



PORT REFORM TOOLKIT

SECOND EDITION

M O D U L E 5

FINANCIAL IMPLICATIONS OF PORT REFORM



THE WORLD BANK

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MODULE

Financial Implications of Port Reform

SECOND EDITION

1. INTRODUCTION

Over the last few years, there has been a strong trend toward the introduction of private management in the port domain in both industrialized and in developing countries. This privatization principally concerns the handling and storage of freight transiting via the port, and the funding and operation of the infrastructure, superstructures, and equipment required for these activities. This trend has involved the construction of complex, multidimensional partnerships between public port authorities and terminal operators. Module 5 presents an analytical framework for assessing the risks confronting port operators and with the goal of identifying principles for the equitable sharing of each risk between the public and private sector parties involved.

This analysis demonstrates that the scope of port terminal operator covers a range of different situations, depending on the type of traffic handled and the degree of competition surrounding the activity. This diversity substantially affects the degree of required regulation of the operator's activity on the part of the port authority or other regulating body (see Module 6). This regulation, in turn, has major implications for the operator, both in terms of the level of risk carried and risk management capacity. Therefore, the principles adopted for sharing the risk between the port authority and

the terminal operator must take this essential consideration into account.

Reducing the situation to its simplest terms, the terminal operator carries two fundamental risks: a cost risk, or a risk of exceeding initial cost estimates for the construction or operation of the project, and a revenue risk, or commercial risk, depending on traffic and revenue yields.

There is nothing extraordinary about this situation. Any enterprise operating in any field of activity has to carry these risks. However, the terminal operator conducts its activity largely in

the public domain, and can have the support of public investment, supply a public service, and enjoy a de facto monopoly. Over and above the overarching legislative and statutory framework, some measure of regulation of its day-to-day activity is often deemed necessary. This regulation can cover a number of technical aspects (definition of the project, performance standards, standards relating to maintenance of the facilities, and so forth), economic aspects (public service obligations or field of activity restrictions), and financial aspects (control of prices, fees, or subsidies). Module 6 reviews in detail the aspects pertaining to economic and financial regulations.

What is the impact of regulation on the cost and revenue risks, and in what way does it condition the principles for sharing these risks?

1.1. Cost Risk

The constraints imposed by technical regulation have an impact on the initial estimation of project cost (investment and operation).

However, provided the rules of the game are established at the outset, and provided these rules are clear, stable, and complied with, they do not affect the excess cost risk, which then only depends (apart from cases of force majeure) on the ability of the operator to implement the project. Under such circumstances, it is reasonable to expect the operator to identify and assume the full cost of attendant risks.

Where risks and associated excess cost stem from changes in the regulatory system or legal framework established prior to signature of the contract, the principles of risk sharing must then depend on the very nature of the activity. Two situations are possible in this case:

- The service provided by the operator is not regarded as a public service. The degree of regulation is then low, and has no reason to change. The risk of changes in the legal framework is considered by the operator as a country risk, such as exists for any industrial company. It is reflected by an adjustment of the initially

anticipated level of return, and can be subsequently passed on to customers through increases in charges.

- The service provided by the operator is regarded as a public service. The contract concluded between the port authority and the operator is then similar to a public service franchise agreement. Integration of this risk by the operator would increase the cost of the service provided and would have an adverse impact on the user. Furthermore, regulation of tariffs imposed on the operator could make it impossible for the operator to pass on increases to the user at a later date. It therefore appears equitable that this risk should be shared.

The principles of risk sharing should be clearly defined on signature of the agreement, and can cover guarantees of stability or provide appropriate compensation (for example, lifting of pricing constraints, indemnities, or other considerations).

1.2. Revenue Risk

In contrast to the cost risk, regulation has a direct impact on the extent of the revenue risk for the operator and on its ability to manage this risk. The revenue risk is in fact the principal risk involved in a port project due to the uncertainty inherent in traffic and throughput level predictions.

As a general rule, it is desirable to assign the traffic risk to the operator. This is possible and justified in a case where the activity is not a public service. Sharing of profits between the port authority and operator can be envisaged under certain circumstances. This is also possible in the majority of cases where the activity is subject to genuine competition.

On the other hand, sharing of this risk is frequently necessary in the case of a public service monopoly. The substantial degree of regulation required in this case imposes such constraints on the operator that it has little means of managing the commercial risk. The port authority

can then, as appropriate, provide the concessionaire with a guarantee of noncompetition, possibly temporary, or even implement a negative concession formula where the operator bids for the lowest level of subsidy required when the traffic is acknowledged to be too low to sustain commercial viability.

While the operator is then no longer fully at risk for meeting the project's projected revenue level, it must continue to bear responsibility for the costs. The regulatory system therefore must not deviate from the principle of assigning the project risk to the operator. This is the case where the contract provides for a guaranteed minimum level of return, or adjustment of rates and charges according to costs.

Another risk for the operator is present in all cases. This is the political risk of noncompliance with the terms of the contract by the public authority, or the imposition of discriminatory measures affecting the project. This risk can be reduced by various methods, or hedged. The assessment of this risk nevertheless represents a major factor in the decision of the operator to proceed or not with the project. Political risk may manifest itself either as a revenue risk or a cost risk.

In the end, the principles of risk sharing between the public port authority and the operator depend, to a large extent, on the degree of public service accorded (or not) to the activity concerned by the national authority and the resultant regulation. The initial situation frequently is that of a stagnant public sector, with little means of clearly identifying among the various tasks in which it is engaged those which relate genuinely to the public service, and which, when delegated or franchised to an operator, demand strict regulation. While a form of partnership always exists between the port authority and the operator, the activities of the port terminal operator do not always embody the characteristics of a public service, and do not therefore require the same level of regulation in all cases. Note, however, that any form of regulation imposes costs, namely the cost of the additional risk imposed

on the operator (reflected by a requirement for a higher rate of return), the cost of resultant considerations, or simply the cost of supervision. To minimize such costs, the objective should be to regulate only in those cases where it is clearly essential.

The port terminal operator has numerous partners in the provision of comprehensive port and transportation service, the most important of which is the port authority itself. The port authority therefore, is not often only a regulator, but also the primary partner of the terminal operator. From this point of view, the type of "horizontal" partnership between terminal operator and port authority does not differ from that which can exist between two companies. Of necessity, this partnership involves reciprocal obligations, with the port authority guaranteeing not only the services that it provides directly, but also those which it may be led to delegate to other entities operating within the port complex.

The involvement of private companies in port management leads to the introduction of a complex, multidimensional partnership with the port authority. This requires the establishment of a clearly defined, stable, contractual framework that enables the operator to quantify and manage the risks with which it will be confronted, and which is based on comprehensive legal procedures and techniques. However, no contract can provide for all eventualities. It is therefore necessary to include clauses that define the conditions and procedures for periodic reviews and negotiations for the purpose of making necessary adjustments. Apart from this renegotiation process, the option of issuing new calls for tender at periodic intervals during the lifetime of the project is a possibility, despite practical problems of implementation. In some cases, a clear division between infrastructure and equipment management and activities management may be desirable. See Module 4 for a full discussion of legal issues.

Once the risks have been distributed between the public and private partners, the private operator—the concessionaire—will seek to

“quantify” and “rate” the residual risk it must bear. The risk valuation will be determined through country and project ratings. Tariff setting will be contingent upon a minimum financial break-even point, below which prospective concessionaires will be unwilling to participate. From the point of view of the concessionaire then, the riskier the project, the higher the requirement of expected returns.

A risk-return assessment is an integral part of a comprehensive profitability analysis of the project. Such analysis would help determine under what conditions and terms the project will succeed in meeting the needs of the market, given the ever changing nature of these needs. This is what is implied when analysts speak of “project bankability.” The operator is now faced with two compelling sets of parameters resulting from the profitability analysis and the cost-effectiveness analysis of the project, and their impact on the socioeconomic returns for the community at large. Because of these market-driven financial constraints and the fragile nature of the public-private partnership, there is as much a case for sharing financial obligations as there is for risk distribution between the port authority and the concessionaire. To reach agreement on an equitable distribution of risks, the difficult balance between socioeconomic returns of a project and financial profitability must first be achieved. This amounts to finding the optimal equilibrium within the framework of a regulatory system acceptable to both partners.

Part A of this module focuses on the issue of “financial engineering” and the effort to secure the best terms for financing and coverage of the project based on the risk analysis and the financial constraints. The key components are the structuring of the project equity and debt, and the management of “exogenous” and political financial risks. Financial engineering is a complex process given the constant introduction of new and more sophisticated financial tools; it is also a delicate process because financial partners commit to projects on a long-term basis. Since

project funding is such a critical element of any significant port reform initiative, a solid understanding of financial engineering is essential. Part A takes a pragmatic view of the subject and seeks to establish a basic understanding of what is at stake. It does not attempt to undertake a comprehensive treatise on the more sophisticated mechanisms for coverage and financing.

PART A—PUBLIC-PRIVATE PARTNERSHIPS IN PORTS: RISK ANALYSIS, SHARING, AND MANAGEMENT

2. INTRODUCTION

We are witnessing a vast movement toward the privatization or private management of public services throughout the world, in industrialized as well as in developing countries. This trend is especially marked in the port sector, where calls for tenders to introduce private management to ports previously under the control of the government or other public entity have increased substantially in the last few years. This trend has created a market for companies to develop port concessions. Projects of this type, which are frequently set up on a project financing basis, generate significant risks for the various parties involved (private sector, investors, and lenders).

Port reform also requires public authorities to take on a new role, that of “concessioning authority” or regulating authority. These changes permit the public authority to concentrate on its essential tasks of economic, social, spatial, and temporal regulation to achieve the best balance among the interests and demands of the various port and shipping entities and of the general public.

Part A of this module will review a number of financial aspects of port reform using the example of a public landlord port that has decided to transfer a terminal into the hands of a private operator. (See Module 3 for a full discussion of service, tool, and landlord ports.) This involves to a greater or lesser degree the delegation of

design, construction, and operating functions to the private sector. In this context, the partnership established between the port authority and operator can take a number of different forms. These are difficult to describe accurately by means of a simple topology as many different types of contracts can be used (see Module 4). Apart from the usual distinctions in terms of the delegated services, ownership of the facilities or the point in time at which the operator intervenes during the lifetime of the project (operation and maintenance contracts, lease contracts, concession, BOT [build-operate-transfer], or BOO [build-own-operate] agreement, and so forth), particular attention will be paid to the problem of risk sharing between the port authority and the operator. All public-private partnerships are defined in a contract, the content of which must be adapted according to the characteristics of the particular project. These contracts reflect the mutual commitments of the parties and in defining them, the risks assumed by each party.

One of the essential conditions for the success of port reform projects is the ability to identify risks. This is a prerequisite to determining optimum risk sharing between the various participants according both to their respective capacity for risk management and their willingness to carry these risks. We shall therefore address the question of risk sharing analysis in greater depth, by means of a pragmatic examination of what it signifies from the terminal operator's viewpoint. The tools we will employ will include a set of principles constituting a code of good practice that have proven acceptable to all parties for risk allocation and sharing in various situations, and an assessment grid that can be used to perform a quick evaluation of the main risks of a project and the ability of a candidate operator to manage these risks.

3. CHARACTERISTICS OF THE PORT OPERATOR

In the majority of cases, private sector participation in port operations comprises industrial and commercial activities, the foremost of

which are the handling and storage of merchandise passing through the port. These port activities involve business practices common to all companies as well as aspects that are highly specific to the port sector.

One can characterize the port operator through a description of these basic and specific aspects and, using this characterization, establish an initial classification of the risks that the operator is likely to encounter. This approach deliberately leaves the definition of the “port” very broad to demonstrate the complexity of the environment of the port operator, whose activity simultaneously takes place in a port community, a transport chain, and national and an international economies, while nevertheless preserving the principal characteristics of an ordinary company.

3.1. General Aspects

3.1.1. National Environment

In common with any other private company, a port operator must transact business according to the legal, economic, social, and political environment of the country in which it is conducting its activity. The legal and statutory environment incorporates the applicable common law rules and regulations, whether stemming from national legislation or international agreements of which the country is a signatory. These include company law; rules of fair competition; tax law; exchange control; regulations governing transfer prices and tax withholding on the payment of dividends; labor laws; laws relating to the protection of the environment; police; concession and property ownership regulations; and customs regulations. This environment also comprises specific measures applicable to ports, such as those concerning their legal status, rules regarding police and security services, and even special measures relating to property ownership, labor laws (as specific to dock workers), taxation, and so forth.

The economic environment is defined by the relevant macroeconomic factors (growth, inflation, exchange laws, debts, and so forth), as well as the wage and salary levels, the level of

training and skills of local human resources, price levels, and so forth.

In its broadest sense, the political and social environments are based on prevailing geopolitical conditions, the stability of the existing national, local, or regional government, the possible risk of armed conflict, the labor climate, and so forth.

The port operator is thus subject to the full range of national legal, economic, social, and political influences that determine the stability of the nation and locale in which the project is located. This must be analyzed in detail, as this environment generates a number of risks, typically referred to as “country risks.”

3.1.2. Industrial and Commercial Dimension

A port operator is a service provider, although with a substantial industrial and commercial (infrastructure and investment) dimension. This is one of the reasons behind the desire to introduce private management in ports. It is generally admitted that a private company has a degree of flexibility and an ability to react quickly that enables it to achieve greater efficiency than a public entity.

In the course of its activity, the operator must finance, install, operate, and maintain the necessary infrastructure, superstructures, and equipment. In common with any other company, the operator must apply its own expertise and resources, while also establishing contractual relationships with various equipment suppliers or service providers (construction contracts and the purchase of tooling, water, electricity, and so forth), employing subcontractors for specific operations (maintenance, security, or even the operations themselves), and with the banking sector for the financial package on which the operation is based. This industrial dimension of the operator’s activity creates what are referred to as “project risks.”

The port operator deals daily with its customers, whether shipowners or shippers, who

are sensitive to the quality of service supplied and the rates charged. These aspects, in turn, are directly affected by the extent of competition confronting the operator. This relationship with customers, on which the level of activity is largely dependent, generates a “commercial risk” or “traffic risk” for the operator.

3.2. Specific Aspects Particular to the Port Sector

3.2.1. Vertical Partnership with the Concessioning Authority

Apart from the legal environment as described above (common law and sector-related rules), under the terms of its contract with the operator, the port authority imposes a set of measures on the operator defining, directing, regulating, or simply authorizing the operator’s activity over a given period. This form of relationship between the port authority and the operator is described here as a “vertical partnership.” This vertical partnership reflects the extensive scope of public service activities the port authority often delegates to the port operator. Inclusion of these measures in the operator’s contract is justified for a number of reasons:

- The port activity involves public issues including issues relating to national economic development, land use, and the handling of external trade.
- The tasks undertaken by the operator may have the characteristics of a public service and may be burdened with at least some of the obligations inherent in the notion of public service, including nondiscrimination and continuity of service.
- The nature of the activity in or the physical location of the port can lead to the development of de facto monopolies with substantial entry barriers (for example, rarity of sites, need for public investment, or an insufficient level of activity for more than one operator). This type of situation makes the intervention of a regulating authority necessary to protect users from an abusive advantage due to a dominant

position. However, this recognized need for oversight should not cast doubt on the principle of legal security, and must avoid any malpractice whereby the port operator could be subjected to arbitrary decisions.

- The activity of the port operator can require public investment in addition to private investment. The investment necessary for the operator's activity can produce a return on invested capital that, while satisfactory for the public entity involved, is insufficient for the private investor. This is the case where the project generates positive externalities and where it is not possible to obtain a direct contribution from all the indirect beneficiaries of these external effects. The need to draw on public funds also stems from the lengthy lifetime of port facilities, which makes it necessary to obtain a return from the latter over periods that substantially exceed the term of loans available on the financial markets.
- The shoreline forms part of the public domain in many countries, which means that, at the least, express authorization (unilateral or contractual) is required to engage in an activity along the waterfront.

It is the integration of these constraints by the public authority that makes a vertical partnership and government oversight essential. These constraints also have substantial consequences for the port operator and the risk it incurs and its ability to manage this risk. These consequences flow from several factors including:

- The concessioning authority may impose conditions and constraints on the operator's industrial project, resulting in cost increases.
- Regulation imposed by the concessioning authority can limit the ability of the operator to manage commercial risks, requiring a sharing of that risk.

- Vertical partnerships by their very nature lead to contractual risk for the operator because the partnership with the port authority is based on a contractual relationship.

3.2.2. Horizontal Partnership with Numerous Players

The service a port operator provides to its customers, whether shipowner or shipper, is part of a more global service of which the operator only provides one element. The operator is thus in a de facto partnership with service providers handling the other components of an integrated transport and logistics chain. This is referred to as a horizontal partnership. This type of partnership may also exist with the port authority if it is a service provider, and with other players of widely differing specializations. It can also be an impromptu partnership, not formalized by direct contractual links between the parties concerned. The extent of and parties to this horizontal partnership depend on the legal position and activity of the customer.

One can broadly describe the integrated service expected by the port operator's principal customers, shipowners and shippers. For a shipowner, the integrated service expected covers all operations required for the ship's call. The services provided by the terminal operator (handling and storage) represent the most sensitive and costly parts of the call, although a vessel call also requires suitable maritime access, operational buoying, properly maintained basins protected from the swell, efficient services to the vessel (pilot, tugs, in-shore pilot), and modern electronic data interchange (EDI) and vessel traffic services (VTS), and so on. Above and beyond the service offered by the terminal operator, this means that the shipowner is sensitive to factors such as the level and reliability of the supporting services provided in the port zone. This identifies a first level of horizontal partnership within the port community, where the partners can be other public or private companies, and the port authority itself. Procedures implementing this partnership are formalized in contracts concluded between the port authority and

the companies operating in the port zone, or via police and operating rules and regulations.

For a shipper, the relevant service is the end-to-end transport service, using a transport chain in which transit via the port is merely one link, or more precisely a node. This means that the shipper is sensitive to the existence and competitiveness of the land transport modes serving the port as well as to the coordination of these services with the port services. This depends on a multitude of factors—controlled by numerous players—including the quality of road, rail, or inland waterway transport infrastructure; the quality of the services provided by the operators of the different modes of transport; and various regulatory measures (flag restriction, charges, and so forth). This leads to a second level of horizontal partnership, where the partners are of varying types and frequently remote from the port activities proper. This situation leads a number of transport companies to seek the integration of the port operator and land carrier business to achieve more efficient control of a larger part of the transport chain.

In addition, it is clear that the ways in which the government agencies carry out their functions in a port (for example, customs, veterinary and phytosanitary departments, or frontier police) represent another aspect of performance that is taken into account by customers when assessing the competitiveness of a particular port. In this context, for example, the European Union recognizes that the conditions under which customs control is exercised can distort the competitive situation (“Douane 2000” program). Similarly, a number of countries in Africa have recognized this problem and taken steps to harmonize their customs rules and practices (Central African States Customs Union).

It is therefore apparent that the port operator does not control all components of the global services delivered to its customers. The customer’s decision to use the operator’s services, then, also depends on factors external to the operator. These factors are under the control of

numerous players with which the operator is not necessarily in direct contact. This situation creates a further commercial risk for the port operator and complicates the management task.

3.2.3. Long-Term Commitment

The port operator runs a business. Consequently, it seeks to maximize profit, although its primary objective is at least to achieve a minimum acceptable level of return on operations and investment to be able to cover its costs and to remunerate its lenders and sponsors. The investments that the operator makes typically display two special characteristics: they are substantial, indivisible, and have extended lifetimes, meaning that they can be depreciated and yield a proper return only over periods frequently exceeding 20 years, and they are “nonrecoverable,” either because they cannot be physically dismantled (for example, a coffer dam) or because the concessionaire does not own the infrastructure or equipment in question.

The justifiable demand of the operator for a reasonable return on investment necessarily requires that it have the right to exploit those investments for a sufficiently long period of time. The above-mentioned characteristics generally mean that an operator’s early withdrawal from a project would have substantial negative financial consequences. In some cases, though, a long-term commitment by the operator may also become a source of concern to the concessioning authority. It is therefore in the interests of both parties to seek a clear and stable legal arrangement by:

- Agreeing to an appropriate contract period giving due recognition to the special characteristics of the project.
- Attributing genuine rights of ownership to the operator for facilities installed in the public domain.
- Agreeing on an equitable and clear cancellation procedure (stipulating causes and indemnification).

- Adopting rules of the game that both reduce uncertainty and ensure proper transparency.

