that results from government rejection or delay of a contractually agreed tariff increase.

4.5. Step 5: Identify Appropriate Regulatory Tools and Mechanisms

The pricing regime, particularly the tariffs and their adjustment formula, is typically a cornerstone of the economic regulatory system. It will determine the return investors can expect and the incentives they may receive to provide quality service.

The chosen tariff formula must be one that can be effectively applied by the competent authority. This presupposes, in particular, that the information needed by the authority to perform its function is available, that the authority can require the regulated enterprise to disclose such information, and that it can check its accuracy and reliability. The degree of complexity of the price adjustment mechanism thus account for the regulatory agency's technical resources and capacity. In other words, the regulatory mechanism should be tailored to the specific characteristics and constraints of the country and sector concerned.

Traditionally, governments have relied on rate-of-return regulation as the primary instrument of economic regulation. In other words, governments have generally guaranteed to port operators that they would recover their costs (within very general guidelines) and get a mark-up to reward investors; thus, the label cost-plus regime. These regimes, however, do not give strong incentives to operators to cut costs. The introduction in the United Kingdom (U.K.) of price caps changed this by showing that the regulatory regime could be designed to minimize costs. Price caps allow the operators to keep a portion of the cost savings they realized, with part of these savings being shared with port users, and sometimes governments. In many countries, hybrid systems have been developed, which result in some degree of immediate rent sharing at the beginning of the period for private sector operations.²²

Rate-of-return regulation allows the regulated company to charge prices that would cover its operating costs and give it a fair return on the fair value of its capital. While rate-of-return regulation gives operators little incentive to cut costs, it protects investors in risky environments and may persuade some of them to bid for deals they would not otherwise have considered. A problem with this regime is its demanding information requirements. To allow regulators to determine reasonable rates of return, the regime places them in a position to make decisions about the wisdom of investments and operating procedures, confusing the role of managers and regulators.²³ Box 17 presents a comparison of the benefits of price caps and rate-of-return regulation.

Price-basket controls such as the RPI-X formula used in the U.K. limit tariff and price increases to the increase in the retail price index (RPI) of a 12-month period minus a percentage that takes into account expected productivity gains.

One difference between the RPI-X and the rate-of-return formula is that the administrative burden of the former is lighter because it is less dependent on information supplied by the

Box 17: Price Cap versus Rate-of-Return Regulation

In practice, price cap and rate-of-return regulation have differences and similarities.

First, a rule such as RPI-X considers only how prices should be changed from year to year; it doesn't tell a regulator how to set them in the first year. A regulator wanting to use price cap regulation for a new service would need to set the initial price in some way, and one obvious option is to consider the price the firm needs to charge to earn a satisfactory rate of return. Second, a price cap needs to be periodically reviewed; a regulator cannot reliably predict what changes in productivity will be possible in say, 10 years. In the United Kingdom, price caps typically are reviewed every five years. And during a review, the regulator naturally takes into account the regulated utility's rate of return. If it is too high, the price cap is likely to be reduced; if it is low, the price cap may be relaxed.

But as long as price cap reviews are sufficiently infrequent (say, every five years), price cap and rate-of-return regulation should have different effects on the behavior of regulated firms. In particular, a price cap regime subjects businesses to more risk. For example, under price cap regulation, if a firm's costs rise, its profits will fall because it cannot raise its prices to compensate for the cost increases at least until the next price review, which may be several years away. Under rate-of-return regulation, however, the business would seek—and typically be granted within a year or so—a compensating price rise, so its profits would not change much. But if the firm's costs fall, the price cap regulation is more advantageous to the firm than rate-of-return regulation because it would retain more of the resulting benefits as profits. Thus, under rate-of-return regulation, consumers bear some of the risk that firms bear in price cap systems. The difference in impact means that firms subject to price cap regulation have a stronger incentive to lower their costs because they keep more of the cost savings than they would if they were subject to rate-of-return regulation. But the increased risk they bear tends to raise their cost of capital.

Source: Alexander, Ian, and Timothy Irwin. 1997. "Price Caps, Rate-of-Return Regulation, Risk and the Cost of Capital," In *The Private Sector on Infrastructure: Strategy, Regulation, and Risk*, pp. 33–34. Washington, DC: The World Bank Group.

regulated enterprise itself, it requires less verification on the part of the regulator, and it allows the regulator's discretionary interventions to be spaced more widely. Some argue, on the other hand, that the administrative burden of price caps may be higher rather than lower because in the end regulators need to perform the same analysis as required for rate-of-return regulation and they must forecast productivity improvements over the next four or five years.²⁴

In many ways, the biggest difference between price controls and rate-of-return regulation is one of emphasis. Regulators must not ignore the rate of return when they reset a company's price cap, but the price cap is an indirect, rather than a direct, control on the rate of return. Rate-of-return regulation has depended on formulae designed to ensure that the regulated company receives the right amount of revenue, and it has often been bogged down in legal arguments. The formulae are only a guide to the level of the price control, however, and still leave room for judgment. The regulator must decide whether to set prices so that they equal the company's predicted costs at the end of the review period or over the period as a whole. The regulator may look at the company's cash flow, as well as the discounted value of its costs and revenues. The regulator may use formulae to check the impact of alternative assumptions about factors such as the growth of demand, and might adopt a price control that seems slightly generous on the base case because otherwise the company would be in a difficult position if the alternative assumption became true. Finally, if a company knows that a formula will be used in a mechanistic manner, it will have an incentive to attempt to manipulate the inputs to the formula. It may be that giving some discretion to the regulator can reduce this incentive. This discretion should not be excessive, however, because the company must remain confident that it can recoup its investment, but it should also allow the regulator to use its judgment of what is fair under a particular set of circumstances, rather than simply blindly following a set of rules.²⁵

Revenue-yield controls allow the regulated company to set tariffs as long as the total revenue or revenue per unit of activity stays within limits established by the regulatory body. An advantage of this approach is that the regulator does not have to specify or review individual port tariffs. Disadvantages include the possible fluctuation of tariffs as the regulated firm seeks to earn the maximum revenues permitted, the complexity of setting the maximum allowable revenue per unit of activity, and the difficulty in forecasting demand if the upper limit is based on total revenues.²⁶

If several ports or companies within a port are regulated together, the regulator may be able to make “yardstick” comparisons among them. If all entities face the same operating conditions, they could, in theory, achieve similar levels of costs. The regulator then could calculate the average cost among them (either over the whole group or among the most efficient companies) and set price limits based on this level (although one should take into account that terminals have very different sizes and hence very different unit costs). Each company, then, has an incentive to reduce its costs, since this will not affect its allowed revenues.

4.6. Step 6. Specify Operating and Financial Performance Indicators

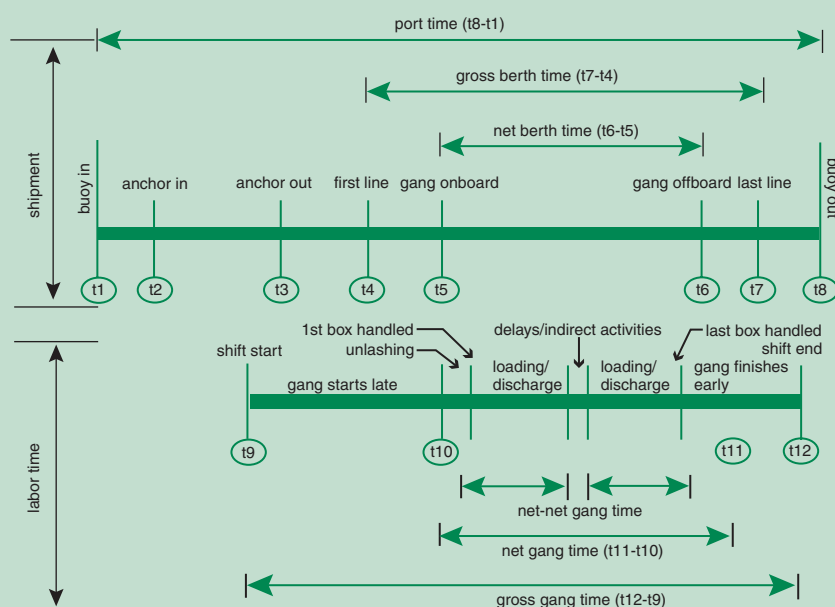
In an ideal competitive setting, market dynamics will force ports to offer efficient services at the lowest possible costs. But in many cases, port competition may be insufficient to induce a positive effect on port performance. For reasons explained elsewhere in this Toolkit, a variety of factors, particularly limited cargo volumes and the required levels of specialization (that is, limited cargo volumes for the different terminals or port facilities), will affect a country’s options to encourage competition. Low cargo volumes generally will either greatly restrict the number of terminal operators providing services, or may enable competition for vessel stevedoring while retaining the public sector’s monopoly over the yard or storage operation. Therefore, in environments where “ideal” levels of competition cannot be established, regulators must seek

ways to replicate the conditions that discipline competitive behavior. One of these ways is through regulation of service performance.

Regulators, typically through provisions in concession, operating, or lease agreements, will incorporate performance standards (or minimum thresholds) expected of the concession holder during the life of the agreement. These thresholds may change in accord with the investment obligations scheduled during the term of the agreement. For example, when a facility is first turned over to the operator, performance standards should consider the technology available in the port at the time of the agreement. This effectively means that the performance standards should be regularly reconsidered and possibly revised.

When considering the use of performance standards, it is helpful to view port services as a production process. This process refers to the range of services provided to the vessel and cargo from the port’s entrance buoy to the berth and on to the gate, and then from the gate to the berth and back out through the port’s entrance buoy. Box 18 shows the production process for a typical port. At the port’s buoy, the marine pilot will board the vessel, which may or may not anchor, depending on berth availability. The vessel then proceeds to the berth, where a tug will assist in the vessel’s berthing operation. Line handlers stand ready to tie the vessel to the berth, following which gangs will appear to provide the vessel with stevedoring and quay cargo handling services. Once the loading and discharging and lashing operations are complete, the line handlers will reappear to untie the lines, the vessel will receive a tug assist once again in the deberthing operation, and a pilot will reboard the vessel to guide it to the entrance buoy for the vessel’s departure from the port.

The vessel may be delayed at each step in the production process, which in turn affects the total time (referred to as port time) a vessel spends in the port. For example, on arrival at the entrance buoy, the vessel may have to wait

Box 18: Port Production Process

Source: Author.

for the pilot's arrival, a berth may not be available for the vessel, a tug may not be readily available for the berthing operation, stevedoring and cargo handling gangs may not be standing ready at the vessel's assigned berth, a crane may not be available for the vessel's hatch removal, a crane may break down during the loading or discharge operation, there may be nonoperational times (that is, times when work cannot proceed because gangs cannot be recruited as, for example, in ports where only one or two shifts per day are worked or where no work is carried out Sundays), and so on. Each of these events is associated with times, which, when summed, will result in the vessel's total time in port. In addition to these, the vessel may be vulnerable to a number of uncontrollable factors that may substantially increase the vessel's port time, such as having to wait for high tide at the entrance channel, inclement weather, or labor disruptions.²⁷

In the port planning process, analysts will frequently assess the relative performance of their ports against other ports in the region. They do this by developing a series of standardized indi-

cators that reflect the degree of efficiency at each step of the port operation. As Box 18 shows, the times at which each step starts and stops are documented, allowing for the calculation of a variety of parameters, also shown in Box 18, that the industry uses to calculate performance.

There needs to be a clear nexus between the parameters being measured and the tasks being performed by and under the control of the operator. The scope of services provided by the operator is dictated by the concession agreement. In exceptional cases, an operator may be given a concession covering all of the services between the entrance buoy and the gate. This means that the operator will provide pilotage and tug assist as well as all of the services conducted within the confines of the terminal. This would suggest that the regulator can reasonably apply indicators that include these services. The regulator, therefore, must be careful in its selection of performance measures. The regulator should be sensitive to what is controllable and what is not from an operator's point of view. For example, the "port accessibility" parameter

may be affected by the government's efficiency for clearing ship's documentation. The time spent for this purpose can greatly skew the performance of the operator, who is responsible for other elements that define port accessibility, such as pilotage and tug services. Therefore, what is acceptable performance from the regulator's point of view should consider only the factors that the operator can control. On the other hand, the terminal operator may be given responsibility only for services rendered between berth and gate, meaning that the regulator would exclude port accessibility as a parameter. One should not lose sight of the fact that indicators will only work if they have been set for specific tasks or operations and take into account the many factors that can influence performance.