4. RISK MANAGEMENT

Risk management by the terminal operator involves a number of steps. Based on the approach adopted by many financial institutions for funding projects with limited or no recourse, these steps are:

- Risk identification.
- Sharing of risks with the port authority, the state, or other public authorities where it is justified or possible.
- Sharing of risks with partners (for example, sponsors, customers, suppliers, or subcontractors).
- Reduction of exposure to residual risk (or the probability of its occurrence).
- Reduction or limitation of the consequences of residual risks (for example, use of insurance or accruals).
- Adjustment of the expected rate of return according to the degree of residual risk.

Two principles should be applied in situations where the activity of the operator represents the delegated management of a public service. First, the reduction of the project's global risk (and consequently of project cost) requires the proper allocation of risk. Risk sharing between concessioning authority and concessionaire on the one hand, and the various sponsors and lenders on the other, must be based on analyses designed to identify and allocate risks to those parties that can carry them best (with least negative impact). Second, any risks allocated to the operator will be reflected in a requirement for higher profits, in terms of level or duration, with a resultant increase in the cost of the service provided. It is, consequently, in the interest of the concessioning authority to restrict, as far as possible, the unnecessary imposition of risks on the operator when the operator is not in a position to manage them. In other words, it is undesirable to make the operator carry risks

that the public sector would be able to carry at a lower cost.

This section explores the approaches operators can use to manage the various types of risk previously identified, and applies the principles set out above to suggest equitable systems for risk sharing between concessioning authority and concessionaire.

4.1. Country Risks

Detailed below are risks resulting from the national and international framework within which the projects must operate.

4.1.1. Legal Risk

Legal risks arise in connection with the lack of precision in and the possibility of changes in the legislation and regulations governing the project. It must be assumed that a set of rules exist at the time the project is initiated.

Insufficient precision in applicable laws and regulations can lead to disputes and misinterpretations and therefore creates risk. In some cases, legal issues can be extremely complex, not only because laws and regulations can be subject to a variety of interpretations, but also in terms of jurisprudence. Furthermore, common practice frequently imposes a number of mandatory rules in terms of port operation (for example, FOB [free on board] Dunkirk, Antwerp).

Consequently, a thorough legal analysis should be undertaken prior to the implementation of the project. When the project is located in an area unfamiliar to the operator, it is particularly prudent to call on the services of local legal advisors specializing in the various disciplines involved in the project. This will help to reduce the incidence of circumstances that might delay project implementation. The risk of noncompliance by the operator with legal or regulatory requirements through ignorance is one carried exclusively by the operator.

The risk of changes in legislation or regulations stems from the possibility that circumstances in effect at the time of the agreement may change at a later date. According to the principles put

forward at the beginning of this chapter, one can argue that the operator is justified in calling for guarantees of legal stability to guard against changes over which the operator has no control. Any such guarantee of legal security should not come at the expense of fair competition among operators or jeopardize the continued operation of any public service. On the other hand, in the case where management of public service is delegated to an operator, the operator is not in an ordinary business situation. First, because the permanency of the operator's activity is essential to ensure continuity of the public service, and second, because the degree of regulation imposed on the operator may well prevent it from adapting to such changes in the legal environment. Consequently, it is desirable either to guarantee stability or to include a contract revision clause to avoid situations where a change in the legislation or regulations could put the financial viability of the project in jeopardy.

The risk of changes in legislation relating to the environment can be particularly significant, and can materialize during the construction or the operational phase. Prior to any decision concerning privatization, the prudent concessioning authority should undertake an environmental study of the project. Conventionally, such studies include:

- The impact of the construction of marine infrastructures on the existing marine environment.
- Management of pollution from ship wastes.
- Management of dredging-induced contamination.
- Management of pollution resulting from accidents.

With respect to environmental risk management, the aspects specific to environment-related regulations should be established prior to the bidding process and, where appropriate, negotiated at the time of signature of the contract. Any increased construction costs caused by

changes in environmental legislation during the life of the concession should trigger renegotiation of the contract between the two parties to define the amount of and procedures for indemnification of the operator by the concessioning authority.

4.1.2. Monetary Risk

In a country where the national economy is weak or unstable, macroeconomic problems or fiscal rules imposed by the host country create a risk, for both shareholders and lenders, that the project may be unable to generate sufficient income in strong currencies. The main monetary risks that can create this situation include:

- Exchange rate fluctuations.
- Nonconvertibility of the local currency into foreign currencies.
- Nontransferability (funds cannot be exported from the host country).

Where the project can generate foreign currency income, which is frequently the case when services are invoiced to foreign shipowners or shippers, the foreign exchange and convertibility problems can be easily overcome. The best way of hedging the transferability risk is for the operator to be paid via an account opened outside the host country (offshore account). Use of such accounts frequently requires approval by the local authorities. When an offshore account can be opened, exchange controls or the prohibition of the export of foreign currency from the host country would have no direct impact on the economics of the project. In this case, the monetary risk is not hedged, but eliminated. In the contrary case, where no authorization can be obtained to open an offshore account, other measures must be considered. The concessionaire should seek convertibility and transferability guarantees from the government or central bank. Decisions about such guarantees often become political issues.

As for the exchange risk, this can be partially hedged by ensuring that the majority of expenses are paid in local currency; for example, by rais-

ing part of the debt in the currency of the host country. However, frequently this is not sufficient; it is rarely possible to raise the required funding for large projects locally. Further, foreign investors must be remunerated in foreign currency. The latter also applies to part of the purchases and personnel expenses (expatriate personnel). Where conditions allow, hedging products (for example, exchange rate swaps) can be used to manage the exchange risk. If, on the contrary, such products do not exist due to the instability or weakness of the host country currency, the exchange risk represents a major problem as it can only be carried by the shareholders and lenders, unless an exchange rate guarantee can be obtained from the central bank of the host country. The latter solution can only be envisaged in the event the project is of critical importance for the host country. Such considerations again add a political element to management of exchange risk.

4.1.3. Economic Risk

Port activities form part of national and international transport chains. The volume of trade moving through these chains depends to a large extent on macroeconomic factors, namely population, consumption, production, exports, and so forth. Consequently, the macroeconomic situation and its expected evolution have a strong impact on the level of activity in a port. It is essential to take this element into account in the market survey conducted to estimate the traffic and throughput risk. The principles of traffic and throughput risk sharing are analyzed in a later section devoted to this topic.

4.1.4. Force Majeure

Force majeure generally covers all events outside the control of the company and events that cannot be reasonably predicted, or against which preventive measures cannot be taken at the time of signature of the contract, and which prevent the operator from meeting its contractual obligations. Apart from this general definition, examples of force majeure are generally stipulated in the contract, including:

- Natural risks, such as climatic phenomena (cyclones and exceptionally heavy rainfall), earthquakes, tidal waves, and volcanic eruptions.
- Industrial risks, fire, or nuclear accident.
- Internal sociopolitical risks, such as strike, riot, civil war, and guerrilla or terrorist activity.
- Risks of war or armed conflict.

In certain contracts, unilateral decisions by the local authorities can be included in the list of events covered by force majeure, in particular where such decisions discriminate against the operator.

These risks are included under country risks, as it is the national context that determines the probability of their occurrence. It is reasonable that if any such event occurs, it should result in the suspension of reciprocal obligations of the parties involved, with a resultant limitation (although not elimination) of their consequences. The contract can also include procedures for sharing the burden of the consequences of such events between the parties, in particular where the operator is managing a delegated public service.

4.1.5. Interference or “Restraint of Prices” Risk

Interference or restraint of prices risk covers those risks that relate to the direct intervention of the public authorities in the management of the project. Public service requirements are normally defined in contract specifications, and the concessioning authority should not, in principle, interfere in any way during the construction or operating phases, provided the concessionaire complies with these requirements. However, concessioning authorities frequently do intervene in the name of public service or for the protection of the users, for reasons of security, for the protection of the environment, or simply on an arbitrary basis. Such interference can take the form of the imposition of new operating requirements, additional investment, or new constraints, the result of which is to increase operating costs or reduce revenue.

Intervention by the government may be well founded, but the concessionaire can then legitimately expect compensation from the concessioning authority for the constraints imposed and indemnification of losses resulting from the concessioning authority's actions.

The best way of attenuating the interference risk is to have a contract that not only states unequivocally the objectives of the parties, but also specifies the limits on government authority to intervene. The contract may also include provisions that will obviate the need for arbitrary government intervention, for example, price escalation clauses or the obligation to increase capacity above a certain traffic or throughput level.

Clearly, it is impossible to foresee all events that might give rise to intervention by the government. Hence, it is a good idea to include contract provisions that call for periodic meetings to discuss the status of the contract and allow for renegotiation of the contract to account for significant changes in circumstances.

4.1.6. Political Risk

The operator cannot control the risks inherent in decisions taken by public authorities. The operator naturally seeks protection against harmful decisions through the clauses of the contract by transferring this risk to the concessioning authority. This is not sufficient, however, since noncompliance with the terms of the contract by the concessioning authority or the government is just one of the risks facing the operator. In addition, the approval of contracts or the issuance of authorizations from administrative authorities can cause delays and increase costs for the operator. Finally, the risks of expropriation and nationalization are also a danger. The risks of noncompliance, inefficiency or expropriation, and nationalization are grouped under the designation of political risk.

Apart from the detailed analysis of contractual commitments, there is also the problem of the credibility of the applicable legal system. The effectiveness of contractual commitments depends initially on the mechanisms available

for settling disputes. Recourse to international arbitration is desirable, involving a neutral jurisdiction applying recognized international rules, such as those of the International Chamber of Commerce. Likewise, the applicable contract law can be that of a mutually acceptable third-party country.

This purely contractual approach, while useful, is frequently inadequate to ensure the acceptable management of the political risk. In practice, the arbitration phase of disputes is rarely reached, but when it is, it reflects the degradation of relations to such an extent that the future of the project is very often threatened.

There are, however, other strategies for protecting against political risk. The inclusion of multilateral organizations, such as the World Bank or the International Finance Corporation (IFC), among the shareholders or lenders represents a form of protection for the operator. The presence of these institutions is not a formal guarantee, but governments generally seek to avoid antagonizing these important multilateral institutions by imposing measures that would upset the equilibrium of a project in which they are involved. Similarly, the financial involvement of sponsors or lenders from the host country can also serve to limit the political risk.

Another approach involves recourse to the export credit agencies such as COFACE in France or Export-Import Bank in the United States, which act as guarantors for the political risk during the loan period.

Actual insurance cover can also be obtained to hedge certain specific risks. Such policies can be obtained from both public insurers such as MIGA (World Bank Group) and private insurance companies.

Quantification of the political risk is always a delicate matter, and there are no reduction or hedging methods that make it possible to eliminate the political risk entirely. Thus, if the perceived political risk is great, and the ability to mitigate those risks is slight, the operator may opt to abandon the project.

4.2. Project Risks

Project risks are those risks associated with the investment in and operation of the resources required for implementation of the project by the operator as set out in the contract between the operator and the port authority. The majority of these risks are carried by the operator, who therefore manages and assumes their consequences.

Project risks include:

- Construction risks.
- Hand-over risks.
- Operating risks.
- Procurement risks.
- Financial risks.
- Social risks.

4.2.1. Construction Risks

Risks associated with the construction of the project involve unforeseen cost increases or delays in completion. A construction delay also translates into increased costs, principally for the operator, in one of several forms:

- Penalties the operator may have to pay to the concessioning authority or its customers under its contractual commitments.
- Delays in start-up of the operational phase of the project, causing a loss of earnings.
- Increased interim interest charges (interest due during the construction phase, most often capitalized).

In turn, the principal causes of excess costs or delays are:

- Design errors leading to the underestimation of the cost of equipment or work or the time required to complete the job.
- Inadequate assessment of local conditions (terrain in particular), which can necessitate modification of the original technical solution.

- Poor management of the job site, poor coordination of the parties involved, or the bankruptcy of a supplier or subcontractor.

These project design and management tasks are under the control of the operator, thus the operator should carry these associated project risks. The operator can then conclude a “design and build” type contract with the construction company so that it can be associated with the project from the design phase on and help shape the project for which it will be responsible. If not involved from the outset, the operator must analyze and accept imposed specifications (for example, basis of design), proposing alternative solutions or refusing certain aspects that it considers unacceptable, but may ultimately have to accept a less than optimal design (for which it will bear the consequences). Increased costs or delays caused by the government or concessioning authority are considered as country risks (for example, political, restraint of prices, or legal risks) rather than project risks. In particular, this is the case when the functional definition of the project is modified or when, subsequent to signature of the contract, constraints are introduced concerning the choice of technical solutions.

Hedging of excess cost increases and completion delay risks by the operator are generally undertaken simultaneously. A common method of managing these risks is to transfer them to the construction company or equipment supplier. When the project includes a major construction phase, the financial package generally requires the inclusion of the primary construction company among the project sponsors. The construction risk (and design risk where applicable) is then allocated to the shareholding construction company, enabling the nonconstruction company shareholders to avoid bearing a risk for which they have little or no control. Transfer of the risk to the shareholding construction company is achieved via the construction contract or the design and build contract. From the operator’s perspective, then, the objective is to bind the construction company in a lump-sum design and build a turnkey contract

that incorporates a performance guarantee and appropriate penalty clauses. This makes it possible to convert the construction risk of the project promoter into a credit risk for the construction company.

Careful selection of a technically competent and financially sound construction company makes it possible to reduce both construction and credit risks because of the assumed capacity of the construction company to honor its contractual, technical, and financial commitments.

It should also be noted that the sponsors of the project (future shareholders) and lenders to the project do not always carry the construction risk in the same way. The lenders will often call on the sponsors for a credit guarantee covering the construction phase, since the lender is protected by limited recourse for the operating period.

4.2.2. Hand-Over Risks

Hand-over risks arise when the operator takes over the management of existing infrastructure and facilities, including operation and maintenance, and in some cases must first begin rehabilitation work. The general rule is that the operator takes over the existing facilities at its own risk and peril. The operator is authorized to carry out prior inspection of the facilities to assess their condition and estimate the rehabilitation and maintenance costs to which it will be exposed.

Even with the ability to inspect facilities, it is desirable to include a clause in the concession contract to safeguard the concessionaire against recourse relating to events and conditions existing prior to the contract, thereby exempting the operator from resulting liabilities.

4.2.3. Operating Risks

The concessionaire operates the facilities necessary to meet its contractual obligations at its cost, risk, and peril. Consequently, operating risk is allocated entirely to the operator. Operating risk principally comprises:

- Nonperformance risk, which can lead to payment of penalties to the concessioning

authority and adversely affect commercial operations (for example, cause traffic levels to fall below expectations) and result in financial losses.

- Risk of operating cost overruns stemming from underestimating operating costs in the bid proposal (for example, omitting a cost category or making a defective calculation) or inefficient management of the project by the operator.
- Risk of loss of revenue not associated with a drop in traffic level; for example, as a result of the noncollection of revenue, fraud, or theft in a case where the operator has not complied with the procedures demanded by the insurers, and claims by customers or frontage residents.

Nonperformance risks can be minimized by selecting an operator with recognized experience in port and terminal management. Cost overrun and loss of revenue risks can be transferred to the operator through use of a fixed-price contract between the master concessionaire and operator (which may provide for escalation by application of an indexing formula), with the possible inclusion of a variable component designed to reward better-than-expected commercial performance.

Concessionaires and port authorities should avoid cost-plus-fee type contracts with operators because they do not transfer any of the risks.

Like the project construction company, the operator may become one of the project sponsors. This then makes it possible to associate the operator at the outset with the definition of the operating system and its cost, thus making the operator fully responsible for the aspects of the project for which it will subsequently carry the risks.

Such measures, however, do not eliminate the operating risk completely. The responsibility of the operator is necessarily capped. Furthermore, this approach in fact converts the operating risk into a credit risk for the operating company. The latter generally has limited initial capital, which will not exceed its working capital

requirement because it has no investment expenses. The responsibility of the operating company can then be covered by shareholder guarantees or a bond system.

In any case, the concessionaire should have the resources to manage this endogenous operating risk, and it is therefore logical that this risk be allocated to the concessionaire in full.

4.2.4. Procurement Risks

Procurement risks arise due to the potential unavailability of critical goods and services and unforeseen increases in the cost of external resources necessary for the project. This is significant for port projects since they often depend on public monopolies to supply critical services, for example for the supply of water and electricity.

Two approaches can help the operator to reduce or eliminate this procurement risk. The operator can choose to produce the critical resource itself. For example, the installation of a dedicated generator in a refrigerated container park or refrigerated warehouse makes it possible to reduce the cost of the resource in some cases and limit the risk of power cuts (which, in addition to simple interruption of the service, can cause damage to the merchandise). This solution often requires specific authorization from the local authorities. Furthermore, providing such goods and services oneself may not always be possible or financially feasible for the operator.

Alternatively, the operator can sign a long-term purchase contract with the producer of the resource. This makes it possible to set the purchase cost using a predetermined price escalation formula, and to limit the risk of a unilateral price adjustments or restrictions on supply. Further, the contract may include a clause to indemnify of the operator against losses incurred in the event of interrupted supply of a critical resource. This is referred to as a “put or pay” contract.

The concessionaire may require the assistance of the concessioning authority or the government

to be able to conclude a put or pay contract with the public monopolies concerned. This usually can be justified in cases where the project has a substantial public service dimension.

Where the procurement of imported supplies is concerned, the procurement risk can stem from customs-related problems; thus, it becomes a component of the country risk. In such cases, the concessioning authority may reasonably bear a portion of the risk.

4.2.5. Financial Risks

The operator bears all risks associated with raising the shareholders' equity or obtaining loans required for funding the project. Likewise, the operator carries all risks associated with formation of the project company (the special purpose company or SPC). Contractual documents define the relationships among the various private players involved in the project (for example, the shareholders' pact and loan agreement). Apart from raising the initial tranche of shareholders' equity and loans, the establishment of standby credit loans should also be considered because it makes it possible to fund any excess costs with which the project company may be confronted.

Likewise, the interest rate fluctuation risk is carried exclusively by the operator. This risk arises when loans used to fund the project are based on floating rates (for example, Euro Interbank Offered Rate [EURIBOR] plus margin). An increase in the reference rate consequently increases the amount of interest to be paid, and hence the project costs. This risk can be hedged by means of appropriate financial instruments (for example, rate caps, ceilings on variable rates, or rate swaps).

When projects are built or operated with the aid of subsidies, there is the risk that the government will fail to make good on its subsidy payments. This risk is relatively small where investment subsidies are concerned, as the construction phase covers a relatively short period. However, international agreements (for example, the Marrakech Accords) or the dictates of

internal law can still intervene to prevent the payment of subsidies.

4.2.6. Social Risk

The social risk arises when operators have to restructure the workforce and bear the cost of severance payments, retraining, and other employee issues. The risks of general strikes or civil disturbances in the host country are frequently classified as cases of force majeure (see country risk), which means that they are often only partially covered by the protections afforded in the contract. Additional insurance can be obtained to cover residual social risks.

The port sector presents special challenges relating to social risk:

- Dock workers often enjoy a special status under national law, which may put the operator in the diminished position of merely acting as an employer of hired labor. These special treatment situations are disappearing in some countries, but where they still exist they are a source of risk and excess cost for the operator.
- Port or terminal concessions, while requiring the operator to continue employing a portion of the existing personnel, often result in a very substantial reduction in the number of port workers (reductions of 50–70 percent are not exceptional). Although the port authority or government may give the concessionaire free reign to rationalize the port workforce, this alone is not sufficient to eliminate the social risk. The operator must also be assured that the local authorities have the capability to manage the social situation thus generated (for example, through retraining, early retirement, relocation allowance, or other program). Otherwise, displaced port labor may seek recourse against the concessionaire.

In addition to the social risk relating to dock workers, the presence in the port of other categories of personnel with special status (for example, seamen, customs officers, and port

authority personnel) can amplify the social risks. Module 7 describes port labor issues in depth.

4.3. Commercial or Traffic Risk

Commercial risks arise from potential shortfalls in projected traffic and from pricing constraints. Traffic and pricing risks are significant in port reform projects due to the high degree of uncertainty associated with medium- or long-term projections of port activity. These risks are affected by the operator's pricing decisions and by any price regulation imposed by government.

The nature of the partnership between the operator and the port authority leads, in practically every case, to sharing of traffic risk, both in terms of responsibility and consequences. The terms of the concession agreement effectively allocate these risks between the two parties. However, even though they are partners in port reform, there is a natural tension between the port authority as a custodian of the public interest and the operator as a profit-maximizing business.