An important factor for a country's shippers is vessel service availability, which comprises connectivity and frequency. Connectivity refers to the number of times a shipper's cargo is transferred or otherwise handled en route to its destination. Generally, the greater number of transshipment moves the cargo undergoes, the more time the cargo will take to reach its final destination. Frequency refers to the number of calls a vessel makes to the port within a prescribed period of time, usually referred to as weekly, twice-weekly, biweekly, fortnightly, or ten-day services (in the case of liner and feeder service trades). Increasingly, to maximize the utilization of their largest and most expensive vessels, shipping lines use a system of feeder vessels and transshipment ports to sort and redirect cargo. From a shipper's perspective, this may improve (increased frequency) or degrade (increased transit time and damage) service.

Assuming volumes justify it, a port may benefit from both connectivity and frequency if it can minimize the vessel's port time. If the carrier is subjected to congestion or delays, then it may avoid a call, minimize its calls, or impose penalty charges as part of its freight bill to shippers. Therefore, performance clauses within the concession agreement should focus on indicators that address the vessel's time in port (or at the

terminal, depending on the operator's responsibility). As earlier noted, the clauses should also recognize the responsibility and span of control accorded to the operator in the concession agreement. For example, a terminal operator should not be penalized if port time was less than desirable because of inefficiencies associated with pilotage (which the operator does not provide) and not the operation at the berth.

Regulators should be concerned with a vessel's time in port, regardless of the operator's responsibility, if for no other reason than to have the ability to ascertain the causes of undue vessel time. In terms of imposing performance standards on operators, however, the regulator should focus on what occurs at the berth, as the vast majority of countries that have undertaken port privatization have awarded concessions to operators for activities at the berth and within the terminal's backup area. Indicators that focus on berth performance also reflect what is happening on the vessel (while at berth) as well as in the backup area of the terminal.²⁸ Such measures should be general in that the regulator is concerned with the operator's overall productivity, and not with the productivity of every subactivity and the incremental times associated with them.²⁹

For concession agreements, the regulator should consider incorporating gross berth productivity, which refers to the number of moves (in the case of containers) or tons (in the case of bulk cargoes) handled in a unit of time, usually expressed in moves per hour or tons per hour. In addition to the time in which the vessel and its cargo are actually worked, gross berth time includes the time the vessel waits for the gang, lashing and unlash time, and other times associated with the preparation required to perform each activity.

The technology used is an important factor in determining what the number of moves per hour should be. For example, a terminal with no ship-to-shore crane must rely on the ship's own gear to handle the cargo. In the container trades, acceptable productivity levels may be on the order of 10–12 moves per gross hour per crane for such operations. In a port with mobile

cranes, expected productivity can be 15–20 moves per gross hour per crane, while gantry cranes can operate at 20–30 moves per gross hour per crane and higher.

Establishing such thresholds for bulk handling facilities is more difficult. There is a plethora of technologies available for solid bulk handling that offer a wide productivity range. For this reason, the regulator may consider regulating in accord with berth congestion factor or ship waiting rate, which compares the time a ship had to wait for a berth compared to the time it actually spent at berth. Simply put, berth occupancy denotes the total time a berth is occupied as a function of total available berth hours. An accepted standard would be a waiting rate that does not exceed 5 percent for a full container vessel, does not exceed 10 percent for a general cargo or breakbulk vessel, and 10–20 percent for a bulk vessel. In the event an operator exceeds this threshold, the operator could be required to invest in more productive technology to reduce the time that vessel would have to wait for a berth.

The performance threshold used by the regulator should, therefore, take into account the technology available at the port, or envisioned as part of the required investment program incorporated into concession agreements. In this regard, it is conceivable that the same agreement may have different performance thresholds by berth in accord with the port's capabilities at different stages of an investment program. This is because a port may have different technologies available at different berths at different times during the concession period, or vessels may simply choose not to use gantry cranes, which are relatively costly for smaller vessels. Box 19 lists some of the more common indicators used to measure port performance and that may be appropriate for inclusion in concession agreements.

4.7. Step 7: Establish an Appeal Process and Procedures

The design of an appeals regime should be a function of the specific institutional set-up and

legal traditions of a country. Courts may play a role where they have or can reasonably acquire the expertise, integrity, and efficiency needed to settle appeals on regulatory matters. Generally, in the design of a regulatory framework, the interests of speed and certainty (which lead to denying appeals against regulatory decisions or limiting the grounds and time frame for filing such appeals) should be balanced against those of fairness toward regulated entities (and consumers) and accountability of the regulator.³⁰

In situations where private port investors and operators are concerned that local conditions may not provide a competent, fair, and impartial appeal, the regulatory framework may specify that such appeals will be adjudicated by an agreed-on international arbiter (Box 20).

4.8. Step 8: Incorporate Regulatory Details into Laws and Contracts

Often, a concession agreement or management contract contains most of the regulatory provisions governing the performance of the private sector partner to the contract. In deciding what regulatory elements the contract should cover and in what depth, two questions arise³¹: Is it possible and desirable to encompass all the necessary regulatory provisions within the contract? If so, what degree of regulatory discretion should be available?

Though it is sometimes argued that a tightly written contract can remove the need for direct regulation, this is rarely the case. Even for a short-term management contract, someone needs to be able to monitor performance against the contract, have the authority to allow minor variations in contract specifications, and arbitrate disputes between the company and its customers and between the government and the contractor. And for longer-term concession and build-operate-transfer (BOT) contracts, it is usually neither possible nor desirable to have highly specified contracts, especially in countries undergoing rapid social, political, or economic change (although one should aim to have as much

Box 19: Port Performance Indicators

Some of the more common indicators of port operating and financial performance included in management contracts and concession agreements are presented below. Often separate values for indicators will need to be specified corresponding to different major categories of port traffic and vessel types (containers, breakbulk, dry and liquid bulk).

Operating Measures

| | |
|---------------------------------|--|
| Average ship turn around time | Total hours vessels stay in port (buoy-to-buoy time) divided by total number of vessels. |
| Average waiting rate | Total hours vessels wait for a berth (buoy-to-berth time) divided by total time at berth. |
| Gross berth productivity | Number of container moves or tons of cargo (for breakbulk and bulk cargoes) divided by the vessel's total time at berth measured from first line to last line. |
| Berth occupancy rate | Total time of vessels at berth, divided by total berth hours available. |
| Working time over time at berth | Total time of vessels being serviced at berth divided by total hours at berth. Reasons for non-working time may include labor agreements and work rules, rain, strikes, equipment failure, port operating schedules, and holidays. |
| Cargo dwell time | Cargo tons times days in port from time of unloading until the cargo exits the port, divided by cargo tons. |
| Ship productivity indicator | Total number of moves (for containers) or tons handled (for breakbulk and bulk cargoes) divided by total hours in port. |
| Tons per gang-hour | Total tonnage handled divided by total number of gang-hours worked. |
| TEUs per crane-hour | Total number of TEUs handled divided by total number of crane-hours worked. |
| Tons per ship-day | Total tonnage of cargo handled divided by total number of vessel days in port. |

Financial Measures

| | |
|--------------------------------------|--|
| Operating surplus per ton handled | Net operating income from port operations divided by total tonnage of cargo handled. |
| Charge per TEU | Total charges for container handling divided by total TEUs handled. |
| Collected charges per billed charges | Total collected charges as a percent of accounts billed (with 30-day lag). |

Source: Author.

detailed specification in the contract as reasonably possible, therefore limiting the degree of uncertainty for investors, users, and governments alike).

Detailed, unambiguous, and very specific contract conditions do have advantages, especially in countries that do not yet have fully developed maritime and port legislation (see Box 21). In particular,

Box 20: International Arbitration

International arbitration is a form of dispute settlement under which the disputing parties agree to abide by the ruling of independent arbitrators, who are typically selected for their technical expertise in particular areas as well as their reputations for integrity. International arbitration has a long history in international trade and investment, where proceedings are typically held in a neutral third country. While the cornerstone of arbitration is the consent of each party, to be effective the decision or award needs to be enforceable in the country where the losing party holds assets. This is generally achieved by treating the award as equivalent to a judgment of a local court.

International arbitration is a potentially important part of the legal and regulatory framework for infrastructure privatization in three main contexts:

- Foreign investors will typically feel more comfortable submitting contractual disputes to a neutral and expert forum than to local courts, which may be perceived to be biased toward local parties, prone to political direction, slow, less expert, and sometimes corrupt.

- In some limited circumstances, arbitration may be an alternative to creating a separate regulatory agency. The key requirements would include that:

- ~ The dispute in question relates to the interpretation and enforcement of a specific obligation, rather than the need to exercise a broader regulatory discretion in the public interest.
- ~ Political acceptance of the decision does not require participation by a broad range of interests in addition to the disputing parties.
- ~ The dispute in question does not require urgent attention.
- ~ Compliance with the arbitrator's orders does not require ongoing supervision.

In some circumstances, arbitration may be adopted as an appeal mechanism for decisions of regulators. As in the previous case, a key requirement will be that there is some reasonably objective standard that can be applied in determining the appeal.

Source: Kerf, Michel, and Warrick Smith. 1996. "Privatizing Africa's Infrastructure: Promise and Challenge," p. 44. Technical Paper No. 337, World Bank, Washington, DC.

they help protect the private company from politically motivated and frequent changes in service requirements. By reducing revenue risk, such protection may help attract more bidders for the contract, reduce the cost of capital, and help the government strike a more advantageous bargain.

The experience generally has been that weak regulatory bodies have been given too much discretion without sufficient policy guidance to make decisions on matters left out of the contracts. In developing countries, the combination of weak regulatory bodies and poorly written contracts has resulted in an extremely large percentage of contracts being renegotiated. The losers in these negotiations have usually been the taxpayers, as governments often end up granting the private parties significant financial concessions.³²

One solution is to use rule-based contracts because they tend to make regulation easier in

the face of significant uncertainty. The challenge is to develop and incorporate rules that are fair and have reasonable information requirements. This is one of the advantages of price cap regulation.

The control of prices charged by a regulated firm is often characterized as a contest between the regulator and the service provider in which the two players do not share the same information. The asymmetry of information places the regulator at a disadvantage. Thus the regulator must define its information requirements and data processes early in the design of the concession contract and transaction. And it should take advantage of the government's leverage during bidding to extract information from concessionaires as well as commitments to continue providing flows of information to aid tariff reviews.

Box 21: Checklist of Regulatory Items for Port Operating Contracts

1. Are the rules for establishing the level and structure of tariffs clear?
2. Does the contractor have the freedom within specified limits to vary the tariff structure and levels?
3. What are the procedures for raising tariffs? What is the frequency of updating? Is there any requirement for operating efficiency gains?
4. Is the operator responsible for collecting all tariffs and charges?
5. Will the tariffs be remitted to the government or retained by the operator?
6. How will depreciation and taxes be treated in the rate structure?
7. If the tariff adjustment method inflates individual cost components, is a locally published index available for each component?
8. What are the trigger events that will allow the operator to adjust the tariff? Typical trigger events include significant variations in reference volumes, a change in the concession area, significant inflation requiring more frequent adjustments, and changes in tax and depreciation laws.
9. Are the guidelines for tariff appeals to the regulatory authority clear and unambiguous?
10. Will the concessionaire provide information as may be reasonably required by the regulator? What is the definition of reasonable?
11. What are the mechanisms for independent verification of financial data, data on the condition of assets, and the achievement of performance targets?
12. What are the provisions for market testing when the contractor subcontracts tasks or purchases services from associated companies?
13. What is the goal of contract information requirements?
14. What access will the regulator have to assets and records?
15. Who will pay for independent financial auditors and technical auditors and who will be responsible for their selection and training?
16. What are the provisions for submission of regulatory accounts and performance data and for disaggregated accounts to aid comparative competition?
17. What are the requirements for publication of financial information and performance standards?
18. Will the regulator require audits by an independent auditor? What auditing procedures will be used to confirm the tariff cost components?
19. What technical information is the concessionaire required to report?
20. What financial information is the concessionaire required to report?

Source: Author.

5. SUMMARY AND CONCLUSIONS

It is in a country's best interest to ensure that its ports operate efficiently and safely, that fair and competitive services are provided, and that ports support and encourage economic development locally and nationally.