When the number of customers using a port, a terminal, or other facility is limited, or when a small number of customers represents a major share of the activity, the operator can protect itself against traffic or commercial risks by means of establishing minimum volume guarantees. This is a long-term contract under which the customer undertakes to generate a minimum level of traffic and agrees to pay a fixed sum to the operator whether or not the service is required or used.

A terminal's main customers—shipping lines or large shipping companies—will frequently become project sponsors, much like construction companies or operators. In such cases, the customer-shareholder carries part of the commercial risk. However, this arrangement has a number of disadvantages, particularly the risk of discrimination against nonshareholder customers. Nonshareholding customers can guard against this possibility by entering into a minimum guarantee contract with the terminal operator (see Box 1).

Box 1: Richard's Bay Coal Terminal: A Wholly Private Terminal

South Africa is one of the world's leading exporters of coal. The seven most important mine operators in the country have funded, built, and now operate a huge coal terminal at Richard's Bay with exceptional rail access facilities to serve their export business. The terminal has no public service obligation and handles the traffic of its shareholder-customers on a priority basis. This places the small producers in a situation of dependence. They in effect are obliged to sell their production to large operators or use other, less competitive and more expensive ports (Durban or Maputo), or use the terminal as second-class customers.

Source: Author.

Regulation invariably generates costs. These include costs for the concessioning authority in the form of additional compensation it may have to pay to the concessionaire plus the direct costs of enforcing the regulations through inspections and other measures. Regulation also generates costs for the concessionaire, which bears greater risks and has less freedom of action than it would in the absence of regulation. Thus, the concessionaire will expect this higher risk level to be rewarded.

The costs of regulation are ultimately borne by the port users or by the taxpayer. Government regulation, therefore, should be kept to the minimum necessary to correct market imperfections and protect the public interest.

The nature and extent of government regulation in connection with port reform are many and varied. Ideally, the concessionaire and the port authority or other regulating entity can arrive at a compromise acceptable to both parties by adjusting regulation and the guarantees and compensation allowed to achieve equitable risk sharing. Because situations affecting port reform vary so widely, there is no single set of rules applicable under all circumstances. Instead, this section describes the different regulatory tools available to the port authority and identifies how each might affect the distribution of risk.

4.4. Regulatory Risks

The relationship between the concessionaire and the port authority or other government agencies is important in defining the rules of the game for the concessionaire and, hence, its risks.

The concessionaire generally desires to limit the scope of the vertical partnerships with the port authority, taking the view that operator activity should be regulated predominantly by market conditions. Consequently, the operator seeks greater freedom of action in the management of its project to be in the strongest possible position to manage risks.

The concessioning authority is concerned with protecting the user, safeguarding the general interest, and avoiding abuse of dominant market positions. The concessioning authority, consequently, seeks to restrict the operator's freedom of action through technical or economic regulatory measures.

The search for a fair balance between regulation imposed by the concessioning authority and the discipline imposed by the market is complex and effectively determines how the commercial risk will be shared (see Module 6 for a detailed discussion of economic regulation).

4.4.1. Regulatory Tools

Regulation often takes the form of specifications and performance standards included in the concession contract itself. These might be set by the concessioning authority in detail prior to the initiation of the selection procedure. Or, they might be defined only in broad terms, with the bidders required to provide details in their proposals (for example, maximum price levels, fee, or expected amount of subsidy to be received). In the latter case, these elements serve as a means for comparing the submitted bids, and then become the performance standards to be applied to the winning bidder.

Regulation by the concessioning authority can be classified as either technical or economic.

4.4.1.1. **Technical Regulations.** These regulations define the minimum technical requirements of the project. They establish a set of parameters within which the concessionaire must operate, and go a long way toward defining the risks to which the concessionaire will be exposed. Technical regulation includes regulation of investments, maintenance, and performance.

Regulation of investments. Regulating investments is necessary only when the operator is itself responsible for the execution of the project. The port authority may then choose to impose a number of regulatory measures:

- A functional definition of required capacity or traffic and throughput thresholds that would trigger new investments in capacity to ensure a minimum level of service (where market conditions might lead to undercapacity).
- Construction standards to ensure that the work is satisfactorily executed.
- Constraints or particular specifications relating to security or protection of the environment.

Oversight by the concessioning authority should be limited to the verification of compliance with the defined measures, and should not extend to the imposition of specific technical solutions, as long as the concessionaire meets the performance standards. Any requirement on the operator to obtain approval of various aspects of the project by the port authority, above and beyond these predefined standards, creates uncertainties that increase the concessionaire's risks. This makes it difficult for the operator to properly estimate future costs for the project, adding an element of risk for which the operator will seek compensation.

Tenders should not be judged solely on the basis of the amount proposed to be invested by the candidate. Indeed, making sure that a minimum amount is invested is not an end in itself (except perhaps for the construction company). Such one-dimensional measures can have adverse effects by possibly encouraging non-economic investment. It is preferable to impose

functional obligations and performance requirements on the operator and to leave to the ingenuity of the operator the task of finding the best way to meet those requirements.

Regulation of maintenance. Defective maintenance of port facilities creates three types of risks: commercial risk for the operator as a consequence of the deterioration in the level of service offered to customers, risk of default by the operator with respect to the public service obligations contained in the contract, and risk of deterioration of assets during the term of the contract. The commercial risk is properly borne by the operator, and poor service will be penalized by the market. No regulation by the concessioning authority is required to guard against this aspect of maintenance-related risk. The public service obligation, in particular the obligation for the operator to provide continuous service, typically is defined in performance requirements contained in the concession contract or subcontract with the operator. An interruption of service resulting from a failure to perform maintenance can then give rise to penalties.

In the case of a concession where assets are handed over to the port authority on termination of the contract, the need for regulation can go beyond a definition of functional obligations. It is normal for the concessioning authority to require that repair and maintenance work is correctly carried out to ensure that the installations are handed over in good operating condition at the end of the concession period. The concessioning authority can impose specific maintenance standards in the contract to ensure the satisfactory preservation of the assets.

Regulation of performance. Finally, where the lack or absence of competition is liable to discourage the operator from providing an adequate level of service, the concessioning authority can include specific performance standards in the concession contract, for example, minimum levels of productivity. While sometimes deemed necessary, this approach is not without difficulties, since it assumes that the concessioning authority:

- Is in a position to define and codify a level of service, whereas the content of the service and the required level of performance can change over time.
- Is capable of determining compliance by the operator with the set standards.
- Has the ability to apply either incentives or penalties when the performance objectives are exceeded or not achieved, respectively.

Beyond productivity criteria and service standards, performance standards can also include a minimum capacity for the terminal. These standards might be based on investment levels or on direct measures of storage and throughput capacity. Generally, it is preferable to permit the concessionaire sufficient flexibility to meet the standards in the most cost-effective manner (for example, extension of yard space versus the purchase of higher stacking equipment).

4.5. Economic and Financial Regulation

Virtually all concession contracts contain economic and financial provisions defining the scope of permissible activity, the minimum services required, the degree of competition the operator can expect, the freedom to set prices, and any fees or subsidies associated with the project. These provisions are designed to establish some level of certainty for the operator with respect to its flexibility to manage the project so that the operator can assess risks and ways to manage them.

4.5.1. Scope of Operator Activity

The concession contract should define the activities the operator is authorized to conduct in the area defined by the contract. The port authority will define this scope based on its reform strategy and operational needs. For example, the port authority may prohibit the operator from engaging in any activities other than the handling and storage of merchandise within the project's defined domain, or specify the types of traffic the operator will be authorized to handle. In the latter case, such limitation may be

the consequence of an exclusivity guarantee previously granted by the port authority to another operator in the port.

By restricting the scope of permissible activity, the port authority increases the commercial risk for the operator. With a narrow scope, the operator's capacity to adapt or diversify its activity in response to market changes is limited. On the other hand, the port authority could allow the operator considerable freedom of initiative and action to exploit port land and facilities in return for the operator's performing unprofitable public service activities.

4.5.2. Public Service Obligations

The port authority may require the operator to comply with principles governing the provision of a public service. This obligation typically imposes requirements for service continuity, with the assessment of penalties or early termination of the contract in cases where the service is interrupted due to the fault of the operator, and also requires equal access and treatment for users (nondiscrimination with respect to pricing, priorities, level of service, and so forth).

It is not always possible or desirable to avoid all discrimination among an operator's customers. For example, obliging an operator who is a subsidiary of a shipping line to serve other competing shipping lines under the same conditions as its affiliated company, irrespective of contractual stipulations, is unrealistic. This problem can and should be avoided when developing the concession bidding qualifications. Business affiliations of the bidder, and any restrictions thereon, should be taken into account when designing the concession and awarding the contract.

The principle of nondiscrimination among users does not prohibit prudent commercial management of the affected activity, including differentiation in tariff or pricing, berthing priority, and service levels, provided these are based on objective criteria such as annual traffic or throughput volume, the period of commitment of the parties, or the characteristics of call or

vessel, and provided these are applied uniformly to all similarly situated users.

4.5.3. Noncompetition Guarantees

Under certain circumstances it may be reasonable for the concessioning authority to grant the concessionaire a noncompetition guarantee to compensate for the imposition of strict regulation, if such regulation may deprive the concessionaire of the normal means available to a company for positioning itself in a competitive market. This type of guarantee is generally limited in time and terminates on a specified date, or when the level of traffic reaches a predefined threshold.

Although they can be useful in limiting a concessionaire's risks, we do not recommend creating monopolies *de jure* unless necessary, even if they are limited in time. Instead, we recommend that the concession contract provide for renegotiation in the event that the competitive situation significantly changes. Renegotiation may include a review of the regulatory clauses to adapt them to new market conditions. In certain cases, this could lead to the indemnification of the operator where the newly created situation calls into question the viability of the project.

4.5.4. Pricing Controls

The procedures for setting tariffs represent a critical element of the economic regulatory system. Prices and pricing flexibility affect the terminal's level of traffic and throughput and the profitability of the concessionaire's operation. Regulation of prices by the public authority affects the operator's flexibility in two key ways: the ability to negotiate the terms of service provided to the customer on a case-by-case basis or the obligation of the operator to publish a list of charges applicable to all users, and in the case of a published list, the ability to set the level of charges.

Operators should be free to set tariffs without significant government oversight when the market is effectively regulated by competition. Competition can come from another terminal in

the port, another port, or another means of transport (air, land, or coastal transport). Estimation of the true level of competition can be difficult (see Module 6 for a methodological approach). From the concessioning authority's perspective, the objective of price regulation should be to limit the risk of the operator abusing a dominant market position. As indicated above, when sufficient competition exists to discipline pricing, the tariff regulation need be nothing more than an obligation to treat all users on an equal basis and the requirement to publish a tariff.

Government oversight can also be kept to a minimum when the activity in question does not constitute a public service. This is the case where the operator only conducts its activity for its own account or on behalf of its shareholders. This is also the case where the port customers are not national economic units (for example, when they represent transit traffic or transshipment activity). The operator should then be free to negotiate charges with its customers on a case-by-case basis.

Pricing regulation is necessary, however, in other cases, namely when the operator provides an essential public service and is in a position of strong market dominance. Apart from the requirement of equal treatment of users and the publication of prices, in such cases the administrative authority may choose to establish a maximum charge (a price cap). This maximum charge can be set initially by the market, as the set of tariffs submitted by the terminal operator as part of the bid. The price caps are generally accompanied by price escalation formulas indexed to a set of economic indicators. However, these escalation formulas are generally applied only for a short term (for example, for a period of up to five years). Following that, periodic renegotiation of the price caps is required, which becomes another source of uncertainty and, hence, risk for the operator.

The problem of regulating public monopolies over the life of a long-term concession continues to be a subject of concern in industrialized countries.

Box 2: Port Réunion: A Single Container Terminal Using Several Handling Contractors

In common with the majority of island economies, Réunion does not generate sufficient traffic to justify more than one container terminal. The majority of the containers are consequently handled by a single container terminal. However, the containers are handled by a number of competing cargo handling contractors.

This has not prevented recourse to private investment or management. The resources required for these operations have been provided by an economic interest group comprising the cargo handling operators and other partners. The partners include the Chamber of Commerce and Industry, yard equipment owners, land storage management, and gantry crane owners.

Source: Author.

So far, no clear and fully satisfactory response has been produced. The problem is even more acute in the developing countries where regulatory oversight capabilities may be weak.

A radical approach to regulating such monopolies would be to recompute the entire concession at periodic intervals, at the same time setting new tariffs according to market conditions. But such a recompetition of the concession cannot be envisaged every five years. Moreover, a recompetition would also require the inclusion in the contract of provisions on equitable withdrawal conditions for the concessionaire, including concession repurchase clauses. These are generally based on the discounted value of anticipated profits from the concession through the original termination date. This amount depends directly on the tariff assumptions for the residual period.

Another approach might be to require the concessionaire to use several handling companies for the same facility, as in Réunion Island (see Box 2).

4.5.5. Fee or Subsidy

Vertical partnerships between the concessioning authority and concessionaire involve some form

of fees or subsidies. This constitutes another form of regulation, as the level of the fees or subsidies is closely linked to the tariff policy. The fees or subsidy mechanism typically has a fixed and variable component.

The fixed component can be a fee equivalent to a rent paid by the operator to the port authority for the use of land and facilities or utilities provided by the public sector. This fee also incorporates profit sharing, that is, the rental fee effectively includes an element to reward the concessioning authority for permitting the operator to profit from the operation of the terminal. Conversely, the fixed component can be a subsidy paid to the operator when the concession is acknowledged to be an unprofitable undertaking. This is a way of compensating the operator for providing essential public services. In this kind of concession, the subsidy level will usually be one of the main award criteria during the selection process.

The variable component of compensation to the concessioning authority can be a payment by the operator of a fee based on the level of activity. The variable component can also be an indexed subsidy based on traffic level. These same things include a minimum traffic threshold that can be used to share the traffic risk and indemnify the operator if the level falls below the predefined threshold. This latter approach may be most appropriate when there is significant uncertainty about the potential traffic moving through the terminal and when the concessioning authority desires to impose tight technical and pricing regulations.

Experience shows that these fee and subsidy levels and any escalation clauses should be decided as part of the concession contract and should be based on traffic levels rather than the degree of profitability for the operator.

The port authority could choose to set the initial levels for the fixed and variable components of subsidies or fees. However, these levels represent the most frequently adopted financial criterion for judging bids and, therefore, preferably should not be set by the port authority, but left for the bidders to propose.

4.6. Golden Share or Blocking Minority

Over and above the contractual conditions included in the bid specifications, the concessioning authority can retain a “right to know” concerning decisions taken by the concessionaire. The most commonly used techniques for this are to hold an equity interest in the project company and to hold a “golden share,” or blocking minority. This enables the concessioning authority to exercise oversight from within, but also can invalidate the risk sharing balance by introducing chronic interference by the concessioning authority in the management of the concessionaire company.

Despite its drawbacks, this form of government oversight is widespread. In over one-third of the privatized port terminals worldwide, the port or municipal authority owning the port also has an ownership interest in the terminal operator company (International Association of Ports and Harbors [IAPH] Institutional Survey, 1999). For example, in the case of Hamburg, the port (owned by the Hamburg regional government) has a majority interest in the operator company. This situation often gives rise to conflicts of interest between the shareholder and regulator roles of the concessioning authority, which tend to outweigh the perceived benefits of such a scheme. Control and monitoring of the concessionaire’s behavior generally is best carried out through a well-drafted concession contract, making proper allowances for the concessioning authority’s interest in reviewing certain strategic decisions of the concessionaire. This will safeguard the concessioning authority’s role as an impartial regulator with all its operators, which runs the risk of being compromised if it becomes involved as an equity holder in any of the private parties it is supposed to oversee.

4.7. Risk and Port Typology

Risk sharing and the extent of required government oversight can also be influenced by the nature of the terminal operations being concessioned. This section identifies several different

types of operations and the resultant implications for regulatory oversight and risk sharing.

4.7.1. Operator Handling Only Its Own Traffic

This method of operating is frequently encountered in the case of a terminal handling industrial bulk (ore or oil) and general cargoes (forest products or fruit). Under these circumstances, it is frequently the shipper, a group of several shippers, or the shipowner itself who serves as the operator of the terminal. This type of special purpose operation does not necessarily represent a public service, hence, it does not require systematic regulation by the port authority. Nevertheless, standards governing the maintenance of the facilities can be imposed for the preservation of the assets given in concession.

The administrative document formalizing the contractual relationship between the port authority and the operator of special purpose facilities merely needs to authorize the use of the site for the defined activity. A fixed fee is typically paid for the occupation of public land, and where appropriate, the provision of infrastructure or equipment by the public sector. Port dues billed directly to users (shipowners and shippers) by the port authority already generate remuneration for the use of the general infrastructure, and therefore would not be further billed to the terminal operator (see Box 3).

4.7.2. Operator Acting on Behalf of a Third Party in a Competitive Situation

In this case, it is desirable for the traffic risk to be carried in full by the concessionaire. This means that the concessionaire must be able to manage this risk by controlling the operating parameters affecting its competitive position. This assumes substantial freedom for the concessionaire in terms of investment, level of service, and the tariff, although some limited regulation may still be necessary to ensure compliance with public service obligations, preservation of public assets, and maintenance of minimum capacity. Because the market is regulated by competition, the tariff can be set freely. The

Box 3: Owendo Ore Terminal in Gabon

The Owendo ore port was built in 1987 to export manganese ore mined in Moanda Province. A number of agreements were signed at the time, including an agreement for the construction of the port and another for the use of public land and installations and the operation of private facilities. These agreements provide for the transfer of responsibility from the port authority to the private operator for maintenance of the facilities and dredging along the wharf, thus making the operator responsible for all maintenance and management of the terminal it uses. In return for the operator assuming these responsibilities, the port authority reduced the fee paid by the operator.

Source: Author.

Box 4: Container Terminals in the North European Range

The current situation in Northern Europe provides an example of genuine competition between different terminals in the same ports, and between the different ports of the Le Havre-Hamburg range. The high level of traffic, the opening of European frontiers, and the quality of the available land transport services support the existence of numerous container terminals, while providing shippers and shipowners with a genuine choice of port and operator. This situation allows the coexistence of public and shipowner-dedicated terminals.

This situation, however, is rarely the case in developing countries, where traffic is thin, border crossings are difficult, and intermodal connections are poor. Hence, the ports on the West African coast have virtually no competition.

Source: Author.

contract is awarded to the candidate proposing the highest rental fee or the lowest subsidy requirement, whichever is relevant (see Box 4).

4.7.3. Operator Acting on Behalf of a Third Party in a Monopoly Situation

This situation is relatively common in developing countries, particularly in African and insular

countries. The existence of a natural monopoly of the port terminal management activity undeniably introduces a public service dimension requiring close economic oversight. This can involve the setting of charges and awarding of the concession to the candidate proposing the highest fee (or lowest subsidy), or, alternatively, setting the amount of the fee (or subsidy) and awarding the concession to the candidate proposing the lowest weighted mean tariff rates. Price escalation and indexing clauses are essential in all cases.

There are several ways that traffic risk and profit can be shared between the concessioning authority and private operator. First, the concessioning authority can guarantee that the monopoly will be protected from competition for a specified time or until a specified traffic level is reached. The agreement may contain clauses providing for modification of the regulatory system or even indemnifying the concessionaire from completion of the contract should the monopoly disappear.

Second, the concessioning authority can guarantee minimum traffic levels when the volume of traffic forecast by the concessioning authority is regarded as highly uncertain by the concessionaire. When such uncertainties exist, the concession agreement typically limits the amount of the fixed part of the fee and introduces a variable part (reduction) if traffic fails to reach a minimum threshold to protect the operator from significant revenue shortfalls.

Finally, the concessioning authority and the operator can agree to share profits when traffic exceeds a specified volume (see Box 5).

4.7.4. Transit or Transshipment Traffic

Transit traffic refers to goods whose origin or destination is a country other than that of the port. Transshipment is the discharge of cargo or containers from one ship and the loading of them onto another in the same port (vessel-to-vessel). Both activities may have a positive impact on the economy of the country, generating opportunities for value-added activities, jobs, and national wealth.

Box 5: Container Terminal Operator in the Port of Klaipeda

The Port of Klaipeda in Lithuania has a new container terminal designed to handle import-export traffic as well as a high volume of (competitive) transit traffic between Western Europe and the Baltic States and Russia. Although the terminal was financed from public development aid funds (EIB), an operating concession was awarded to the German operator Eurogate in association with local partners.

Source: Author.

When the customer is not an economic unit in the country of the port, the government does not have the same interest in protecting the customer. Consequently, in the absence of any special agreement, there is little reason for the government to accept any of the risks associated with transit and transshipment traffic or to regulate economic activity by the operator.

In fact, the port may benefit from the operator's market dominance in handling transit traffic, which is disciplined by the existence of alternative transport systems (transit), the capacity of competing ports in the region (transshipment), and the degree of international competition. Under these circumstances, it is reasonable for the port authority to seek to obtain maximum profit from this favorable (although perhaps transitory) situation. In this case, the port authority charges an operator with the managing of this "natural resource" (that is, the country's geographic advantage) with the objective of maximizing spin-off benefits for the country.

Regulation of the activity is not required, apart from the actual authorization and an obligation to preserve existing assets where appropriate. There is no need to subsidize the activity nor to share commercial risks because they are fully carried by the operator. On the other hand, the port authority will seek to maximize its profit by awarding the concession to the highest bidder, namely the candidate proposing the most favorable profit-sharing arrangement (fixed and variable fee) to the authority (see Box 6).

Box 6: Port of Djibouti: Transit and Transshipment

The independence of Eritrea has deprived Ethiopia of its maritime access (ports of Assab and Massawa). Ethiopia is now landlocked. The recent conflicts between the two countries have made Ethiopia substantially dependent on the Port of Djibouti for its maritime trade. A lack of budgetary resources has led the Djiboutian authorities to seek private funding for the necessary development projects (for example, a cereal terminal). This project, based on the realization of a "situation rent," should achieve a fair yield for the investors. It will generate new revenue for the independent international Port of Djibouti and economic activity for the country.

The Port of Djibouti has long enjoyed a strategic situation in the container transshipment domain, this activity representing a significant proportion of its container traffic and resources. The Dubai Ports Authority now manages the Djibouti container terminal under a concession agreement.

Source: Author.

4.7.5. Mixed Situations

The situation frequently existing in ports is a mixture of the configurations described above, further complicating decisions about the procedures to be adopted. This leads to a hybrid approach, combining compensation systems, regulatory oversight mechanisms, and encouragement of "situation rents" (highly profitable operations in select activities to help fund a needed public service that might otherwise generate a loss) (see Box 7).

4.8. Other Concessioning Authority Guarantees

The existence of a horizontal partnership between the various players in the port community and its relationship with the transport chain was described earlier. The operator will often seek to combine the various services required by customers into an integrated whole or, alternatively, give contractual guarantees to customers as to the level of service provided in these various domains.

Box 7: Djibouti Fishing Port: Public Service and Semi-Industrial Activity

The Republic of Djibouti has constructed a fishing port to encourage the development of a small-scale fishing industry that can provide the country with new sources of animal protein for human consumption. Financed by public development aid funds (concessional loan from the African Development Bank), the port cannot be financially profitable on the basis of this small-scale activity alone.

However, the fishery resources of the region, combined with certain advantages granted to the country Lomé 4, make it possible to look toward the development of an export-oriented semi-industrial fishing activity. Furthermore, this project has led to the preparation of reclaimed, back-filled sites, a privileged location that will provide space for the development of various activities.

Placing the complete entity under concession could possibly enable the concessionaire to make a profit from the overall project, while meeting its public service obligations relating to small-scale fishing activities.

Source: Author.

Box 8: Horizontal and Vertical Partnerships in the Port of Maputo, Mozambique

In a horizontal partnership, the public port authority awarded a concession for the Matola Terminal to a private operator, with the goal of developing transit traffic for the export of coal from South Africa. As the admissible draught of vessels is a major strategic element for the operator, the contract stipulated that the port authority would maintain a minimum access channel depth. The concessionaire has claimed that the port authority has failed to meet this commitment, and has declined to pay the scheduled fee as a result.

In a vertical partnership, the port itself and the railway that serves the port are in the process of privatization. The port has been profitable while the railway has operated at significant losses. Separate privatization requires adjustments to balance the two concessions without raising doubts as to the global cost of the transport chain for customers. A solution under consideration involves the creation of a joint price regulation authority for the port and railway concessions.

Source: Author.

It is logical for the port authority to provide the operator with guarantees concerning standards of facilities and performance of services in the port (for example, depth of access, buoying, operating hours, and ship services), whether provided directly by the port authority itself or delegated to other service providers within the framework of a vertical partnership. These commitments, frequently grouped in a clause headed “concessioning authority’s obligations,” can result in financial penalties against the port authority in the event of failure to meet its obligations. The resultant commercial risk for the operator is then transformed, theoretically, into a credit risk for the port authority. Clearly, it is important for the operator to conduct a thorough analysis of the complete port community, its operations, and its reputation before committing to the project. Irrespective of the clauses included in the contract with the port authority, the operator will inevitably suffer the consequences of any defective operation of the port.

Likewise, while it may be useful to include guarantees regarding land transport modes (for example, hours of operation, access to carriers, creation of new infrastructure, maximum charge, or minimum capacity for a rail service), the quality of the intermodal service at the port is critical to efficient and cost-effective operation and should be analyzed before the operator puts in a bid (see Box 8).

4.9. Contractual Risks

Relationships between the port authority and concessionaire, as well as between the concessionaire and its suppliers, lenders, customers, and subcontractors, are defined in contracts. This section highlights the principal risks involved in the drafting and implementation of such contracts.

4.9.1. Contract Management

To protect both the concessioning authority and the concessionaire, contracts typically include

provisions governing the possibility of changed circumstances or disputes about contract implementation. The main elements of the contract governing such developments include:

- *Revision clauses:* At the outset of the project it is impossible to foresee all the events that might arise over a period of several decades. This means that revisions will be required to adjust the terms of the contract to changing situations. The conditions and procedures for these revisions must be defined, for example, periodic revision at defined intervals, revisions scheduled for key project dates, revision triggered when a particular throughput level is reached, or revision at the request of one or other of the parties.
- *Contract termination or renewal clauses:* The duration of the original contract period is a major risk consideration for the operator. The possibility for renewal or extension of the contract must be defined, as must the procedures for take-over or repurchase of the project assets on termination of the contract.
- *Early termination clauses:* These clauses define the conditions potentially leading to cancellation or early termination at the request of one party or another, and the applicable procedures relating to penalties or compensation. These clauses must also be compatible with the underlying loan contracts signed by the operator, where these agreements provide for a lender's right to substitute another operator in the event of the bankruptcy of the original operator.
- *Procedures for settlement of disputes:* Risks associated with disputes were addressed in the section on political risk management. The relevant clauses cover settlement out of court, the eventual intervention of independent experts subject to prior acceptance by the parties, and arbitration clauses (for example, place, applicable law, arbitrator, expenses).

4.9.2. Indexation Risk

Indexation formulas have been mentioned on a number of occasions in connection with changes in tariff levels, long-term contracts with customers or suppliers, operating contracts, and so forth. Indexing designed to enable the operator to cover or reduce certain risks (in particular the inflation risk) itself induces other risks, such as risk of significant deviation of real-world conditions from the indexation formula over a certain period and the risk of divergence between the indexing conditions of different contracts signed by the port authority and the operator (procurement, operation, and sale). The risk for the operator is that the indexing formulas can lead to an increase in costs that exceed the increase in revenue or the potential reduction in negative effects. The risk for the concessioning authority is that the operator's prices rise too high when competition is inadequate.

4.9.3. Credit Risk—Bonds

Sharing or mitigating the many risks associated with port projects frequently gives rise to contractual obligations and attendant financial sanctions if one party's or another's obligations are not met. Sanctions convert the risk into specific financial obligations (payment of penalties). This, in turn, generates the credit risk of the partner that is unable to meet its financial obligations.

The most efficient method of ensuring that the partners honor their financial commitments is to require bank bonds. These are frequently demanded from the concessionaire or by the operator from its private partners. The amounts and call conditions for these bonds must accurately reflect the respective commitments of the parties. However, the operator's credit risk with respect to the concessioning authority cannot be covered by bonds, and generally remains a political risk.

4.10. Approach of the Different Partners to Risk and Risk Management

Part A of this module has been largely devoted to analyzing the principles of risk sharing between

the public port authority (as the entity offering the concession) and the private concessionaire. This section looks in general terms at other aspects of risk sharing from the perspective of each party and the particular risks affecting it.

4.10.1. Concessioning Authority

The primary challenge for the port authority is to identify and define a balanced set of risk management measures. This requires expertise in numerous areas, which can lead to the use of specialist consultants. In addition to the terms of the contract concluded with the operator, which defines risk sharing between the port authority and the operator, the composition and characteristics of the sponsors raise major issues for the port authority in terms of:

- The capacity of the operator to comply with the terms of the contract.
- The degree of commitment of the various shareholders.
- The commercial positioning of the operator, with particular reference to the equal treatment of users or customers.
- The transfer of technology and the participation of national players in the project.

This means that the process for selecting the partner is a matter of prime importance for the port authority. Apart from selecting a partner who can meet financial objectives (for example, reasonable tariff levels, minimization of subsidies, and maximization of the fee), the port authority must also be able to select a reliable partner, one capable of complying with all the terms of the concession contract and capable of carrying all of its allocated risks.

Recommendations relating to the management of calls for tender are published by the principal international financial institutions (IFIs). These documents describe in detail relevant selection criteria and methods for achieving the satisfactory selection of candidates. The involvement of the IFIs in these privatization initiatives also may permit port authorities to avail themselves of additional assistance provided by these

entities. These sponsors can thus play the dual role of lenders and advisors to the concessioning authority.

Apart from the challenge of selecting the original partner, as time passes there is also an issue associated with the continued commitment of the shareholders. A particular risk arises if the initial shareholders decide to dispose of their interests in the project company to third parties that do not meet the expectations of the concessioning authority. This risk must be anticipated by appropriate contractual clauses.

4.10.2. Project Sponsors

Having first analyzed the risks of the project, the shareholders will logically seek to align the level of risk with the expected return on the operation. Their decision to become involved, consequently, depends on their assessment of indicators such as the project internal rate of return, investment coverage ratio, or return on equity.

However, apart from this determination, which is the same one every investor must make, each sponsor generally adopts its own particular approach according to its own agenda, enabling it to reduce this risk/shareholder return profile. For example:

- A constructor or equipment supplier seeks to maximize its return for the construction phase and through the upstream services it provides.
- An operator seeks a return on the facility management services that it provides.
- A customer, shipper, or shipowner looks for a high quality of service and reasonable rates over the long term.
- A financial investor is primarily looking for the sustainability of the project throughout the life of the investment period.

The agendas of the various sponsors can lead to different expectations in terms of concessionaire policy. This situation also creates major differences in each sponsors willingness to carry risk

or in the length of time over which they expect to earn a return. The concessionaire consortium clearly must manage possible differences in objectives among the sponsors; but these differences also concern the concessioning authority because they can lead to situations that are prejudicial to the general interest, for example, service continuity.

4.10.3. Lenders

The project's lenders primarily look for the project to have the capacity to repay its debts. They consequently adjust the amount of the debt and the repayment profile according to the annual and actuarial debt coverage ratios (see Part B of this module for a precise definition of these concepts).

Apart from these financial ratios, the lenders frequently impose other constraints on the sponsors to ensure their continued commitment throughout the defined repayment period. This stems partly from the fact that the loans are not (or are only partially) guaranteed by project assets (which tend not to be liquid in port projects), but principally from the cash flows forecast for the period of the loan.

The lenders, therefore, invariably call for a minimum equity investment on the part of the sponsors. Alternatively, lenders may consider the replacement of equity participation by subordinate debt (which presents the same advantages) as acceptable. Furthermore, reserves can be set up for the purpose of earmarking cash-flow surpluses for debt repayment, thereby preventing the shareholders from recovering their equity contributions before loans have been repaid. It is also rare for "nonrecourse" loans to be genuinely without recourse, and the lenders frequently impose guarantees on the part of the sponsors, particularly during the construction period.

The techniques adopted by the lenders to limit their risk also include other measures including comfort letters or commitments by the concessioning authority, domiciliation of revenue or debt, assignment of debt, and technical and financial performance bonds.

5. CONCLUDING THOUGHTS

It is not possible to cite universal principles for risk sharing in view of the widely varying characteristics and environments of port projects, but one important area to consider is the public service obligation. The public service dimension of port operations, which the public authority assigns to each port activity, is a core element in the process of defining and sharing risk.

However, the notion of public service is by no means universal. While some principles are constant, the definition of public service varies from one country to another, and does not remain constant over time even within a given country.

This variation, consequently, is a major consideration in the preliminary debate on the introduction of private management in ports. The delineation of public services is all the more delicate as the initial situation is frequently one of a stagnant public sector, often with limited capacity for clearly identifying the responsibilities that fall within the public service domain. For example, the activity of a port terminal operator cannot be qualified as a public service in all cases, and is more akin to a purely commercial activity in many instances. At the same time, the activity of the port terminal operator cannot be fully classified as to that of a commercial company, as the notion of partnership with the port authority is still present, although the levels of regulation and guarantees may be considerably reduced.

In a case where the public authority assigns this public service dimension to the activity, it is legitimate for the authority to retain careful oversight of the activity, while being free to delegate its actual implementation. The public authority might regulate the activity of the implementing entity to a greater or lesser degree, while the delegatee must reconcile the right of fair competition with the proper protection of the interests of users (or customers). This has complex implications for risk sharing, for which the procedures must be very carefully adjusted to achieve a fair balance, one that respects the objectives and constraints of the parties involved.

The main objective of this part of this module has been to describe various approaches for identifying risks involved in port reform projects and to suggest ways that these risks might be shared equitably among the interested parties. Part B of this module will introduce analytical tools and risk measurement options available for port authorities contemplating port reform.

PART B—PRINCIPLES OF FINANCIAL MODELING, ENGINEERING, AND ANALYSIS: UNDERSTANDING PORT FINANCE AND RISK MANAGEMENT FROM PUBLIC AND PRIVATE SECTOR PERSPECTIVES

6. INTRODUCTION

Concessioning authorities, concessionaires (SPCs), investors, lenders, and guarantors involved in port reform use a wide variety of economic and financial analytical tools and performance measures to evaluate the feasibility of prospective projects. Each party has a different perspective on what makes a proposed project a success and, consequently, may use somewhat different tools and measures. All measures, however, are designed to capture the economic value of the proposed project to the interested party, including an assessment of the likelihood that the full economic value will materialize (that is, taking uncertainty and risk into account).

Part B of this module provides a tour of the most commonly used analytical tools and measures of economic performance and risk to familiarize interested parties with the types of tools and measures that are used by their potential partners in port reform projects so they can better understand what motivates and concerns each of them. It will especially help government decision makers without a private sector finance background to appreciate the private sector's perspective on port reform and will permit them

to “speak the language” of their private sector counterparts. This, in turn, should help governments and concessioning authorities design port reform projects to be more attractive to the private sector.

7. MEASURING ECONOMIC PROFITABILITY FROM THE PERSPECTIVE OF THE CONCESSIONING AUTHORITY

7.1. Differential Cost-Benefit Analysis

Traditionally, economic assessment is based on a comparison of two solutions: a solution with a proposed project and a reference solution (that is, a solution without a proposed project). In the case of a proposed expansion versus a greenfield project, the reference solution corresponds to a solution in which the existing port infrastructure would evolve without modernization or expansion.

The assessment is based on a differential cost-benefit analysis. The costs and benefits are assessed in terms of economic value. This has a dual implication in terms of methodology:

- The project assessment framework must be calibrated according to the nature of the national economic entity in question: state, local authority, port community, and so forth. In other words, economic assessments must be carried out at several levels to ascertain to which economic entity the benefits of the project will accrue.
- The various costs and benefits must be considered net of all taxes (direct or indirect tax, customs duty, and so forth) and national subsidies, regardless of the nature of the national economic entity in question. The various taxes and subsidies correspond to monetary transfers between national economic entities and are therefore not to be taken into account in the national economic assessment of the project.

The assessment of commercial benefits and costs does not pose any particular valuation problem because their value is determined by the market. However, assessing noncommercial benefits and costs is more difficult.

7.2. Commonly Used Economic Profitability Indicators

Socioeconomic discounted profit or net present value (NPV). In the field of public investment and port investment in particular, the principal criterion on which the investment decision is based is the socioeconomic discounted profit. This criterion enables the intrinsic value of the project for the community to be assessed, and only projects with a positive discounted profit should be selected.

The discounted profit is defined as the difference between the discounted investment expenditure and the discounted value of the net benefits generated by the project during its lifetime. We also use the expression economic net present value or economic NPV.

For a project whose operations begin in year t , the discounted profit is calculated as follows:

$$\text{NPV Econ} = -C + \sum_{i=t}^{\infty} \frac{A_i}{(1+a)^i}$$

$C =$ Discounted investment cost

$a =$ National economy discount rate

$A_i =$ Benefits in year i

$t =$ Year in which the infrastructure is put into service

The discounted profit criterion enables government officials to decide on the appropriateness and interest of the project for the community. However, employing this tool does not provide any information as to the date on which it should be carried out. With certain hypotheses (for example, investment made at the beginning of a period, or net annual benefits increasing with time, unchanging chronicle of benefits

with time) it can be shown that discounted profit reaches a maximum for a certain commissioning date, referred to as the optimal commissioning date. If the project is carried out before that date, the community loses benefits. Conversely, once that date is passed, the project should be carried out as quickly as possible.

Internal rate of return or economic IRR. The (positive or negative) value obtained when calculating the discounted profit is an absolute value (as opposed to a relative value) that does not allow public decision makers to weigh the relative merits among several projects or variants. To permit this weighing of alternatives, another way of tackling the economic assessment of a project is to consider the value of the discount rate at which the net discounted profit is zero, or the economic IRR of the project.

The economic IRR is the solution r of the equation:

$$-C + \sum_{i=1}^{\infty} \frac{A_i}{(1+r)^i} = 0$$

$C =$ Discounted investment cost

$A_i =$ Benefits in year i

This second criterion enables us not only to assess the intrinsic interest of the project for the community by accepting only projects whose economic IRR is higher than the discount rate of the national economy, but also enables us to arbitrate among several projects or variants by choosing the one with the highest economic IRR.

Sensitivity studies. The economic assessment of a project is normally supplemented by a sensitivity study, which enables decision makers to ascertain the effect of changing a number of parameters on the value of the economic IRR.

By way of illustration in the port sector, we can test the effect of changes in traffic levels, investment costs, operating costs, and cargo handling productivity on any project's discounted costs and benefits.

7.3. Assessing the Economic Costs of the Project

Assessment of market economic costs.

Traditionally, the market economic costs of a project consist of investment costs, maintenance and operation of equipment, and materials used in each solution (that is, the solution with the proposed project and without the project). In the case of a project to expand an existing infrastructure versus a greenfield project, the costs to be considered in the reference solution account for the normal expenses necessary to maintain the operating life and the normal safety conditions of port equipment and structures.

The inventory of project costs includes induced infrastructure costs, such as the new land service networks required by the project. For example, a greenfield project often requires the building of a new access road, for which the investment cost to the community can sometimes be higher than the cost of the port project itself.

Assessment of nonmarket economic costs. The inventory of project costs must also take into account “nonmarket” economic costs. In the port sector, these include but are not limited to:

- The costs related to transferring traffic from one transport route to another (for example, if several ports are competing within the same country).
- Possible effects of the project on town planning (particularly traffic congestion).
- The impact of the project on the environment and safety (for example, marine pollution, nuisance to locals, and pollution resulting from handling bulk cargoes).

Assessing these economic costs is a particularly difficult exercise, but one that is essential to determine the economic rate of return of a project.

Assessing the economic benefits or positive externalities of the project. The economic benefits of a port project can be analyzed as an increase in real revenue for the various elements of the national economy. They can take the

form of a direct increase in national added value corresponding to an increase in the wages created by net job creation, or an increase in company profits (new activities whose development depends on the realization of the project). Another benefit is a price reduction translating into an increase in real income for consumers and an increase in profits for companies. This covers, for example, reductions in ship turnaround times resulting from improved handling efficiency (theoretically leading to a fall in freight rates), benefits from economies of scale, lower insurance costs, reduced cargo inventory costs, lower inland transport costs, and more.

The benefits can theoretically affect all national economic agents who, in some way or another, are concerned with the production, marketing, transport, and handling of goods passing through the port in question.