The purpose of economic regulation is to ensure the efficient and competitive functioning of the port. Regulations often intervene in the functioning of markets, including the setting of controlling tariffs, revenues, or profits; controlling market entry or exit; and maintaining fair and

competitive behavior and practices within the port sector.

Decisions about reform strategy, industry structure, and regulatory frameworks are intimately intertwined. Therefore, evaluation of regulatory issues, options, and their consequences should be conducted early in the reform process. As shown by the reform experience in port and other sectors, delay can add to the regulatory burden and cost, restrict the availability of options for the regulator, and risk incompatibility between regulatory requirements and institutional capacity.

Due to port sector reforms, many ports have evolved into a landlord port authority, with facilities leased to private operators, that directly provide their services to carriers and shippers. In this situation, private operators may provide services previously provided by the public port authority, such as pilotage, tug assist, vessel stevedoring, storage, and yard services. Private operators are typically motivated by profit and may not necessarily provide facilities or services that are of economical, environmental, or social value if they conflict with profit maximization. Therefore there is a need for regulatory oversight to ensure that the public interest is protected. The scope of regulation depends on the extent of existing competition.

Factors indicative of the extent of competitiveness within the port sector include:

- *Transport options:* Competitiveness of a country's port and inland transport system in terms of total system costs and available options.
- *Operational performance:* Competitiveness of each port in terms of capacity and level of cargo handling services.
- *Tariff comparisons:* Competitiveness of each port in terms of level of port charges.
- *Financial performance:* Competitiveness of each port in terms of its overall profitability.

The lack of transport options, congested facilities, relatively high prices, and high profits alone or together may encourage terminal operators and other port service providers to breach the threshold of what may be regarded as acceptable competitive behavior.

Port sector reformers can choose from two general strategies to increase port sector competition: structural remedies and regulatory remedies. Clearly, the ideal strategy is the one that results in increased competition. Therefore,

when considering port privatization, reformers should strive toward structural improvements that increase the number of competitors before resorting to regulatory improvements.

Regulatory enhancements (particularly economic regulation) are intended to improve efficiency by correcting various market imperfections; essentially, the regulations attempt to force ports to behave as if they were competing in a perfect market.

Structural remedies include:

- Introduction of new berths or terminals.
- Division of the existing port into terminals.
- Entering into short-term operating agreement, lease, or management contract.

Regulatory remedies include tariff filing and setting of tariffs and rate-of-return thresholds.

To help design an economic regulatory policy for the port sector, the following principles should be considered:

- Government should clearly understand the competitive environment of the port sector.
- The regulator should clearly define what form of economic regulation (for example, rate of return or tariff setting) is to be applied and under what circumstances.
- Responsibilities for port operational and competition regulation should be formally separated. Because of the risk of agency capture and the potential conflict of interest between the two forms of regulation, they should be assigned to two different entities.
- Policy and case deliberations should include the opportunity for affected parties to present their views.
- Decisions made by the regulator should be enforceable with recourse for appeal.

ANNEX A. PORT TARIFFS: GENERAL STRUCTURE, ITEMS, AND FLOW OF CHARGES

As mentioned earlier in this module, tariff control is the most commonly used method for economic regulation of ports. Tariffs differ from port to port as they tend to be a reflection of the services offered (for example, container handling, tug assist, and pilotage), the facilities being provided (for example, gantry cranes, storage yard, or sheds), the party that incurs the tariff charge (for example, the carrier or ship's agent, or the shipper), and the basis on which a tariff item is calculated (for example, pilotage charges based on the vessel's gross registered tons or vessel draught). Because of these differences, tariffs may seem highly fragmented and complex, but there is a core set of essential services required for handling ships and cargoes that all ports typically offer. These can be referred to as basic services. Regulators tend to focus on these services because they represent the bulk of the total charges and are commonly offered by all ports. Box A-1 shows the ranges of the percentages of total port charges represented by a core set of services.

Such services can be broken down into two categories:

- *Services to vessels:* Basic ship services encompass the activities and related charges for ships entering and exiting the harbor and for berthing and deberthing. These include: pilotage, pilot boat, tug assist (berthing and deberthing), line handling, and use of channel and navigation aids (harbor fee). The basic ship services also include the use of the related port facilities (for example, dockage and berth occupancy) and of the general port infrastructure, usually covered by the port dues.
- *Services to cargo:* The basic cargo services include three related activities: (1) transfer of cargo between ship and dock or storage; (2) transfer of cargo between

Box A-1: Relative Weights of Different Port Charges

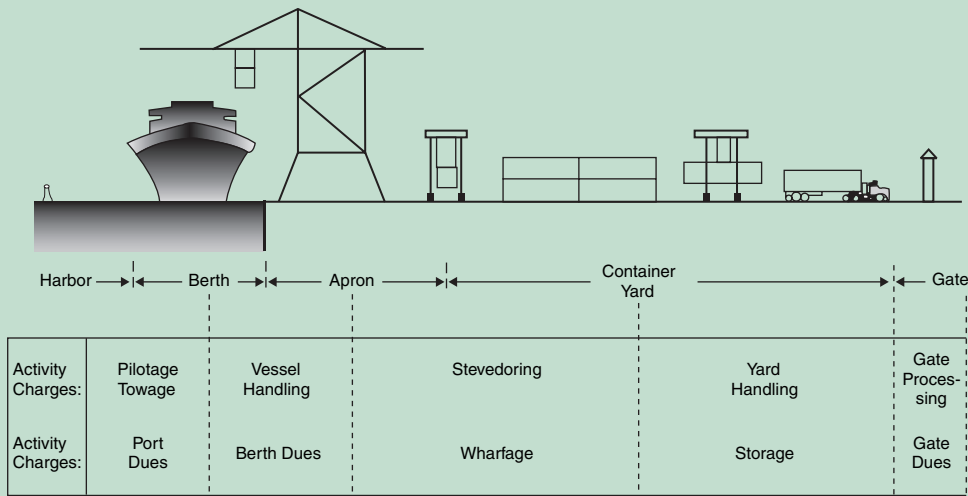
| Item | Percent of total charges |
|---|--------------------------|
| Port tariffs on the use of infrastructure | 5–15 |
| Berthing services | 2–5 |
| Cargo handling | 70–90 |
| Freight Forwarding | 3–6 |

storage and outside the gate; and (3) intermediate storage in the yard (in the case of containers) between the ship and yard transfers for a specified number of work days ("free time"). The related charges are for the use of labor, shore handling equipment, yard machines ("rental"), and port facilities ("use of installations" and "wharfage"). Box A-2 shows the relationship of these charges within the typical container terminal.

In determining if tariff regulation is necessary, the regulator first has to identify the specific service and the service provider. In the traditional port, the public port authority was typically an operating port, meaning that the public entity provided virtually all of the basic services noted above. From a regulator's point of view, this was a simple matter because of the public entity's monopoly position over all basic services. Generally, one service provider would be regulated.

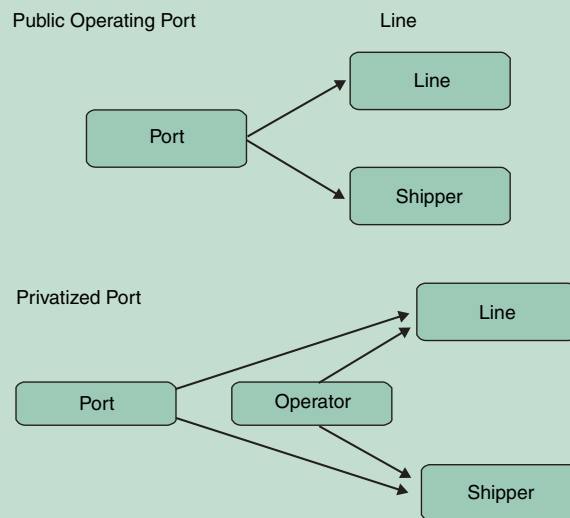
Today, many ports have evolved into a landlord port authority where facilities are leased by private operators, who in turn directly provide their services to carriers and shippers. In this situation, private operators may provide services previously under the domain of the public port authority, such as pilotage, tug assist, vessel stevedoring, storage, and yard services. Because of this shift in service provider responsibility, the entire tariff system as well as the transaction process has changed. The port authority (or other government entity) will likely continue collecting a navigation charge or port dues, and

Box A-2: Relationship between Port Charges and the Location Where the Charge is Incurred



Source: Author.

Box A-3: Transaction Complexities Pre- and Postprivatization

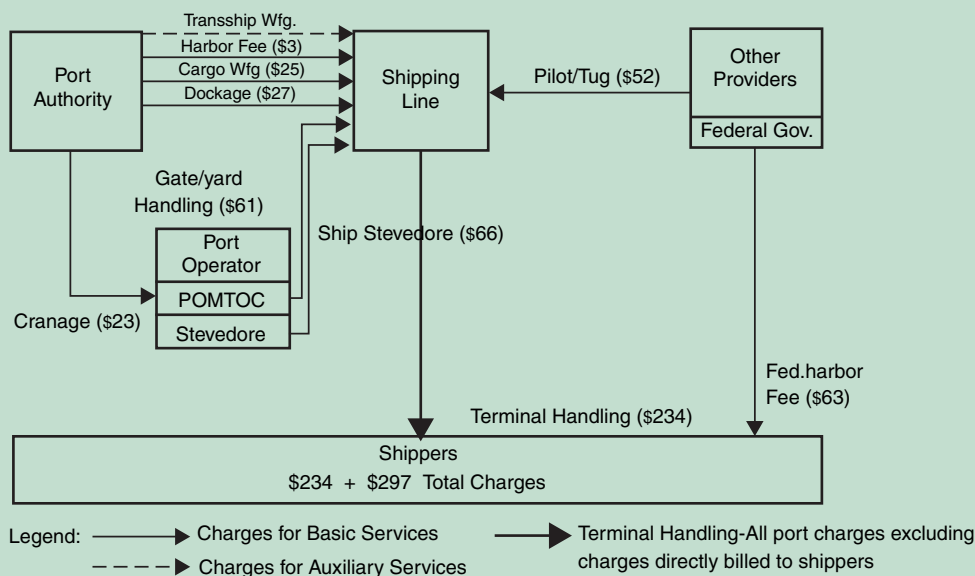


Source: Author.

may also charge for dockage and gate service fees, depending on the structure of the lease with the operator as well as the port's facility configuration.³³ The port authority will also have a lease arrangement with the operator, who generally charges fees for the range of services provided from berth to gate (for example, vessel stevedoring, yard handling, or storage).

Thus, the regulator has gone from single-entity regulation to potentially regulating a full range of services provided by a number of operators.³⁴

Box A-3 shows the evolving complexity that privatization has introduced from a transaction point of view. Under the public operating port, the transaction process was quite clear, as ports

Box A-4: Port Charges in Miami, Florida

Source: Author.

assessed charges to only two parties—shipping lines and shippers. Under a privatized port arrangement, the port authority applies charges to operators, lines, and shippers. In potential antitrust settings, therefore, the regulator needs to be concerned not only with the port authority's charges, but also the many private operators providing basic services, dramatically increasing the potentially regulated population.

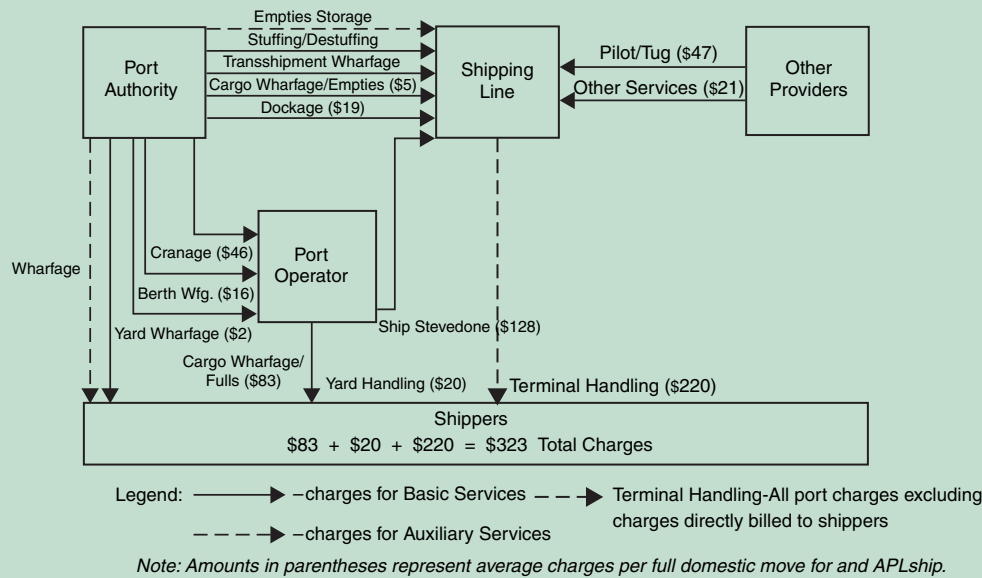
Box A-4 shows an actual case of the interrelationships of port charges in the Port of Miami for containerized cargoes. The port is established as a landlord authority under local government jurisdiction (Miami/Dade County). At the time of writing, ship charges in Miami, like in most U.S. ports, include a special fee called the Harbor Maintenance Fee, collected by the U.S. federal government to cover dredging and aids to navigation. The charge is 0.125 percent of the cargo value, or about \$63 per average box of \$50,000 value. There is, however, a second charge called a harbor fee applied by the local port authority, which is based on the ship's gross registered tons (GRT).