8. RATING RISK FROM THE PERSPECTIVE OF THE CONCESSION HOLDER

8.1. Financial Profitability and “Bankability” of the Project

Once the risk allocation chart between the public and private sectors has been produced, as described in Part A of this module, the private concession holder will then seek to quantify and price the residual risk of the project that must be borne. This risk is assessed by producing a country and project rating. Once this first stage is carried out, rating the risk is then defined by setting a minimum financial profitability threshold for the project below which a private concession holder will refuse to commit itself. In other words, the more risk associated with the project by the concession holder, the higher the required project profitability.

It is within this framework that one analyzes the financial profitability of the project. The financial analysis is designed to determine the conditions under which the proposed project can respond to market requirements, which usually vary with time, or in other words, determine the bankability of a project. In terms of

methodology, the financial profitability of a project is determined by forecasting the cash flows generated by operation of the project. This aspect will be developed later in the section on financial modeling.

The calculation of the financial profitability of a project does not take into account the envisaged financing structure. In practical terms, only operating cash flows (calculated after tax and duty), consisting of investment and operational flows, are considered. Taking the predicted financing structure into account in the project's forecasted cash flows would result in accounting for them twice. The purpose of this first stage of the financial profitability analysis is to decide whether it is interesting for the private concession holder (sponsors and banks) to continue the analysis of the project from a financial point of view. In fact, a financially unprofitable project at this stage will not become profitable regardless of how it is financed.

This economic model of the prospective project, described later in this module, is usually produced by the sponsors in collaboration with the financial advisors (merchant banks or specialist agencies). The economic model should not be confused with the economic analysis carried out by the concessioning authority as described above.

8.2. Assessing the Project Risks by Producing a Rating

Part A of this module presented the principles for allocating and managing risks between the concessioning authority and the concession holder on the one hand, and between the concession holder and the sponsors or lenders on the other. The method used, inspired by the logic of the banking analysis of project financing, consisted of:

- Drawing up a list of risk types: for example, country risks and project risks.
- Distributing the risk to the party best able to assume it, for example, concessioning authority, sponsors, lenders, customers, suppliers, or subcontractors.

- Reducing the exposure of the SPC or the likelihood of the occurrence of a residual risk.

The next stage consists of quantifying the residual risk that will be borne by the SPC. This risk is assessed by producing a rating. There are two types of ratings: a country rating to quantify the risk attached to the project's background and, therefore, to establish whether the country risk is acceptable to the market, and a project rating, a project risk assessment through the establishment of a checklist, which establishes whether the intrinsic risks in the project were correctly handled by the sponsors.

There are numerous country risk assessment methods. Box 9 presents the method developed by Nord Sud Export (NSE), which acts as an adviser to the French insurance company COFACE (Compagnie Française d'Assurance du Commerce Extérieur) in its country risk assessment process.

The project rating checklist, established following the principles spelled out in Part A of this module, is included as an annex to this document.

8.2.1. Commonly Used Financial Profitability Indicators

The purpose of financial profitability indicators is to determine the conditions under which the proposed project is financially justified. There are four main measures used to assess a project's financial viability: payback, IRR, NPV, and investment cover.

8.2.1.1. Payback Time. The payback time, or the time required for a return on investment, is the first indicator enabling investors and operators to assess the financial profitability of a project. It is measured by relating the value of the investment to the average annual cash flow.

$$T = \frac{I}{R - C}$$

T = years to pay back investment

I = total investment

Box 9: The Country Ranking Developed by Nord-Sud Export

The country ranking process by Nord-Sud Export (NSE) ranks a hundred or so emerging economies according to market opportunities and the risks the individual countries may represent for international operators (industrialists, bankers, or insurers), either for mere export operations or for investments. This ranking is made possible thanks to an objective rating system based on more than 100 criteria, coming out of a database developed by NSE over 18 years.

What Is Included in the Country Risk?

Strictly speaking, the country risk concept includes three main kinds of risks:

- The political risk, which may affect property rights through confiscation, expropriation, or nationalization, with or without compensation, through contract or debt repudiation.
- The transferability risk, when a country's central bank cannot convert resources in local currency into international means of payment.
- The payment risk for governments themselves, or for public enterprises, when the public buyer or debtor does not meet its financial commitments.

These three risks make up the basis of the country risk, that is:

- For lawyers, the act of government, knowing that recourse against a foreign government is for all practical purposes a very difficult undertaking.
- For bankers, the sovereign risks, knowing a sovereign guarantee often constitutes the financial safety scheme.
- For insurers, the political risks, knowing those risks can be interpreted as catastrophe risks, and as such should be covered by specialized insurance companies acting either on behalf of governments or within the market reinsurance framework.

Country Ranking Methodology Proposed by NSE

NSE developed a two-step methodology: a rating of risk factors identified and distributed by categories, and use of weighing coefficients for each identified risk factor.

Rating of Country-Risk Factors

The country risk assessment is established based on the following classification:

Parameter 1: Sovereign financial risks

- Importance of public debt and debt service (6 criteria)
- Sovereign default risk (6 criteria)
- Inconvertibility risk (3 criteria)

Parameter 2: Market financial risks

- Command of fundamental economic balances (5 criteria)
- Exchange risk, sudden currency devaluation (4 criteria)
- Systemic risk and economic volatility (6 criteria)

Parameter 3: Political risks

- Homogeneity of the social fabric (4 criteria)
- Government and regime stability (7 criteria)
- External conflicts (4 criteria)

Parameter 4: Business environment

- Conditions for foreign investments (6 criteria)
- Labor conditions (4 criteria)
- Good governance (5 criteria)

Weighing of the Risk Factors

There cannot be any country ranking without weighing of the risk factors. The exercise is all the more difficult to carry out when there are about 100 criteria to assess. Furthermore, the specificity of NSE's country ranking method is to provide for a differentiated weighting system depending on whether a country is being assessed from an exporter's standpoint (taking a risk for less than 18 months), or from an industrial investor's standpoint (local long-term development). This leads, therefore, to proposing two specific weighing systems.

One needs to know how to make good use of country rankings, which can lead to questionable results for at least four reasons:

- It is hazardous to compare countries as different as South Korea and Egypt, for instance, speaking of countries within the newly industrialized economies.
- Country ranking methods mix various risk factors according to a necessarily subjective weighting system.
- Most country rankings are made after experts' assessments, and therefore reflect more their own perceptions of the risks involved, rather than the sheer reality of the countries.
- Finally, country rankings have as an objective to deter commercial operations in countries deemed to be—objectively or

Box 9: The Country Ranking Developed by Nord-Sud Export (Continued)

subjectively—high risk, when no country ranking system is able to foresee events of a revolutionary type. As a result, most country ranking systems have to go through sudden and ex post downgradings, an impediment to effective decision making. In other words, it may be questionable for a company to decide on long-term commitments only on the basis of country rankings, which, by definition, offer only limited reliability.

Source: Jean-Louis Terrier, NSE Founder.

R = average annual operating income

C = average annual operating costs

R – C = average annual operating cash flow

Other things being equal, an investment project will be more interesting for the private investor if its payback period is shorter. A high value for T reveals, among other things, the need for long-term financing and introduces great uncertainty.

8.2.1.2. Project IRR. The advantage of the IRR is that it does not rely on the notion of average year cash flow, which can be dangerous in the case of income and costs that are very changeable with time.

The project IRR is the solution r of the equation:

$$\sum_{i=1}^n \frac{-I_i + R_i - C_i}{(1+r)^i} = 0$$

I_i = amount invested in year i

R_i = operating income in year i

C_i = operating costs in year i

$R_i - C_i$ = operating cash flow in year i

n = length of concession contract

The higher the value of r , the more interesting a project will be from the financial point of view.

8.2.1.3. Project NPV. A third indicator of financial profitability is the project NPV. A project will be considered insufficiently profitable from a financial point of view if the obtained project NPV is negative. The NPV value is an absolute figure that does not allow for comparisons among several projects or variants. Because of this shortcoming, it is generally appropriate to calculate the investment cover ratio as well.

$$\text{NPV Proj} = \sum_{i=1}^n \frac{-I_i + R_i - C_i}{(1+t)^i}$$

I_i = amount invested in year i

R_i = operating income in year i

C_i = operating costs in year i

n = length of concession contract

t = project discount rate

8.2.1.4. Investment Cover Ratio. The investment cover ratio (ICR) compares the project's discounted cash flows to the total of the discounted investments.

$$\text{ICR} = \frac{\sum_{i=1}^n \frac{R_i - C_i}{(1+t)^i}}{\sum_{i=1}^n \frac{I_i}{(1+t)^i}}$$

The factors are the same as those used in calculating the project NPV.

A project will be considered profitable from a financial point of view if its ICR is greater than one. This is a variant of the previous indicator, but it has the advantage of providing a relative value, thus enabling investors to compare the results of several projects or variants.

8.3. Project Discount Rate—Cost of Capital

Apart from the rate of return on investment (the payback method), the other three measures of profitability noted above take into account performance over a project's lifetime. These methods require the use of a project discount rate based on

the notion of the time value of money. This rate can be used directly in the formula (project NPV and ICR) as well as indirectly (comparing the project IRR obtained to the project's discount rate). The concession holder, therefore, requires an accurate value for the project discount rate. In financial analysis, the profitability of an investment is measured against the cost of the financing required to own the resources placed under the company's control. In other words, it is the cost of capital (weighted average cost of capital [WACC]) that gives a true measure of the project's discount rate.

Traditionally, the cost of capital represents the weighted average cost of all the financial resources invested in the project and is measured as follows:

$$WACC = [(1 - g) \times r_e] + [g \times r_d]$$

g = financial gearing or leverage or the amount of the financial debt in relation to the total financial capital

r_d = cost of the financial debt or the financial debt remuneration requirement

r_e = cost of equity (the return on equity requirement)

In the next section, the remuneration requirements of the various private capital providers (lenders and sponsors) will be analyzed, including the determination of both r_d and r_e .

8.4. Financial Debt Remuneration Requirement

The financial debt remuneration requirement relates to the yield to maturity of the financing. It is the discount rate that cancels the present value of the sequence of expenses created by this financing. It therefore incorporates all the elements of the cost of finance, that is, the interest rate of the loan and all the fees charged in setting up the loan. If there are no fees and expenses, the yield to maturity is the same as the interest rate.

The yield to maturity engendered by the flow sequence $[F_0, F_1, \dots, F_N]$ is the solution for the rate r of the equation:

$$\sum_{i=1}^N \frac{F_i}{(1+r)^i} = 0$$

There are four fees usually charged by lenders in financing projects:

1. An arrangement fee (up front commission) to pay for the time spent in studying and setting up the dossier.
2. A participant's fee to pay for the time spent in studying the dossier.
3. A commitment fee designed to pay for the commitment to make unused funds available in the future (for example, the cost of a forward rate agreement).
4. An agent's fee, which pays for the administrative work consisting of checking and applying the loan agreement and managing credit flows (draw downs or repayments).

The interest rate is expressed as follows: interest rate = base rate + bank margin. The bank margin is known as the "spread." It is usually fixed and determined when the loan agreement is signed.

The interest rate may be any of the following:

- In the case of a fixed rate loan, a reference rate such as the return on treasury bonds of the country of the currency concerned.
- In the case of a revisable or variable rate loan, a reference rate quoted in a financial market such as EURIBOR or LIBOR (London Interbank Offered Rate).
- In the case of an indexed rate loan, the procedures for changing the base rate are laid down from identified parameters (for example, inflation).

It should be remembered that a rate is said to be "revisable" if the reference is predetermined; in the bond market, the coupon relating to a period (paid at the end of the period) is known at the beginning of the period. Also, a rate is said to be "variable" if the reference is postdetermined; in the bond market, the coupon relating to a period is not known until the end of the period.

8.4.1. Inflation

Real and nominal interest rates translate the cost of money at a given moment in time, for a specific period, and in a specific financial market place. The nominal interest rate initially represents the sum of the real interest rate and expected inflation. The real interest rate therefore represents the cost of the money excluding all monetary erosion. The relationship between the real and nominal interest rates is given by the following formula:

Within the framework of assessing financial

$$1 + \tau_{\text{real}} = \frac{1 + \tau_{\text{nominal}}}{1 + \tau_{\text{inflation}}}$$

profitability, the rate used for the initial approximation is the nominal interest rate.

8.4.2. Risk Rating by Determining *rd*

The financial analyst faces the difficult problem of translating the risk, established by means of the project rating, into a remuneration requirement. That is, the analyst must determine the risk premium, or the spread attached to the project for the lenders on the understanding that there are no guarantees other than the cash flows produced by the project.

The spread is established by the lenders and accounts for:

- Intrinsic characteristics of the loan (maturity and repayment terms).
- Sovereign risk assessment.
- Diversification policy of the bank's asset portfolio.
- Liquidity level in commercial banks when the financing is being structured.

8.4.3. Debt Remuneration Requirement Conclusion

Based on these various elements, it becomes a relatively easy task to determine the financial debt remuneration requirements. However, these largely theoretical calculations must not

lead one to lose sight of the fundamental objective of commercial banks to not get “stuck” with a high level of commitment above the ceiling allowed by their management board and defined within the framework of their own development and risk management policies.

Since the beginning of the 1980s, deregulation of financial activities has occurred contemporaneously with an increase in market volatility and competition between financial establishments. This situation has contributed to the development of assets and liabilities management as a stand-alone function in the banking world. Traditionally focusing mainly on development of commitments and increases in market share, commercial banks have come to appreciate the need to enhance their balance sheet value and their operating margins.

The decision on whether to invest in a specific project thus has to meet all these considerations, largely intrinsic to the company and generally unknown to the other private partners in the project. And when a positive decision is reached, it is not unusual to notice significant differences in the remuneration levels required by different banks. This underscores the theoretical nature of the approach described above and illustrates the complexity of the job of the financial analyst assigned to this kind of project.

8.5. Equity Remuneration Requirement

Assessing the equity remuneration requirement in a port project is a difficult exercise. Undoubtedly the most commonly used approach in financial analysis is the capital asset pricing model (CAPM), which is used in assessing the risk-profitability profile.

The equity remuneration requirement, *re*, is given by the formula:

$$r_e = (r_f + \beta_e (r_m - r_f))(1 + \alpha)$$

re = equity remuneration requirement

rf = risk free rate

β = equity beta parameter representing sensitivity

r_m = market rate

$r_m - r_f$ = market risk premium

α = sovereign risk factor

This method is based on the strong hypothesis that the risk in any financial security can be broken down into two categories: market risk (systematic or nondiversifiable risk) due to a set of factors exogenous to the company (for example, changes in the economy, tax system, interest rates, inflation), and specific risk (intrinsic or diversifiable risk) due to a set of factors endogenous to the company (all the risks previously mentioned under project risks).

The CAPM translates the fact that the profitability required by an investor is equal to the risk-free money rate plus a security risk premium, that premium being equal to a market-risk premium multiplied by the security's volatility factor. The market risk premium measures the difference in profitability between the market as a whole and the risk-free asset. The current level market-risk premium in France is in the region of 3–4 percent.

There are two questions that are essential for a financial analyst involved in a port privatization project to pose:

- How does one translate a risk quantification (achieved by establishing the aforementioned ratings) to an equity and quasi-equity remuneration requirement? In this regard, what should be the risk premium attached to the equity supplied by the project's sponsors?
- What dividend payment policy should be recommended? In other words, how does one reconcile the necessarily antagonistic objectives and interests pursued by the lenders and shareholders (who want the cash flow from the project to exceed the term of the loan) on the one hand, and between the sponsors and the SPC, on the other?

These are complex questions requiring complex answers. As far as the risk premium is concerned, it is generally determined following normative approaches. These approaches consist of determining the beta parameter for each of the sectors the project sponsors are involved in (contractors, terminal operators, cargo handling companies, shipowners, shipping companies, and so forth) and comparing them to the parameter generally assigned to a port operating company. The value assigned to the project, called asset beta, should logically be the highest value uncovered in this process. Finally, the determination of the equity beta stems from the difference that could exist between the specific financial structure of the project (as determined by the SPC) and the one observed in the normative approach.

“Differentiated” remuneration requirements depend on the type of shareholder. It should be remembered that the expected remuneration requirement levels of the project differ depending on the type of shareholder concerned. This fundamental point can be explained by the different outcomes sought by the various sponsors involved in the project:

- Constructors or equipment manufacturers will seek to maximize their margin in the sale of the works contract to the SPC.
- The operator will seek to maximize its margin in the downstream supply of management services.
- The customer (shipper or shipowner) will seek a high quality of service in the long term and a maximum reduction in the cost of using the port.
- The pure investor will primarily seek the maximum financial return on investment in the project.

There is also the difficult problem of differentiating the remuneration requirement for the pure investor and the other types of sponsors, with respect to which the SPC represents only a fraction of their objectives in the project. Generally speaking, discussions relate to the optimal time

for the pure investor to place its capital with the SPC, given a traffic risk may be experienced. In this regard, should the investor come in as early as the project set-up stage, at the beginning of the operating stage, or when the operation of the investment has shown its ability to produce sufficient revenue?

All of these questions, which are of interest not only to the concessioning authority but also to the lenders, are at the heart of the discussions surrounding the financial analysis of the project.

8.5.1. Sharing of Public-Private Financial Commitments: Arbitration between Financial and Socioeconomic Profitability

If the project offers both a positive discounted socioeconomic net benefit and project NPV, it should be carried out because it is favorable for the community and the concession holder alike. Conversely, when both discounted socioeconomic net benefit and project NPV are negative, the project should not be carried out. These are fairly straightforward outcomes leading to relatively straightforward “go no-go” decisions.

The real challenge is how to reach a reasonable decision when the operation is profitable from the socioeconomic point of view but not from the financial point of view. With port projects this is the most frequent situation given that port infrastructure investments are discontinuous or “lumpy,” with a long working life. They must therefore be designed from the start to their definitive size, even if port traffic only builds up gradually.

As a result, it is not unusual for the government to contribute to the funding of a project. This constitutes the value of the project to future generations, which is often difficult to ask the customers of the present generation to bear without running the risk of increasing the cost of using the port to such a level that the port loses its competitiveness. Even though proper remuneration of the benefits offered within a reasonable economic life of the project should be the rule, depreciation and remuneration of the government’s contribution over a longer

period, commensurate with the life of the long-term assets it financed, should not be seen as a departure from this principle. It would obviously be different if the capital market offered financing on a cycle equal to the investment cycle existing for port projects (25 to 50 years). This, however, is not the case today.

In conclusion, the financial constraints imposed by the market on this fragile public-private partnership often leads to a sharing of financial commitments between the concessioning authority and the concession holder. The search for an equitable split is based on the need to balance the socioeconomic profitability of a project and the financial profitability.

9. FINANCIAL PROJECT ENGINEERING

Capital markets are highly diversified. Whether one should use such a source of finance is dependent on many criteria, such as its cost, the type of assets to be financed, the guarantees required, flexibility of use, and conditions of acceptability by the financial market. The financial engineering of a project consists of seeking out the optimal terms and conditions of finance and cover for the project based on analysis of the financial constraints and risks of the market.

Implementing financial engineering is a sensitive and complex exercise, sensitive because of the commitment of the financial partners over periods that can be very long, complex because of the multiplicity and increasing sophistication of the financial tools available in the market. It is also essential to understand that the financial project engineering must first and foremost conform with a pragmatic logic that is dictated by common sense and a thorough understanding of the issues. It should not be based on a desire to use sophisticated finance and cover mechanisms for their own sakes.

9.1. Financial Structuring within the Framework of a Project Finance Set-Up

Once the financial profitability of the project has been determined, the SPC must define the

structure of its liabilities, that is, the value of its equity and quasi-equity and the value of its debts.

In project financing schemes, the structure of the SPC's liabilities directly stems from the project's ability to service its debts. The main measures being used in this respect are:

- *Capital structure ratio:* The most commonly used ratio to ascertain the financing structure is: $(\text{equity} + \text{quasi-equity}) \div \text{financial capital}$. Financial capital covers all of the financial resources invested and placed under the company's control by the capital providers. In other words, it includes permanent financial resources (equity and quasi-equity + medium- or long-term financial debts) and bank advances (short-term financial debts).
- *Annual debt service cover ratio:* The ADSCR is calculated as: $\text{ADSCR} = \text{available cash flow for servicing the debt} \div \text{annual debt service}$. This ratio is calculated each year and therefore provides a continuous view of the project's ability to service its debt. It also enables the debt repayment profile to be changed if the values obtained reveal too high a disparity during the finance cycle.
- *NPV debt cover ratio:* The average of all the annual cover ratios, known as "average debt cover ratio" is also used by some analysts. This ratio enables, among other things, a comparison to be made between several methods of paying off the loan and provides a global view of the economics of the project.

These three ratios enable one to assess from the outset the amount of the debt with limited recourse that is acceptable to the banks. From this flows the amount of equity and quasi-equity required to finance the project.

If the shareholders' aim in financing the project is to enable the project to benefit from a nonrecourse or limited recourse loan, then this means that the repayment ability of a project may be

less than the amount of external finance that the shareholders wish to obtain. In this case, the loan will be split into several tranches differentiated according to the degree of recourse the lenders want to be granted with respect to the project shareholders; this is called subordinated debt or mezzanine debt. In this case, these financial resources are considered to be the same as the partners' current accounts, namely quasi-equity.

But, as always happens in financial analysis, the discounted value of a series is preferred to its average value because the time value of money is taken into account. For this reason, we prefer the NPV DCR, which is defined as follows: $\text{NPV DCR} = \text{NPV of cash flow available for servicing the debt} \div \text{outstanding debt}$. The discount rate used in calculating the NPV is that of the average interest rates of the financial debts. As regards the period over which the NPV is calculated, there are two possibilities: the length of the financing cycle, in other words the length of the loan (the loan life cover ratio [LLCR]), or the length of the investment cycle or concession contract (the project life cover ratio [PLCR]). If the debt is not repaid by the time the loan agreement expires, subsequent cash flows will be used to pay it off.

What are the minimum requirements for these ratios in the case of a port project? In practical terms, it is difficult to suggest precise thresholds for the foregoing ratios that could apply to all projects. However, it seems reasonable to state the following, as far as project financing in Organisation for Economic Co-operation and Development (OECD) countries is concerned:

- A capital structure ratio below 15 percent would likely lead the lenders to demand an increased equity or quasi-equity contribution from the sponsors as a token of their commitment to the project.
- An annual ADSCR below 1.3 would inevitably require restructuring of the financing set-up, likely along the lines of an amendment of the loan amortization profile.

- An NPV DCR below 1.7 would run the risk of deterring any potential private investor; the project would then require an increased public financial contribution to make it viable for the private partners.

These thresholds are given only as potential indicators and do not apply to all cases, nor do they take into account the country risk factor. Clearly, their final assessment is contingent upon the overall project risk analysis described in Part A of this module.

9.2. Debt Structuring

Debt markets are highly diversified. Consequently, in complex transactions, debt is often broken down into several tranches (segments) of different loans. The aim of structuring the project's debt consists of seeking the optimum finance conditions for each of these tranches to reflect the requirements of the project's various financial partners.

Debt financing is usually defined by a set of intrinsic characteristics. The four main ones are:

- *Length or maturity of the loan:* The date on which the last repayment of the loan or the tranches of the loan has to be made by the SPC.
- *Availability period:* The closing date of validity of the loan, which limits the lender's undertakings in time.
- *Loan repayment terms:* The repayment of a loan must be tailored to the project for which it was set up. There are three types of repayment profiles generally used:
 - ~ Equal installments of principal.
 - ~ Equal installments of interest and principal.
 - ~ Installments depending on the available cash flow.

Some terms include deferred repayment or a grace period, which means that over a certain period (rarely more than two years) the borrower pays only interest to the lenders. Deferred repayment may prove necessary for projects in

which the ability to generate operating income significantly lags behind project costs. This is usually the case with greenfield port projects.

- *Average length and loan duration:* The average duration of a loan is usually used as an instrument of comparison when the loan repayment profile is dependent on available cash flow.

The average duration of a loan is given by the formula:

$$D = \frac{\sum \text{Outstanding Amount}_i}{\text{Total Borrowing}}$$

Outstanding amount i represents the various annual outstanding amounts of the loan over its lifetime. A variation of average duration of the loan introduces the discount factor and represents the “center of gravity” of the finance flows over time. A credit sequence [F1, F2, ..., Fn] at a discount rate of t has a duration of:

$$D = \frac{\sum_{i=1}^n \frac{F_i \times i}{(1+t)^i}}{\sum_{i=1}^n \frac{F_i}{(1+t)^i}}$$

This latter measure of duration is more often used as an instrument for measuring and managing the rate risk.

9.3. Long-Term Commercial Debt

To finance public service infrastructure, the first two methods that spring to mind are public budget finance and investment prefinancing by the project sponsors. Both of these methods are referred to as corporate financing. This implies the inclusion of the amount of the investment in the public accounts of the concessioning authority as well as in the company accounts of the constructor, respectively.

These finance solutions have the major disadvantage of being a burden on the investment capacity and balance sheets of the parties. This is particularly true in the case of transport infrastructure where the sums to be financed are large and the balance sheet ratios (see above)

are weak in the first few years of the project due to the slow increase in revenue generating traffic. An alternative to these methods is project finance.

It is difficult to define the characteristics of a typical project finance set-up because tailor-made solutions are so important. However, the financial set-ups have one essential point in common: repayment of the loan is either primarily or solely dependent on cash flows generated by the project itself. In the first case, this is called limited recourse financing and in the second, nonrecourse financing.

The two characteristics common to limited recourse financing are that the loan is repaid on the basis of cash flows generated by the project, and that the lender has no guarantees other than the assets of the project itself, which often are not financially recoverable for port projects.

9.3.1. Foreign Currency Loans

One way of reducing exchange risks is to obtain financing in local currencies. However, this type of financing quickly reaches its limits in developing countries. In fact, the weakness or nonexistence of a national money market, high local currency interest rates, and the absence of investors willing to provide finance over periods compatible with infrastructure projects all combine to exclude local currency debt or at least restrict its use to a short-term revolving line of credit designed to finance operating expenses. Foreign currency debt also poses problems of exposure to the residual exchange risks of convertibility and transferability.

9.3.2. Guaranteed Commercial Debt

Export credits and financial credits with a multilateral “umbrella” export credit agencies (ECAs) and multilateral agencies (MLAs) offer guarantees or “cover” that can mitigate political risks associated with port projects and therefore open up new financing possibilities. When the commercial banks are to a large extent freed from worrying about political risks, they can concentrate their efforts on the commercial risk

within the framework of terms offered by these agencies. The fact remains that these agencies are themselves subject to term and cost constraints that must be taken into account (particularly the OECD Consensus for export credit agencies).

9.3.3. Export Credits

Export credits can prove very useful when the project is located in a developing country and involves the contribution of foreign technology. Among export credits, one must distinguish between supplier credits (credit granted directly by the exporter) and buyer credits. Buyer credits, the more common of the two, are granted by commercial banks for a maximum length of two years to a foreign borrower to enable the borrower to pay cash to the supplier (the exporter) according to the terms of the commercial contract. Buyer credits free the exporter from the financial risk of making a credit-based sale to the buyer.

When an export sale is supported by a buyer credit, two distinct cross-referenced contracts are signed: the commercial contract between the exporter and the foreign buyer, and the credit agreement between this same buyer (as a borrower) and the lending banks. The commercial contract spells out the respective obligations of the supplier and the buyer. It must indicate the payment modalities (in particular the down payment to be made before delivery and the overall payment schedule) that will serve as a basis for the buyer credit. The credit agreement is signed between the commercial bank and the foreign buyer. Under this agreement, the bank commits itself to pay the exporter and the buyer agrees to pay back the bank for all amounts paid to the supplier according to terms and modalities spelled out in the credit agreement.

Buyer and supplier credits can both benefit from public support for medium- and long-term export financing. This support, governed by the consensus rules drafted by the OECD member countries, can be expressed in two ways:

- Provision by credit insurers of cover for political and commercial risks on foreign

debtors (the SPC would be the foreign debtor within the framework of a project finance transaction).

- Provision of a fixed rate for the loan, known as the reference commercial interest rate (RCIR), for instance in the case of COFACE, the French export credit agency. In Europe, such a rate stabilization mechanism is possible for loans in both euros and foreign currencies.

Buyer credits are of three varieties:

- Administered credit is when the buyer credit benefits from public support through a rate stabilization mechanism on top of a guarantee provided by an export credit agency. Also, this type of loan is placed at a more competitive level (fixed rates and long terms) than syndicated financial loans or bonded debt.
- Pure cover credit is when the buyer credit only benefits from a guarantee provided by an export credit agency. In this case rates are neither stabilized nor enhanced. They are freely established by the banks, indexed on a reference index (EURIBOR or LIBOR, for instance), and can be variable, revisable, or fixed.
- Financial credit or free credit is when the buyer credit is established without any public support and without any export credit guarantee. The manufacturing risk is carried by the supplier and the credit risk by the bank. Because of the risk involved, it is in fact limited to the best-known borrowers, and generally limited to down payment financing.

Export credit agencies exist in most industrialized countries: COFACE in France, SACE in Italy, HERMES in Germany, ECGD in England, CESCE in Spain, and Ex-Im Bank in the United States and Japan.

In a port project, this source of financing relates more to port equipment (for example, handling equipment, container gantries, and computer systems) than infrastructure (for example, civil

engineering or dredging), which is usually subcontracted locally. To enjoy the export credit cover, the project must fulfill certain criteria. The first of these is that payments made under the contract concluded with the exporting equipment manufacturer must represent 85 percent of the share able to be repatriated (national share + foreign share). Box 10 describes how the concepts come together in an example.

It should be pointed out that while the principal activity of export credit agencies is now to cover political risks, some of them have project financing teams and are beginning to consider covering the commercial risk in some projects. Furthermore, there is an increasing number of major project financing contracts in the form of multisourcing operations, in the sense that they are structured either by major multinational groups that can source from different countries through their subsidiaries, or by multinational consortiums organized on a cocontracting or subcontracting basis. This change can be explained by the fact that the ever increasing size of the investment level of the projects does not always coincide with the total commitment limitations (geographic or sector) set by the export credit agencies and governments within the framework of their risk policy (see Box 11).

9.3.4. Financial Credits with a Multilateral Umbrella (A- and B-loans)

Multilateral organizations, such as the World Bank Group, through the International Bank of Reconstruction and Development (IBRD) or regional development banks (European Bank for Reconstruction and Development [EBRD], Asian Development Bank (ADB), and Inter-American Development Bank [IDB]), are also involved in these types of transactions alongside commercial banks and export credit organizations. This is referred to as cofinancing.

Most of the time cofinancing is carried out in the form of parallel financing where the project is split into separate lots, each covered by a World Bank loan or a commercial debt granted by a bank or a buyer credit covered by an

Box 10: An Example of Export Cover by COFACE in a Port Project

Assume there is a greenfield port construction project in China requiring the supply of quayside gantries. Let us further assume that the equipment manufacturer, whom we shall call the “exporter,” identified for this service is French, and that the commercial contract concluded between the SPC and the industrialist represents an investment of 100 M FRF broken down as follows:

- French share, 50 M FRF (parts exported directly from France).
- Foreign share, 10 M FRF (parts manufactured in Germany, for example, and exported to China).
- Local share, 40 M FRF (for the installation of port equipment in China subcontracted locally by the exporter).

The proposed financing for this contract is a buyer credit (structured by the exporter’s French bank) with a request to COFACE for export cover against the political risk during the manufacturing stages (six months, for instance) and credit (five years for this kind of investment according to OECD rules) with an application for stabilization of the loan’s interest rate. The notion of export cover is a complicated one as will be illustrated by the following example.

During the manufacturing stage, the extent of the export cover granted to the exporter is 100 million FRF, for an amount of cover which can vary (depending on the policies issued by the export credit agencies from 70–85 percent

of the value of the commercial contract, that is, 70–85 million FRF in this example). The 15–0 percent of the value not covered cannot be covered by additional insurance by the exporter.

During the credit stage, the extent of the export cover granted to the exporter’s bank amounts to 100 percent of the portion of the contract that can be repatriated (that is, the French share plus the foreign share, or 60 million FRF). The amount of cover granted to the bank is 95 percent of the extent of cover (the remaining 5 percent cannot be covered by additional insurance by the bank).

In other words, the export cover granted by COFACE in terms of cover for the political risk and rate stabilization only relates to an amount of 60 million FRF. The additional financing required for the port investment (40 million FRF in this example) is then known as “straight back-up credit.” It can be provided either by the exporter’s bank or by another commercial bank (a local Chinese bank, for example).

Generally speaking, finance structuring with export credit leads to the credit being split into two tranches: one guaranteed and the other not guaranteed at market conditions (rate and duration). This can also be referred to as a joint financing technique because each of these tranches refers to one and the same investment.

Source: Author.

export credit agency. These cofinancing methods, relating to financing of separate lots, should not be confused with the technique of joint financing, which combines several sources of finance in a single lot, according to a percentage agreed to in advance.

In practice, the involvement of a multilateral agency in this type of set-up leads to the financial credit being structured at two levels (or in two segments): an A-loan granted by the multilateral organization itself, and a B-loan underwritten by commercial banks under the multilateral umbrella.

The World Bank, through the IFC, can be involved in A-loans in three ways:

- Direct financing of the last installments of the loan granted by the commercial banks, usually translating into a 10–25 percent participation.
- Provision of a guarantee relating to the last installments, in return for a guarantee fee.
- Conditional participation of the World Bank in variable rate credits, if the final charge corresponding to payment of interest exceeds the repayment ability as originally assessed.

As far as B-loans are concerned, the notion of a multilateral umbrella does not mean that the multilateral organization gives the commercial

Box 11: Principal Guarantees Offered by an Export Credit Agency for Project Financing: The COFACE Example

COFACE insurance policies cover four categories of risks:

- *Manufacturing risk*: Materializes when the fulfillment of the exporter's contractual obligations is suspended for at least a 6-month period, inasmuch as this situation results exclusively from factors spelled out in the insurance policy subscribed by the exporter.
- *Credit risk*: Materializes when the exporter's commercial bank finds it impossible to recover all or part of the debt relating to the guaranteed contract, inasmuch as this situation results exclusively from factors spelled out in the insurance policy subscribed by the exporter.
- *Performance bond and advance payment reimbursement guarantee risk*: Upon request from the exporter, these guarantees and bond commitments may be included in the scope of the manufacturing or credit risk guarantees.
- *Bid guarantee risk*: Materializes when the exporter cannot recover from the beneficiary of the bid guarantee all or part of the guarantee amount.

In principle, COFACE also demands that to cover the manufacturing risk, the credit risk must be covered, and that to cover the credit risk, in the case of progressive payments, that the manufacturing risk must be covered.

Facts Triggering Guarantees

COFACE general conditions list eight factors triggering a call on guarantees (manufacturing or credit):

- Arbitrary cancellation of the guaranteed contract by the debtor.
- Mere carence of the debtor.
- Insolvency of the debtor, consisting of its incapacity to meet its financial commitments, resulting from:
 - ~ A judicial act resulting in the suspension of individual lawsuits (as the judicial liquidation).
 - ~ An agreement reached with all creditors.
 - ~ A de facto situation leading the insurer to conclude that any payment, even partial, is unlikely.
- General moratorium enacted by the government of the debtor's country or of a third-

party country through which the payment must be processed.

- Any other act or decision of a government of a foreign country preventing the guaranteed contract from being carried out.
- Occurrence, outside of France, of war, revolution or riot, or acts of nature such as hurricane, flood, earthquake, volcanic eruption, tidal wave, or similar event.
- Political events and economic hardships occurring outside France, or legislative or administrative measures taken outside France, preventing or delaying the transfer of funds paid by the debtor or its guarantor.
- Act or decision by the French government, such as a ban on exports of the goods or services that are the object of the guaranteed contract, or requisition of the goods in the course of manufacturing.

Principal Guarantees Offered by an Export Credit Agency for Project Financing: Concepts

The risk definitions above, as well as the guarantee triggers, constitute the basis of the guarantees offered by COFACE to its clients. However, to get a good understanding of the scope of the guarantees offered, it is necessary to grasp the following concepts:

- *Public buyer*: An entity exercising the government's responsibility and which cannot be judicially bankrupt. When a public buyer benefits from a letter of guarantee from its finance ministry, it is then called a sovereign buyer.
- *Private buyer*: A buyer that does not meet the previous criteria, and which can therefore be judicially bankrupt.
- *Political risk*: Risk resulting from a political fact, such as a war, revolution, or an act of government preventing the contract from being carried out. It becomes an extended political risk when the event leading to the materialization of the risk is not of sovereign origin, but comes from a local community, a public establishment, or similar organization.
- *Commercial risk*: Risk resulting from the financial instability of the private buyer (insolvency). This implies that any payment default by a public buyer, sovereign or not, exclusively results in materialization of a political risk, or broad political risk.

Box 11: Principal Guarantees Offered by an Export Credit Agency for Project Financing: The COFACE Example (*Continued*)

Specificity of Risk Coverage by COFACE in Project Financing

In project financing schemes, the borrower is the SPC. Therefore, in all cases, even when the public partner would have chosen to take equity participation alongside the private sponsors, the borrower is considered a private buyer. However, COFACE will not cover, in principle, the SPC's commercial risks, that is, insolvency resulting from an inadequate assessment of future traffic in particular.

Political risks are covered, both manufacturing and credit. As far as the extended political risk is concerned, the risks potentially eligible must be measurable, and refer to specific clauses in the contract, the nonrespect of these clauses allowing the SPC to terminate the contract with a right to indemnity by the public partner. This indemnity is defined to allow it to cover, as a minimum, the outstanding debt balance.

Political risks refer to the public partner's commitments to do or to pay, with specific contents spelled out in the contract. In case of noncompliance, this constitutes a breach of contract. These may include availability of land, issuance of building or operating permits, payment of investment or operating subsidies, fiscal measures initially granted, and so forth.

Source: Author.

banks any kind of guarantee on this credit. It simply means that the banks will feel reassured by the participation of the multilateral organization because the host states are unlikely to take detrimental measures against the project because of their presence.

Finally, although multilateral institutions are often unwilling to bear certain risks, they have the advantage of being able to offer much longer loan periods at fixed rates than the commercial banks.

9.3.5. Bonded Debt

Bonded debt is a source of long-term financing that is currently enjoying widespread popularity, particularly in financing transport infrastructure. It is used extensively in the North American market and is reserved for institutional clients.

This option should not be confused with bond issues for public savings.

Issuing bonded debt (under what is referred to as Rule 144A) enables financial terms (margins and fees) to be obtained as well as maturities that are more favorable than those available in the banking market. This method of financing is fairly recent, as it only took off in the early 1990s and it has still not reached maturity. In fact, it is only in the last few years that the market has come to agree to cover financing requirements during the construction period. It is therefore more a method of refinancing for banks than of financing for investors.

It should also be noted that using this type of financing source can create problems for inter-creditor relations. While the problem of seniority between the debt categories can be easily solved, the ability of the various quorums to call in their sureties and the differences in the level of information supplied to the protagonists poses major problems (for example, a club of a few banks does not receive the same information as a large, liquid syndicate of heterogeneous investors).

9.3.6. Structuring Equity and Quasi-Equity

Equity is a financial resource that is flexible enough to earn its return over a variable and unspecific time frame, without creating any risk of financial sanction by the equity holders. In other words, equity refers to financial resources placed under the control of the company and designed to cover the materialization of project risks.

9.3.6.1. Equity Provided by the Public Sector.

There are many ways in which the public sector can become involved in port investments.

Which of these is applied depends to a large extent on the configuration of the project. In a nonexhaustive way, one can list the following options:

- *Contribution of assets:* This solution has the dual advantage of reducing the initial amount of the investment and possibly providing income during the construction period. Within the framework of a port

extension project, a contribution of assets could consist of entrusting the private concession holder with the operation of an existing terminal managed until then by a public port authority. In this way, the financial profitability expected by investors is reinforced by the assurance of cash flows on signature of the concession agreement; this is known as backing.

- *Cash contribution:* The concessioning public authority can invest cash in the project or provide operating subsidies. This increases the available cash flows for servicing the debt. For example, in the case of a green-field port project, investment subsidies are frequently required for financing swell protection structures because of the discontinuous (lumpy) nature of this investment.
- *Guarantee contributions:* The concessioning public authority offers a minimum revenue guarantee, a guaranteed return on invested capital, or a guarantee to make good on liabilities in the case of force majeure.