Dockage in Miami is also charged on the basis of GRT at a rate of \$0.24 per GRT for every 24-hour stay. Cargo charges in Miami include wharfage, at \$1.60 per ton, or the equivalent of \$22.40 per 14-ton box, which has declined almost 6 percent since 1998. Cargo wharfage is billed directly to the line (carrier), which in turn incorporates the wharfage charge with the freight bill.

There are two separate handling charges, ship handling (stevedoring) and terminal or gate handling. Ship handling is performed by private stevedores, collecting a range from \$35–50 per container, excluding crane services. Terminal handling is performed by POMTOC, a private sector joint venture of local stevedores and P&O Ports. POMTOC charges approximately \$45–55 per move, for any type of container, including empties. The charge for gantry cranes is based on an hourly rate of \$450 per hour (straight time). The cranes are owned by the port authority, but operated by the private stevedores and maintained by a private company.

The port has no direct charging relationship with shippers, only with shipping lines (carriers)

Box A-5: Port Charges in Cartagena, Colombia



Source: Author.

and operators. Shippers pay directly only the federal Harbor Maintenance Fee.

Box A-5 shows how the flow of charges may differ from port to port. The figure also illustrates the flow of port charges for the Port Society of Cartagena, whose tariff reflects the operating arrangement in that port. In Miami, the facilities are administered by the local port authority. In Cartagena, as elsewhere in Colombia, the facilities are administered by a private sector company referred to in Colombian law as a port society. The port society's primary responsibility is to operate the backup area (the area behind the berth), while private stevedoring companies handle the loading and discharging operation.³⁵ In addition, other private operators provide pilotage and tug services. These operators, along with the stevedoring companies, are charged an installation user charge by the port society. Unlike the

Miami case, the port society has a direct charging relationship with the shippers and also charges the port operators (stevedoring companies) directly for berth and yard wharfrage. In Colombia, shippers are also charged directly for yard handling by the stevedoring companies.

The emerging complexities in privatized settings suggest that regulators will need to be more cognizant of how port services are provided and what party is charged by whom. It is conceivable that one country can have a variety of charge flow configurations depending on the operating arrangements in a particular port. As is shown in figures A-3 and A-4, depending on the extent of competition, it is possible that regulators will need to monitor the pricing practices of not only the port authorities, but also the various private parties engaged in port operations.

ENDNOTES

- 1 World Bank. 1997. *Toolkits for Private Participation in Water and Sanitation, Module 1: Selecting an Option for Private Sector Participation*, p. 20. Washington, DC: World Bank.
- 2 Return on equity (ROE) = net income/shareholders equity; return on assets (ROA) = net income/total assets.
- 3 Trujillo, L., and G. Nombela. 1998. "Privatization and Regulation of the Seaport Industry." December, p. 21.
- 4 Perfect competition is a noble goal, but rarely achievable. While there are cases of markets with large numbers of sellers and buyers, these sellers and buyers are seldom fully informed about their alternatives. The information available to them may be of questionable reliability or costly to acquire, while at the same time there may be artificial restraints (for example, government regulation of prices or resource mobility) that affect the competitive environment. Many might argue that the U.S. port sector represents a perfectly competitive market given excess capacity and a plethora of intermodal and port options. Many of these assets, however, either directly (for example, construction grants) or indirectly (for example, tax-exempt status on the interest of bonds issued to finance construction) are subsidized, thereby distorting the market supply in response to demand.
- 5 But there are a number of cases where the mere presence of a private owner changed the efficiency of the port or the terminal because a very different company culture was introduced (for example, Klang Container Terminal in Malaysia).
- 6 World Bank. 1997. *Toolkits for Private Sector Participation in Water and Sanitation, Toolkit 1: Selecting an Option for Private Sector Participation*, Annex 1. Washington, DC: World Bank.
- 7 World Bank. 1996. *Infrastructure Delivery: Private Initiative and the Public Good*, pp xxi–xxii and pp. 54–61. Washington, DC: World Bank Economic Development Institute.
- 8 In many ports, load-bearing capacities may be different at each berth. For example, one berth may be designed to handle the weight of gantry cranes on the berth's apron, while other berths are designed to handle lower weight breakbulk cargoes. There are, of course, engineering solutions to expanding an apron's capacity, which require substantial investment. This investment may be justified with anticipated cargo volumes.
- 9 Regulators differentiate between tariff filing and tariff monitoring. Tariff filing normally is required each time a service provider adjusts its tariff. The filing is a means of informing port users about generally available prices for services. This allows port customers to detect any abnormalities in pricing behavior (for example, unjustified pricing discrimination) and, in the event such abnormalities exist, to register a complaint with the regulator. In the event a complaint is received, usually for alleged discriminatory, collusive, or predatory pricing practices, the tariff filing requirement gives the regulator a pricing history to support its investigative efforts. Where the regulator perceives a relatively high risk of anticompetitive behavior, or if there is a history of violations on the part of one or more operators, then the regulator may monitor the tariffs that are filed, assessing for itself the anticompetitive impact of the new tariff at each filing.
- 10 In some countries, setting the tariffs is distinct from approving tariffs. For example, in Nicaragua the operator (or cargo handling company) submits a tariff for approval through the Empresa Nacional de Puertos (EPN, the national ports authority), which reviews the tariff and forwards it for final approval to the Ministry of Transport and Infrastructure. EPN may attach comments regarding its assessment of the fairness and reasonableness of the tariff, but its role is not

to assess the proposed tariff's relationship or effect on industry competitiveness (this responsibility does not yet exist for any sector in Nicaragua). In Colombia, prior to its tariff liberalization in 1995, the Superintendente General de Puertos (SGP, the General Port Superintendent) set the tariffs, initially both minimum and maximum charges and eventually only maximum tariffs. In practice, the effect is the same, as the regulator sets the tariff by either dictating one or approving one.

- 11 World Bank. 1996. *Sustainable Transport: Priorities for Policy Reform*, p. 104. Washington, DC: World Bank.
- 12 World Bank. 1996. *Sustainable Transport: Priorities for Policy Reform*, pp. 86–87. Washington, DC: World Bank.
- 13 Many port authorities, as part of their published tariffs, will impose operational regulations relevant to both carriers and terminal operators. Operational regulations can refer to a variety of topics, such as vessel reporting requirements, navigation rules within the port's jurisdiction, invoicing rules for port dues, information access rules (for example, anchorage, vessel lighting, speed, and so forth), port working hours, reporting procedures for environmental incidents within the port area, detainment rights for vessel damage to facilities, or other rules.
- 14 This is an important point. There are basically only two ways for determining the basis on which tariffs should be set. The first is tariff benchmarking with other ports (or their operators) that operate in similar conditions. The second is to require the operator to provide audited financial data with careful consideration of the debt service obligations from investments. In this sense, the regulator would have to make certain assumptions about what the rate of return is and what rate is considered "reasonable." What the regulator considers reasonable may not adequately consider the initial investment risk that the operator made. A complicating factor concerns those operators that may offer bundled services, only one of which the regulator intends to regulate. The complexity here is derived from the ability to assign costs to each of these bundled services. Finally, operators always have a monopoly on their financial information. What they report will not necessarily be an accurate reflection of reality. Indeed, some operators may keep separate accounting books, one for reporting purposes and one for proprietary purposes. Because of the uncertainty and questions of data reliability, regulators will often establish a mini-max or maximum tariff that reflects the range of uncertainties associated with defining an operator's cost structure.
- 15 The steps, while presented in a logical order, do not necessarily need to be implemented in the sequence presented.
- 16 Guislain, Pierre. 1997. *The Privatization Challenge: A Strategic, Legal, and Institutional Analysis of International Experience*, p. 258. Washington, DC: World Bank.
- 17 Guislain, Pierre. 1997. *The Privatization Challenge: A Strategic, Legal, and Institutional Analysis of International Experience*, p. 258. Washington, DC: World Bank.
- 18 Eustache, Antonio. 1999. *Privatization and Regulation of Transport Infrastructure in the 1990s: Successes...and Bugs to Fix for the Next Millennium*, p. 28. Washington, DC: World Bank.
- 19 See in this respect Module C.63 of the International Labour Organization's Portworker Development Program (PDP).
- 20 Guislain, Pierre. 1997. *The Privatization Challenge: A Strategic, Legal, and Institutional Analysis of International Experience*, pp. 280–81. Washington, DC: World Bank.
- 21 Smith, Warrick. 1997. "Utility Regulators—The Independence Debate." In *The Private Sector on Infrastructure: Strategy, Regulation, and Risk*, September, p. 22. Washington, DC: World Bank.

- 22 Eustache, Antonio. 1999. *Privatization and Regulation of Transport Infrastructure in the 1990s: Successes...and Bugs to Fix for the Next Millennium*, pp. 24–25. Washington, DC: World Bank.
- 23 Burns, Phil, and Antonio Eustache. 1999. *Infrastructure Concessions, Information Flows, and Regulatory Risk*. Washington, DC: The World Bank Group.
- 24 Guislain, Pierre. 1997. *The Privatization Challenge: A Strategic, Legal, and Institutional Analysis of International Experience*, p. 268. Washington, DC: World Bank.
- 25 Green, Richard, and Martin Rodriguez Pardina. 1999. *Resetting Price Controls for Privatized Utilities: Manual for Regulators*, pp. 11–12. Economic Development Institute, World Bank, Washington, DC.
- 26 Green, Richard, and Martin Rodriguez Pardina. 1999. *Resetting Price Controls for Privatized Utilities: Manual for Regulators*, p. 64. Economic Development Institute, World Bank, Washington, DC.
- 27 The operator, itself, may also be affected by factors outside its control, such as ship size, number of moves for loading or discharging, type and number of hatch covers, vessel dimensions (width and depth determine the path of the container's movement), and stowage plan.
- 28 Berth performance is a reflection of both efficiency at the berth as well as efficiency for the operations behind it. Yard congestion itself can cause delays in vessel loading and discharge.
- 29 Operators, on the other hand, should be concerned with these incremental measures because they point to underlying causes for overall productivity performance.
- 30 Guislain, Pierre. 1997. *The Privatization Challenge: A Strategic, Legal, and Institutional Analysis of International Experience*, p. 280. Washington, DC: World Bank.
- 31 World Bank. 1997. *Toolkits for Private Sector Participation in Water and Sanitation, Toolkit 1: Selecting an Option for Private Sector Participation*, Annex 2, p. 33. Washington, DC: World Bank.
- 32 Eustache, Antonio. 1999. *Privatization and Regulation of Transport Infrastructure in the 1990s: Successes...and Bugs to Fix for the Next Millennium*, p. 29. Washington, DC: World Bank.
- 33 For example, the port authority may have a general perimeter gate in which initial access is cleared by port authority personnel. An “interior” terminal gate is under the control of the operator that leases the facility.
- 34 The extent to which regulation is necessary, of course, is dependent on the risk of monopolistic or oligopolistic behavior on the part of both the port authority as well as the firms. Even in a post privatization environment, the port authority may still be considered a monopoly by virtue of facility ownership (for example, the landlord model in an environment where there is no inter-port competition) and in terms of its charges for navigation, wharfage, and dockage (assuming it charges these). In addition, even in nonmonopolistic settings there may still be a need for antitrust concerns for specific services in light of the highly concentrated markets that have resulted post privatization.
- 35 This arrangement is changing, however, as the society is now providing vessel stevedoring services for vessels calling to berths where the society's gantry cranes are located.

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