There are many financing vehicles for the public sector to contribute equity to the SPC. The intervention can take the form of:

- Public financing drawn from the budget of the concessioning authority or the host state of the project.
- Export credit (usually buyer credit) granted to the concessioning authority by one or more export credit agencies (creating subsovereign risk for the bank).
- Bilateral financing (for example, the French Development Agency) or government protocol (now renamed Emerging Country Reserve in France).
- EU financing, which can come from the European Investment Bank (EIB) or the European Commission (European Development Fund financing in particular).
- Multilateral financing from the World Bank Group (IBRD or IDA) or regional development banks.

With the exception of export credits, the beneficiary of this type of financing is the host state of the project, which then retrocedes the credit, frequently granted on concessionary terms, to the port authority concerned. While this technique has an undeniable advantage for the lenders of avoiding the risk of a shortfall caused by the local public authority, given that the credit enjoys a “sovereign guarantee,” the fact remains that in some developing countries (in Africa in particular) this procedure of the state retroceding the credit is carried out on terms and conditions that are not always favorable to the local company, as the state wants to make a profit on the transaction.

Financial analysts compare all of these public sector financial investments in the project to equity, whether or not the concessioning authority is one of the shareholders of the SPC. The risk that these resources will not be made available to the private concession holder remains. This risk is an integral part of the political risk. One can therefore understand why the private concession holder (and the banks in particular) have tended to prefer investment subsidies, payable right at the start of the concession, to operating subsidies.

9.3.6.2. Equity Invested by the Project's Sponsors. Equity contributed to the project by its sponsors is paid into the SPC's share capital. This is determined according to the minimum required by legislation and the available funds of the future shareholders. Banking requirements are usually not too strict in terms of the amount of share capital required, as only the value of the equity and of similar funds is significant in terms of financing structure. The equity balance is usually given to the SPC by the sponsors in the form of confirmed letters of credit in the name of the shareholder.

9.3.6.3. Equity Invested by Multilateral Institutions. Some multilateral institutions have financial tools that enable them to invest in these operations as a shareholder of the SPC in the same way as the project's sponsors. The best known of these institutions is the International

Finance Corporation (IFC), a subsidiary of the World Bank Group, which invests in private companies in developing countries. It acts as a catalyst, in the absence of a government guarantee, by providing coinvestors with protection against noncommercial, expropriation, and profit repatriation risks.

There are three ways in which the IFC can be involved:

- Direct investment in the capital of the SPC.
- Long-term subordinated loans granted to the SPC and then considered as quasi-equity in the financing structure.
- Shareholder advances granted to the project sponsors, which are similar to partners' current accounts and are also considered as quasi-equity.

9.3.6.4. Equity Invested by Bilateral Institutions. Some bilateral institutions become involved in these projects by investing in the SPC. In France, this is the case with PROPARCO, an investment subsidiary of the French Development Agency (ADF). Established in 1977, PROPARCO (Société de Promotion et de Participation pour la Coopération Economique) has a mission to promote the creation and development of private enterprises in developing countries, particularly in Africa. PROPARCO's equity participations are to be sold after an average of six years, when the enterprise reaches a satisfactory growth rate.

9.3.6.5. Specialist Investment Funds. In some cases, the use of specialist funds (geographic, sector, or religious) can also finance major projects. These sophisticated sources of finance are usually similar to quasi-equity because the invested capital is mostly supplied to the SPC in the form of mezzanine debt.

This subordinated debt, which is junior in ranking to traditional bank debt, is frequently given to the project for a long term and attracts a much higher rate of interest than traditional bank debt. This type of financing is therefore

reserved for highly specialized private investors, for example, pension funds, institutional investors, or finance company subsidiaries of major groups.

9.4. Managing Exogenous Financial Risk

Exogenous financial risks are a category of market risks as opposed to political risks. They arise from the perpetual changes in the capital market. Such risks usually relate to interest rates, exchange rates, and counterpart risks. With regard to interest rate and exchange risk cover, there are two main families of markets that although different, are also interdependent:

- The interbank market (forward), where contracts are negotiated by private agreement and the bank usually acts as an intermediary between several counterparts for a commission. This is also known as the over-the-counter market.
- The organized markets (futures), whose main feature is the offer of standard contracts, futures contracts, and option contracts continuously quoted on the international stock exchanges. Standardization relates to the nominal value (also known as the notional value) and the maturity dates of those contracts.

While the cover principles are identical in both of these markets, the methods employed in their operation are quite different. Three reasons explain why:

- Standardization of contracts (nominal value and fixed maturity dates) implies that the cover obtained in the organized markets is always imperfect for the investor, contrary to what happens in the interbank market. Imperfect means that the level of cover is only rarely an exact multiple of the nominal value of the futures contract. Similarly, it is almost equally as rare for the cover expiry date to correspond to the maturity date of the futures contract. Also, futures contracts provide only partial cover, and there

continues to be a residual risk for the company.

- In the organized markets, the vast majority of contracts do not involve actual delivery of the underlying securities. These delivery and receipt undertakings are in fact offset before maturity by a transaction in the opposite direction to the original one. Conversely, in the interbank market, the obligation to deliver or receive the underlying security usually exists. In jargon, the futures markets are said to be “paper contracts” as opposed to the “physical contracts” pertaining to the underlying security.
- Because the interbank market is an over-the-counter market, transactions are executed principal to principal, which implies a counterpart risk that is not present in organized markets due to the presence of a clearinghouse.

The financial engineering of a project in terms of risk cover always has to be tailor made. As such, it must adapt itself to the configuration of the project and its environment, the cover requirements sought by the investors, and the local conditions of the country. Also, the products available on the capital market are not applicable to all developing countries.

Several previously described methods of financing already incorporate cover against certain financial risks in their design. This is particularly the case with guaranteed credits, which, depending on circumstances, can offer the SPC exchange or interest rate guarantees. Also, while it is easy to dissociate the method of financing a project from the cover for financial risks in theory, in practice it is more difficult. Designing the financial engineering of a project must therefore fall within a global approach where the financing and the financial risk management methods are dealt with simultaneously.

All of the cover products (detailed in the following paragraphs) are used more during the operating period than the construction period for two main reasons. First, cover requirements

are without common measure in terms of duration, a few years for construction and typically a minimum of 20 years for operation. Second, using such products requires an accurate prior knowledge of the amount of flows to be covered, an exercise that is much more difficult to achieve during the construction stage.

The principles of cover are based on the notion of transfer (and not removal) of the financial risk to a counterpart. The counterpart agrees to bear the risk for payment of a premium because its cover need is the opposite of that required by the investor. In other words, all these mechanisms involve the notion of counterpart risk, which can be difficult to manage in the case of a project financing set-up.

The market sees new risk management and cover instruments every day. Their sophistication is limited only by the imagination of the financiers. It would therefore be futile to attempt to deal with this field exhaustively. The goal of the following section is to make the mechanisms understandable and explain the issues, specifically within the framework of a project financing set-up.

9.4.1. Interest Rate Risk Management

As already mentioned, debt financing usually involves a variable interest rate, consisting of a reference rate (variable) and a margin (fixed). As far as the SPC is concerned, the interest rate risk occurs when the reference rate rises and, along with it, the financial costs of the project. Given that concession contracts are concluded for long periods, the concession holder's main concern is to try to cover itself against the risk of rates rising in the long term.

Several issues regarding interest rate risk management merit further explanation. The risk associated with rising reference rates (for example, EURIBOR or LIBOR) can result from two independent sources, the first being an increase in inflation in the countries in which the reference index is calculated, that is, the developed countries. This creates a need to neutralize the negative impact of inflation on the cost of the

debt, since it will make the debt more expensive. Neutralizing the effect of inflation is possible only if the price indexing parameters laid down in the concession contract make provision for this. Delaying the adverse affect of inflation is the existence of a lag factor, of varying length, between the time the real interest rates rise and the time they are passed on in the concession holder's interest charges. This increase might lead to an increase in the project's revenue if the project is carried out in one of the indexing countries, thereby partially offsetting the affects of increased inflation and interest rates.

The second source is an increase in real interest rates wherein the annual increase is not offset by a parallel increase in available cash flow for servicing the debt. This implies a corresponding rise in the cost of the debt. Consequently, the SPC bears the whole brunt of the rate rise if no other cover mechanism was originally provided in the set-up.

Conversely, interest rates could fall significantly during the operating period. If the SPC had managed, either directly through the loans granted to it or indirectly through the cover instruments it contracted, to maintain a fixed interest rate on its debt, it would experience higher interest expenses than competitors with variable rate debt. This would imply that the port's customers would have to bear this surcharge through the prices they were charged. In other words, setting up a fixed rate loan during a period of falling rates would translate into a less favorable competitive position for the SPC (compared to other competing ports or terminals that may have opted for a variable rate loan), leading to a rise in the commercial risk. A prudent mix of fixed and variable rate loans is therefore advisable, on the understanding that there is no ideal formula. Although a 50-50 ratio is often used as an initial approximation, the final determination of this cover threshold is an extremely complex exercise as it assumes the ability to forecast long-term rate trends over a 10-, 15-, or 20-year financing cycle.

Finally, let us remember that existing cover instruments are used more during the operating

than the construction period. It is harder to determine the rate risk and fix drawings on the loan in time (dependent on the state of progress of the works) than to fix the repayments that are stated in the loan agreement.

9.4.1.1. Interest Rate Swaps. The use of swaps to protect against the risk of interest rate changes, particularly long-term rates, has become popular over the last few years. Banks have played a lead role in the development of this market. A swap is an exchange of interest rates between two dealers, the bank usually acting as an intermediary and charging a commission. A rate swap can also be obtained where two counterparts are involved in different currencies. In practice, the SPC with a variable rate debt pays the corresponding interest and receives in return interest calculated on the basis of a fixed rate. This effectively provides the SPC with a fixed rate debt.

In project financing, it can be difficult to find a counterpart who will agree to swap interest rates with the SPC, primarily for two reasons: first, the SPC can only offer the cash flows produced by the project as a guarantee. Also, the credit risk attached to the SPC, which the counterpart will have to accept, depends on the project configuration. In countries subject to significant political risks, a possible but difficult to implement method consists of transferring this credit risk to the project's sponsors by asking them to guarantee the swap if the SPC were to fail. The second reason it is difficult to find a counterpart to swap with is that a variable rate loan granted by a banking syndicate usually has a repayment profile based on the profile of the cash flows produced by the project. It is extremely rare for this to correspond perfectly to the counterpart's cover requirements. It is also common for the swap to relate only to a fixed portion of the loan repayment (possibly smoothed out over the financing period), the balance remaining exposed to the rate risk. This is known as a residual interest rate risk. This technique enables the SPC to enjoy a possible rate reduction on the uncovered portion of the loan, while at the same time enjoying cover on the portion with the fixed rate in the event of a rise.

9.4.1.2. Firm Financial Instruments in the Over-the-Counter Market. Two firm financial instruments exist on the over-the-counter market, a forward-forward rate, which enables a company or an investor who wishes to borrow on a future date and over a set period to fix the cost of borrowing now, and a forward rate agreement (FRA), which enables a company or an investor who wishes to borrow on a future date and over a set period to cover the rate position with a bank or financial institution.

While these two products offer excellent protection against rate risks, they differ on one essential point. The FRA completely dissociates the rate guarantee transaction from the financing transaction, which is not so in the case of the forward-forward rate. For this reason, FRAs are more frequently used in project finance, given the diversity and specific nature of the loans granted in these set-ups.

9.4.1.3. Firm Financial Instruments in the Organized Markets. In the organized markets, futures are also able to offer efficient protection against interest rate risks. The standard contracts traded in these markets are undertakings to deliver (for the contract vendor) or to receive (for the contract purchaser), on a clearly defined date, fixed-income financial securities with features strictly specified by the contract itself, at a price fixed on the day the contract was negotiated.

The general principle with these cover transactions is to take a position in the contract market opposite to that held in the cash market of the underlying security, the loan transaction in this case. In practice, an SPC wishing to cover itself against an interest rate rise (particularly long-term interest rates) will sell forward standard contracts. The number of contracts sold is calculated in such a way that the duration factor, defined in advance, is equal in both transactions.

9.4.1.4. Conditional Financial Instruments (interest rate options). An option confers a right on its holder to buy or sell the underlying security of the option (for example, financial securities) at a rate fixed in advance (called the exercise price or striking price). This right can only be exer-

cised during the life of the option, that is, up to the exercise date. If the option grants its holder an option to buy, it is called a call option; if the option grants its holder an option to sell, it is called a put option. In return for the right resulting from the purchase of the option (regardless of whether it is a call or put), the purchaser pays the vendor of the option a premium, which the vendor keeps whether the option is exercised or not.

There are two main types of interest rate options available to an SPC fearing a rise in rates, one is a cap that enables borrowers to set an interest rate ceiling beyond which they no longer wish to borrow and will receive the difference between the market rate and the ceiling rate. This product is perfectly suited to the cover requirements sought by an SPC, while at the same time enabling it to benefit from a gain in the event of rates changing favorably, which in this case would translate into a rise in rates. The other interest rate option is a collar that is a combination of a cap and a floor (which enables a borrower to set a floor rate). This product enables a dealer to set an interest rate fluctuation range outside of which it has to pay the difference between the market rate and the floor rate and within which the counterpart will have to pay the dealer the difference.

Although these products exist on organized markets, they are more commonly traded on the over-the-counter market, which offers the purchaser of the option, the SPC, a product tailor made to meet its requirements.

The principal limiting factor in the use of these cover instruments is the sometimes extremely high premium associated with them, that is, the cost of the option. As the volatility of the underlying security depends on the exercise date of the option, a cover application from an investor relating to a very long period of time will automatically result in a rise in the return required.

9.4.2. Foreign Exchange Risk Management

For a company investing in a foreign country, the risk of a change in foreign exchange rates

traditionally materializes in two different ways: a consolidation exchange risk or asset risk that arises when the financial results of a subsidiary company (the SPC in this case) are included in the consolidated accounts of the sponsors in different currencies, or a transaction exchange risk that arises when investments or operating income and expenditure involve several currencies.

The consolidation exchange risk, although sometimes overlooked by financial analysts in privatization projects, is a major concern for the project's sponsors. The ways of managing it relate to the accounting and taxation details of the consolidation, which will not be dealt with here because there are large local disparities in these details between one country and another. We note simply that the consolidation risk is usually approached from the point of view of tax optimization of the project and is dealt with once the methods of financing and risk cover have been set.

As far as the transaction exchange risk is concerned, several risk management methods were mentioned in the section devoted to risk management. These techniques are intended to eliminate the risk by pricing the port services in foreign currencies (the project is then said to be foreign currency generating) or obtaining a loan in local currency or transfer the exchange risk to public entities by obtaining an exchange rate guarantee over the period of the concession from the host country's central bank (at the request of the ministry of finance), which converts the exchange risk into a political risk.

These techniques, although highly desirable for the concession holder, are a challenge to implement. Depending on circumstances, the SPC will have to bear a part of the exchange risk. Against the backdrop of an international economy characterized by floating currencies and wide fluctuations in currency rates, managing the foreign exchange risk is a necessity for an SPC. Consequently, it will strive to transfer this risk to a counterpart expert in dealing in the foreign exchange markets.

The foreign exchange market is the most challenging segment of the capital market. Spot and

forward transactions between banks occupy a central position in the market. It would be wrong, however, to think that the foreign exchange market is reserved for these interbank transactions. Since the beginning of the 1970s, new markets, the derivatives markets, have gradually developed.

Within the derivatives markets, it is customary to make a distinction between standard contract markets, which are located in stock exchanges that have clearinghouses, and nonstandard contract markets, which are a compartment of the interbank market in which over-the-counter deals are transacted. Within these standard contracts, there is a further distinction between futures and options.

All of the methods relating to interest rate risk cover also exist for exchange risk cover. Thus, the cover products available on the derivatives markets are:

- Forward currency sales on the interbank market.
- Currency futures on the organized markets.
- Foreign exchange options in both compartments of the foreign exchange market.

As a rule, investors involved in project finance set-ups tend to prefer the over-the-counter market, which is more flexible in terms of the choice of amount to be covered (which may exactly match the expected amount of flow), maturity dates, and exercise prices in the case of foreign exchange options.

With regard to the options market, there exists an "option option," which has proved to be a particularly interesting product for the investor at the stage of bidding on a tender. The project profitability calculations carried out by the company are based on certain assumptions about exchange rates even though the company is not certain of winning the contract. If it wins the contract after the invitation to tender, it is not uncommon for the market to have shifted significantly in the meantime. Also, an option option gives the option holder the right to buy a foreign

exchange option whose exercise price is close to the reference exchange rate used, thereby covering itself as early as the tender stage. If the company is not successful, it doesn't exercise its option option. Also, it is worth mentioning that since the volatility of the price of an option is less than the volatility of its underlying security (in this case the foreign currency), the price of the option option tends to be low.

Finally, the use of these cover products, as in the case of rate risks, requires an accurate, prior knowledge of future foreign currency cash flows. This is referred to as the company's "net foreign exchange position." Determining this position is a difficult exercise, particularly during the operating period. Assessing the value of the basket of currencies to be covered can therefore only be a "guesstimate." Nevertheless, it is important to estimate these flows carefully during the financial modeling of the project. This point will be discussed further at a later stage.

9.4.3. Counterpart Risk Management and Performance Bonds

All of the techniques mentioned in the Part A of this module relating to risk management are based on the principle of risk sharing in project financing set-ups: to minimize the costs of covering risks, they must be borne by the party in the best position to assume it. This involves transferring each identified risk to a private counterpart. The risk that any of these counterparts may disappear is what is called the counterpart risk or credit risk.

The counterpart may be directly involved in the project and therefore belong either to the SPC or the bank syndicate. But, it may also take no direct part in the project other than through the risk it agrees to take on, either because it counter balances an opposite cover requirement or because it expects payment for doing so.

Also, with regard to counterpart risk management, a distinction must be made between the credit risk relating to the sponsors of the project and the credit risk resulting from the other counterpart, as the financial cover instruments used are of a totally different kind.

The need to cover the counterpart risk in a project financing set-up stems principally from a requirement of the bank syndicate that structured the loan and wishes to satisfy itself as to the solvency of the various sponsors of the project (for example, builder, operator, supplier, owner, or shipper). To satisfy itself that these parties will honor their financial contractual commitments, which might be expressed in terms of contract penalties, the bank syndicate may require the establishment of guarantees known as performance bonds. These are usually issued by one of the party's "friendly" banks, which must also have an acceptable rating. The bank syndicate is then confident of being indemnified if any of the project's sponsors become insolvent. This is also a good way for the arranging banks to limit their liability, by only accepting projects with top ranking partners as sponsors.

Counterpart risk cover instruments also include credit derivatives that are beginning to appear in the project financing market. For the moment, however, they are still handicapped by a certain lack of liquidity and a small choice of available counterparts.

As far as the other financial counterparts of the project are concerned (banks, insurers, and specialist financial institutions), the use of credit risk cover products is still not common today. In fact, project financing set-ups remain a reserve of a small number of players of international stature who usually have an excellent rating.

9.5. Financial Engineering and Political Risk Management

Political risk is an expression that covers all risks resulting from unfavorable and unilateral decisions taken by the public authorities of the host country of the project, whether they are the state, local authorities, or port authorities. Financial engineering of political risk management consists of setting up adequate insurance products to mitigate any financial consequences that may result from a public decision that is detrimental to the viability of the project.

The separate presentation of political risk and market risk (the exogenous financial risks presented in the previous sections) within the framework of this module needs to be distinguished. The risks of nontransferability and nonconvertibility of the local currency, which are components of foreign exchange risk, can be used as an example. While it is clear that fluctuations in foreign exchange rates are partly due to market dealings, the fact remains that they are also dependent on the monetary policy either set by the national central bank or the government. It is impossible to determine with precision the exact split between these two classes of risk and, hence, to design the optimal cover arrangement. This example illustrates a “grey” area that makes the financial analyst’s challenge a little more complex.

The financial treatment of political risk management harks back to the notion of investment guarantee, which poses the difficult question of knowing under which balance sheet headings to place this cover. While the answer may seem obvious with regard to the guarantees offered by secured loans (which were dealt with in the section covering the financial structuring of the project), existing insurance products relating to investment guarantees can, depending on the type of policy, relate either to a guarantee of equity invested by the sponsors or a guarantee relating to all the project’s assets. This distinction, which is fundamental in terms of its potential consequences, is difficult to grasp in practice.

The calling in of these guarantees and indemnity procedures provided by insurance policies in the event of default is not without problems. Without going into detail, it should be mentioned that the notions of “events of default” and “subordination of rights” between an investment guarantee and a secured loan in practice prove to be particularly complex and difficult to manage for all private partners.

9.5.1. Guarantees Offered by Multilateral Agencies

The best known of the multilateral agencies offering investment guarantees is the

Multilateral Investment Guarantee Agency or MIGA; its goal is to “encourage investments for productive purposes between member countries of the World Bank Group.” In this sense, it is in a position to guarantee the SPC’s investments against losses that may result from noncommercial risks, including:

- The risk of nontransferability as a result of restrictions imposed by the host government.
- The risk of loss as a result of legislative or administrative measures or omissions of the host government that effectively deprive the foreign investor of ownership rights or the ability to exercise investment control.
- The risk of breach of contract by the host government in relation to the investor.
- The risk of armed conflict and civil disturbance.

Since 1994, the World Bank (Bank or IBRD) has promoted the use of political risk mitigation guarantees to address the growing demand from sponsors and commercial lenders contemplating financial investment in the infrastructure sectors of developing countries. The Bank’s objective in mainstreaming guarantees is to mobilize private capital for such projects on a “lender of last resort” basis while minimizing the host government’s requisite indemnity to the Bank as a condition of providing the guarantee.

Bank guarantees are provided to private lenders for infrastructure financing where the demand for debt funding is large, political and sovereign risks are significant, and long-term financing critical to a project’s viability.

The Bank offers commercial lenders a variety of guarantee products: partial risk, partial credit, enclave and policy-based guarantees in IBRD countries, and partial risk guarantees in IDA-only countries. Broadly speaking, all guarantees provide coverage against debt service default arising from sovereign risk events. Each guarantee is tailored to match the specific need of an individual transaction.

IBRD guarantees are offered for projects in IBRD-eligible countries, with the exception of certain foreign exchange earning projects in IDA-only countries. IBRD guarantees can be both partial risk and partial credit in nature. Bank guarantees are generally available for projects in any eligible country, irrespective of whether the project is in the private or public sector. The Bank may, however, at times limit the availability of guarantees in certain countries, for example in countries undergoing debt restructuring.

IBRD partial risk guarantees ensure payment in the case of debt service default resulting from the nonperformance of contractual obligations undertaken by the government or their agencies in private sector projects. Sovereign contractual obligations vary depending on project, sector, and circumstances. The obligations typically include:

- Maintaining an agreed regulatory framework, including tariff formulas.
- Delivering inputs, such as fuel to a private power company.
- Paying for outputs, such as power or water purchased by a government utility.
- Compensating for project delays caused by political actions or events.

Partial risk guarantees may also cover transfer risks that may be caused by constraints in the availability of foreign exchange, procedural delays, and adverse changes in exchange control laws and regulations.

Partial risk guarantees are used in IDA member countries in sectors undergoing significant reforms. IDA guarantees are offered on a pilot basis to private lenders against country risks that are beyond the control of investors and where official agencies and private markets currently offer insufficient insurance coverage. IDA guarantees are available selectively, where an IBRD enclave guarantee is not available. IDA guarantees can cover up to 100 percent of principal and interest of a private debt trench for

defaults arising from specified sovereign risks, including government breach of contract, foreign currency convertibility, expropriation, and political violence.

Partial credit guarantees cover all events of non-payment for a designated portion of the financing. While these guarantees historically have been used to encourage extension of maturity by covering the later years of the financing, the Bank recently structured a partial credit guarantee to cover a single coupon interest payment on a rolling basis throughout the life of the facility, plus the final principal repayment.

Enclave guarantees are highly selective partial credit guarantees structured for export-oriented foreign exchange-generating commercial projects operating in IDA-only countries. Enclave guarantees may cover direct sovereign risks such as expropriation, change in law, war, and civil strife, but may not cover third-party obligations (such as those of an output purchaser or input supplier), nor will it guarantee transfer risk. In all cases, the scope of risk coverage under the guarantee would be the minimum required to mobilize financing for a given project.

Bank guarantees facilitate the mitigation of risks that lenders cannot assume, catalyze new sources of finance, reduce borrowing costs, and extend maturity beyond what can be achieved without the bank guarantee. They also provide more flexibility in structuring project financing. Clearly, within the World Bank Group, IFC, and MIGA are the preferred sources of support to the private sector. As such, sponsors and financiers should consult with IFC and MIGA concerning their potential interest in financing or covering the project. IFC supports private sector projects through equity and debt financing, the syndicated B-loan program, security placement, and underwriting and advisory services. MIGA provides political risk insurance primarily for equity investments, but it can also cover debt financing as long as it is also covering equity finance for the same project. These agencies cannot accept host government guarantees.

9.5.2. Guarantees Offered by Export Credit Agencies

Export credit agencies also issue guarantee policies covering investment operations abroad. These instruments usually provide a guarantee for the SPC against the political risks of an attack on shareholders' rights and nonpayment and nontransfer of the payment, or nontransfer of the investment or of the indemnity provided in the concession contract, in the event of nationalization.

The guarantee package (with a cover ratio in the region of 90–95 percent) relates not only to the initial investment, but also to the self-financing produced by the project, that is, the profits to be reinvested and the profits to be repatriated. Generally, there is a ceiling on the basis of cover relating to the self-financing produced by the project: in the case of COFACE in France, the cumulative limits are respectively 100 percent (with respect to profits to be reinvested) and 25 percent (with respect to profits to be repatriated) of the initial investment.

Finally, it should be noted that securing such a guarantee is conditional on the existence of a bilateral investment agreement between the country of the export credit agency and the host country of the project.

9.6. The Use of Private Insurers for Covering Political Risks

Private insurers sometimes offer viable alternatives to public insurers for covering political risks. The cost of this insurance may be quite high, but it is sometimes the only alternative for making financing of projects in difficult countries possible.

A private insurer covers the banks against the occurrence of a political risk causing the loan to default. Private insurers are sensitive to the monitoring procedures that the banks put in place to assess the political risk and its development. The banks must therefore provide evidence of their ability to assess and avoid political risks during the project set-up stage; this is a condition of underwriting the policies.

10. FINANCIAL MODELING OF THE PROJECT

10.1. Construction of the Economic Model

Constructing the economic model of a port project consists of identifying, from the SPC's point of view, all of the forecasted cash flows to be generated by the investment. They fall into three main categories: capital expenditure, operating revenue and expenses, and tax-related matters.

10.1.1. Capital Expenditure Types

Investment breakdown. The production of a capital expenditure (Capex) statement requires the gathering of data that are usually fixed and set out in the various contracts defining the project: the concession contract, construction contract, equipment supply contract, and so forth. The investment breakdown must be sufficiently detailed. The total amount of the investment should be broken down by type of homogenous assets; that is, assets that have similar working lives and methods of depreciation. Capex categories relevant to port projects might include buildings, open areas, port equipment, infrastructure, superstructures, and dredging work. The categorization of Capex must also take account of the type of work envisaged; for example, refurbishment of existing structures and/or new works.

Investment phasing. Traditionally, determining the investment phasing at the set-up stage satisfies two requirements: it records the Capex flows required by the project in the economic model and it fixes the value of the basis of the instruments providing cover against exogenous financial risks (rates and foreign exchange). Also, investment phasing enables the financial analyst to structure the project as accurately as possible according to its ability to support its method of financing. Investment phasing also allows the analyst to reassess the appropriateness of the investment decision by testing real options, for example, to defer the execution of the project, to defer progress of the works, to

abandon the project, to reduce activity, or to make the project more flexible.

Investment currencies. The amount and the required currency of payment by the SPC must correspond to each item on the investment statement. The equivalent of this amount in the model's reference currency can be found by calculating the exchange rate initially set in the macroeconomic hypotheses. The foreign currency breakdown of the Capex thus enables the SPC to ascertain its exposure to exchange risks throughout the life of the concession contract, that is, allowing its net exchange position to be calculated.

Economic depreciation and tax allowances statements. A depreciation statement must accompany the Capex statement for each of the identified headings. It is based on knowledge of the period of depreciation of each asset and the method of depreciation authorized by the tax legislation of the host country of the project, for example, straight-line or double-declining balance.

Confusion often arises between the notions of amortization, depreciation, and tax allowances. This confusion usually stems from the improper use of the same expression to express three different financial concepts. Amortization refers to the capital repayments of financial loans. Depreciation is designed to adjust the economic value of an asset according to the loss of economic value it undergoes with time.

Appropriations to depreciation appear in the profit and loss account, while accrued depreciation appears on the balance sheet, which gives as true as possible an account of the assets of the company. Tax allowances represent the deductions that the tax authorities allow on the investments the SPC makes. While they are, generally speaking, based on the depreciation of the asset, considerations of economic policy also enter into the equation for tax allowances. This is to encourage investors by allowing them to write off their assets over periods shorter than the economic life of the asset. In terms of financial analysis, this overdepreciation leads to an underevaluation of the entity's financial

results at the beginning of the investment cycle and an overevaluation at the end of the cycle.

In the case of port projects, understanding the notion of depreciation is complicated by the nature of the assets entered on the SPC's balance sheet. If the depreciation methods seem easy as far as port equipment or new infrastructure works are concerned, the fact remains that the question of the length of ownership or of the potential life of the refurbished assets is far from obvious. For example, what is the residual working life today of a fully refurbished 30-year-old concrete quay?

Similarly, the distinction that must be made between appropriations to depreciation, which by their nature are not cash flows (referred to as calculated charges), and maintenance charges, which are cash flows, is not always easy. For example, should one depreciate dredging works, and if so by what method, when the maintenance charges relating to maintaining depths close to the quay or in the access channel are already included in the charges account of the profit and loss account? Prevailing practice, in fact, is not to depreciate dredging works and access channels.

Residual value of the investment at the end of the concession. There is always an "exit" for any investment, whether it is liquidated, ceded to the concessioning authority, or sold. Thus, inevitably there is a need to assess the residual value of the investment. There are several methods based on the notion of value in use or replacement value. In the port sector it is very difficult to assess the residual value of infrastructures that do not have a true market value at the end of the concession. Therefore, when a residual value methodology is not defined by the project (for example in the concession agreement) Use of the book value of the assets at the end of the term or project horizon is recommended.

10.1.2. Operating Revenues and Expenses

It should be noted that the word "operating" is used here as opposed to the word "construction." This distinction enables one to identify all the

revenues contributing to the formation of the gross operating surplus, the true balance of the operating account. The summary statement of operating revenues and expenses includes:

- An item-by-item breakdown of operating revenue and expenses. The same project may produce very different types of income. It is therefore important to know the various revenue headings according to the type of creditors and any interdependence between them.
- A fixed (annual percentage that does not depend on the level of production) and proportional (amount per production unit) breakdown for each of the various headings. This exercise, which is difficult to perform in practice, is fundamental in terms of financial analysis for determining the company's economic break-even point and for assessing the level of risk attached to the formation of the gross operating surplus.
- The foreign currency or currencies for each of the revenue and expense headings.

10.1.2.1. Operating Revenue and Charges in Terminal Management Operations. The various sources of revenue produced by the operation of a port project stem directly from the contents of the concession granted by the port authority. The revenues break down into categories within the framework of a port project:

- Port dues, which are distributed between dues on ships and dues on cargoes and typically cover the use of the port's basic infrastructure.
- Services to ships, for example, piloting, towing, stores, bunkering.
- Estate revenues, which constitute a significant source of revenue for port authorities and an operating charge for terminal operators.
- On-board and on-land services to cargoes: for example, cargo handling, storage, and packaging.

- Revenue from administrative operations.
- Miscellaneous, for example, equipment rentals.

The main items making up operating charges include maintenance charges, personnel charges, and the operating royalty due under the concession contract.

10.1.2.2. Operating Finance Requirement.

Traditionally, a company's operating finance requirement is determined from an analysis of the company's operating cycle: production, storage, and marketing. In the case of a terminal operator, the operating cycle is simply the delivery of the service rendered to its customers. It corresponds to the cash advance or working capital that the company must have at its disposal between the time it begins operating and the time it begins receiving payment for its services. There are four factors that determine a company's need for working capital:

1. Volume of business (the more turnover increases, the higher the need).
2. Length of operating cycle (the longer the cycle, the higher the need).
3. Customer or supplier credit policy (the longer the customer payment time, the higher the need; the reverse is true with regard to supplier credit policy).
4. Operating cost structure (the more operating costs increase, the higher the need).

10.1.2.3. Operating Account Balance. The gross operating surplus (GOS) is the first indicator of revenue produced by the operation of the SPC. It is measured by subtracting operating charges from operating revenue. In practice, it forms the balance of the operating account. In jargon, the SPC is said to achieve basic equilibrium if its GOS is positive. Changes in the operating finance requirement should be deducted from the calculated GOS. One then gets the operating cash surplus (OCS), which is a cash flow, unlike the GOS, which is an accounting aggregate. The OCS will subsequently be included in the cash flow statements.

10.1.3. Tax Flows

Tax flows are all the cash flows resulting from the impact of the tax system on the project. In addition to the deductibility of financial charges, which will later need to be built into the financial model (cash flow statements), the tax flows relate to taxes on company profits and the (total or partial) carrying over of tax losses from previous years.

Traditionally, corporation tax is calculated by multiplying a rate, which can vary from country to country, by a basis of taxation, which is determined according to the type of investment made. While it is easy to obtain the rate of corporation tax, calculating the basis of taxation is difficult as it requires principles of accounting established by the tax legislation of the host country.

Tax losses from previous years can be carried forward over a number of years depending on national legislation. Losses carried over in this way can then be considered as a tax credit granted to the SPC. In the financial model, this calculation is important to include to avoid overestimating the impact of corporation tax on the net profitability of the investment.

10.2. Construction of the Financial Model

A financial model of the project traditionally involves the production of three financial statements: the cash flow statement, the income statement, and the balance sheet.

10.2.1. Cash Flow Statement

Cash flow statements show all the company's incoming and outgoing cash flows. They therefore include all the cash flows involved in the establishment of the operating cash surplus and all Capex.

Capex stems directly from the choice of the financial resources needed to accumulate financial capital. It refers to equity and debt invested in the company by capital providers (shareholders and lenders).

Equity-related capital expenditure refers to increases in capital granted to the project by shareholders on the one hand and a return paid on the invested capital on the other. With regard to the latter, this is directly related to the dividend payment policy decided upon by the shareholders and accepted by the lenders.

The most commonly used method for modeling dividends consists of distributing the maximum profit (after tax and any reserve obligations) up to the value of the available cash. Models usually provide what are called reserve accounts, the purpose of which is to freeze any cash flow surplus from the project until the total value of these accounts reaches a certain minimum level (usually set by the banks). This minimum level is usually set at six months of debt service.

Capex related to financial debts and quasi-equity is entered in a flow statement called a debt service account. Traditionally, there are five headings in this account, which are:

- Balance at beginning of period.
- Drawings on the credit.
- Financial costs (including interest on capital paid during the construction period).
- Repayment of loan principal.
- Balance at end of period.

The order of subordination of the loans must be clearly shown in the model.

In virtually all tax systems it is common to allow the deduction from income of the financial charges of the SPC. These financial charges represent the interest paid by the company on the loans it takes out. However, repayment of the loan principal, which relates to the project's assets, has already been depreciated in the operating profit/loss and is not a deductible expense.

10.2.2. Profit and Loss Account (income statement)

The purpose of the profit and loss account is to determine the amount of corporation tax, the net profit/loss, and to model dividend payments

to shareholders. The main stages of the calculation enable the principal interim financial balances to be determined:

- Gross operating surplus.
- Operating profit/loss.
- Financial profit/loss.
- Current pretax profit/loss.
- Corporation tax.
- Net profit/loss.

It should be stressed that an extraordinary profit/loss forecast is fairly exceptional in this type of operation.

10.2.3. Balance Sheet

The SPC's balance sheets enable the company, investors, and others to monitor the changes in the financial structure of the company throughout the life of the project. It should be remembered that, unlike an accounting balance sheet, the items on the asset side of a financial balance sheet are shown at their gross value. The deduction of the accrued depreciation of these gross values appears under the liabilities of the SPC.

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APPENDIX: RISK CHECKLIST— PRINCIPAL RISKS IN A PORT PROJECT

I. Country Risk

A. Government/Administration

- Stability
- Reputation (negotiations, administrative inefficiency)
- Links established
- Concessioning authority
- Political risk: low, medium, high

B. Currency

- Revenue in foreign currency?
- Revenue in local currency?
- Stability of local currency over last few years
- Convertibility of local currency
- => Exchange risk: low, medium, high

C. Social

- Does the operation induce a major reduction in personnel?
- If so, is a redundancy scheme planned?
- Funded? By whom?
- Must a proportion of local personnel be taken on?
- Qualification of local labor?
- => Social risk: low, medium, high

D. Taxation

- Level of knowledge
- Profits tax?
- Sales tax?
- Withholding on dividends or intragroup transactions?
- Stability of fiscal system
- => Tax risk: low, medium, high

II. Traffic Risk

A. Market

- Activity
- Traffic established? (stable, sharp fluctuations, or steady growth)
- New traffic
- Growth factor
- General economic activity
- Sector/domain activity
- Acquisition of market share
- Previous quality of service
- Nonexistent

Poor/fair/good

=> Prediction reliability: poor/fair/good

Customers

Identified major customers

“Atomized” market

Competition/captive traffic

Present situation

Competitor terminal in port?

Competitor terminal in country?

Competitor corridors?

Traffic volatile or stable?

Future situation

Contractual guarantee of exclusivity?

Entry barriers?

Risk of changes: low, medium, high

Risk of competition: low, medium, high

B. Obligations

Public service obligations

Technical

Minimum capacity

Performance standards

Tariffs

Free rates

Price cap

Escalation formulas

Exemptions?

Fee payable to concessioning authority

Up-front fee?

Fixed annual part: fixed amount, judgment criterion?

Variable annual part: fixed amount, judgment criterion?

Concessioning authority subsidy

Investment

Fixed annual part: fixed amount, judgment criterion?

Variable annual part?

Guaranteed traffic? Cost + fee?

C. Guarantees

Extra franchise port services

What port services do my customers require?

Who is in charge? (me, public or private port authority, potential problem)

Level of service guaranteed?

Level of service satisfactory?

Price levels satisfactory?

Pilot service

<ul style="list-style-type: none"> Berthing services Haulage Buoying Maintenance of access Maintenance of basins Maintenance of protection structures Other Operating hours for these services 	<ul style="list-style-type: none"> Work and supply contracts Concessionaire-employer Approval of concessioning authority required? Call for tenders obligatory? Thresholds? Maintenance standards imposed? Construction period/commissioning date <ul style="list-style-type: none"> Underestimated Reasonable Comfortable Penalty level Operation Public suppliers (water, electricity, and so forth) Safety rules Subcontracting authorized/approval
<ul style="list-style-type: none"> Degree of sensitivity to inspection <ul style="list-style-type: none"> Customs Veterinary and phytosanitary Other Vessel waiting time Priorities granted Land transport What modes of transport are used for my traffic? <ul style="list-style-type: none"> For each mode: <ul style="list-style-type: none"> Capacity of operators Quality of service of operator(s) (time taken, security, and so forth) Obstacles to the work of these operators (regulatory, political, and so forth) 	
III. Project Risks <ul style="list-style-type: none"> Investment amount Dredging Infrastructures Buildings Facilities Missions Design Construction/installation Rehabilitation/repair Maintenance (infrastructure, superstructure, and dredging) Operation Security Obligations relating to investments Functional specifications Technical specifications Functional specifications related to a threshold (future subject) Information supplied and technical specifications imposed Investigation campaigns Contractual information? Preliminary design Detailed design 	IV. Contractual Risks <ul style="list-style-type: none"> Status of project company State or concessioning authority has blocking minority interest? Proportion of capital reserved for local investors? Contracts with third parties <ul style="list-style-type: none"> What contracts taken over by concessionaire? Concessioning authority's approval required for signature of new contracts? Bonds <ul style="list-style-type: none"> Nature of bonds Amount Call conditions Consequences of legislative regulatory changes <ul style="list-style-type: none"> Borne by concessioning authority Borne by concessionaire or not specified Possibilities for recourse Contract revision <ul style="list-style-type: none"> Instigation of concessioning authority Instigation of concessionaire No provision Force majeure <ul style="list-style-type: none"> Causes Procedures Early termination <ul style="list-style-type: none"> Concessioning authority's request: causes, procedures

Concessionaire's request: causes,
procedures

Disputes

Possibilities for claim

Contract law

Arbitration clause

V. Financial Aspects

Franchise period

Project IRR over this period

Payback period

VI. Tender Assessment Criteria

Preselection

Technical assessment

Financial assessment

