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Project Finance and Concession Pricing Models: An Application to Brazilian Ports

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ABSTRACT. *Since the Lei dos Portos (''Ports Law'') of 1993, Brazilian ports have operated under the landlord regime, which places the management of ports in the hands of a national authority and provides for the rendering of private services inside the facilities. The model has enabled increases in capacity as well as gains in efficiency, both of which are currently limited due to infrastructure constraints. Expanding infrastructure by building additional ports was an option for the sector to meet the needs of a growing economy. In this context, this article discusses the adoption of public–private partnerships and project finance structure to propose a formula to compute the value of a new port.*

RESUMEN. *Desde la promulgación de la Ley Brasileña de Puertos de 1993, los puertos brasileños operan bajo el régimen de arriendo, que mantiene la administración del puerto en las manos de una autoridad nacional y permite la provisión de servicios privados en el puerto. Este modelo permite aumentar tanto los beneficios relativos a la capacidad como a su eficiencia. En la actualidad, las restricciones infraestructurales limitan el aumento en eficiencia y capacidad. La expansión de la infraestructura a través de nuevos puertos se ha convertido en una opción para que el sector pueda cumplir las necesidades de una economía en crecimiento. Dentro de este ámbito, este artículo discute la adopción de una*

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sociedad público privada, y la estructuración de financiamiento para proyectos que propongan una fórmula para calcular el valor de un nuevo puerto.

RESUMO. *Desde 1993 a Legislação Portuária Brasileira opera sob o regime de locação, o que mantém a gestão dos portos nas mãos da autoridade nacional, mas permite o fornecimento de serviços privados nos portos. Tal modelo permitiu aumento da capacidade bem como ganho de eficiência. Atualmente, o ganho de eficiência e o aumento da capacidade são limitados por restrições infraestruturais. A expansão da infraestrutura com portos novos tornou-se uma opção ão para que o setor atenda as necessidades de uma economia crescente. Neste contexto, o presente artigo discute a adoção de parcerias público-privadas e a estrutura de financiamento de projetos para propor uma fórmula capaz de calcular o valor de um porto novo.*

KEYWORDS. *landlord ports, public-private partnerships, value of a port, value of real estate*

INTRODUCTION

Until 1993, and except for a handful of private terminals that handled their own bulk cargo, all Brazilian seaports were state-owned enterprises. As one might expect, Brazilian ports were stymied by bureaucracy, labor unions, and political interference. At the same time, Brazilian federal government financial constraints had restricted new investment, thus rendering the sector very inefficient.

After the so-called Ports Law was introduced in 1993, the Brazilian port sector experienced major changes in terms of promoting private participation, later confirmed by the *Nova Lei dos Portos* (New Port Law) 12.815/2013. As such, Port areas and terminals were leased to the private sector, which assumed investments and cargo operation under specific concession contracts with the government in an arrangement known as "Landlord Port," as defined by the World Bank (2003). A new regulatory agency, the National Waterway Transportation Agency (ANTAQ), was created, tasked with regulating, supervising, and enforcing ports and waterways contracts. A new category of private ports was created to be run at the operator's risk, under authorization from ANTAQ.

Under this new regime, the Brazilian port sector boomed. From 1999 to 2010, the total cargoes moved through Brazilian ports grew by 190%, and in containers alone, volume grew 570% in the same period. In terms of efficiency, there were notable gains in terms of operational efficiency and lower cargo handling costs.

However, bringing the ports up to date technologically has lost momentum, and currently the model is not sufficient, on its own, to address the growing demand the sector is facing. As such, the Brazilian port model fails to provide capacity increases in pace with the growth in demand. At this point, one obvious way to increase capacity is to select new areas where new ports must be built by means of greenfield projects (Lacerda, 2005; Marchetti & Pastoria, 2006).

In recent years, Brazilian public authorities have identified areas for new ports and port terminals (ANTAQ, 2009). Among other aspects, the ANTAQ study took into account (a) environmental legislation and (b) the design features of current and future vessels destined for long-haul cargo transportation. ANTAQ hopes that the construction of new deep-water, technologically modern ports and port terminals will improve the competitiveness of Brazilian exports and, therefore, result in positive impacts on the national economy.

Some authors have reported that the Brazilian government does not have enough available financial resources even for updating the technology of existing ports (Goularti Filho, 2007; Lacerda, 2005; Rocha & Britto, 2010), much less for the construction of new ones. Thus, collaboration among private enterprises and the public sector has become a necessary condition for development.

However, it must be noted that the government has, as yet, established neither the form of such public–private partnerships (PPP) nor the pricing model to be adopted—this despite the existence of academic works that recommend this type of arrangement in the port sector, for example, the World Bank's well-known 2003 Port Reform Toolkit. This article aims to contribute to the discussion of these two important matters.

To begin, the article advances the model for public–private collaboration for new ports and port terminals. The suggested collaboration model is consistent with project finance theory and diverges from the current Brazilian landlord port model. The article goes on to propose a pricing model for new port areas and to stipulate that the revenues derived from such new ports shall be captured to form a permanent fund dedicated to financing the key tasks of a port authority, such as conceiving and implementing port policies and development strategies; providing and maintaining channels and breakwaters; providing and maintaining piers, berths, locks, and turning basins; and providing or arranging road and railroad access to ports (DeMonie, 1994).

Although this article concerns the application of public–private collaborations in the case of new ports and port terminals through project finance, the same approach could be applied to any sector of the economy where opportunities for investments through PPP exist, especially regarding infrastructure.

The article is organized as follows: Section 2 presents a brief on project finance theory and the forms of public–private collaboration on infrastructure investment. Section 3 discusses the application of a public–private partnership to new Brazilian ports. Section 4 proposes a concession pricing model. Section 5 concludes the article.

CONCEPTUAL AND LITERATURE REVIEW

A Brief on Project Finance Theory

First it is worthwhile pointing out that the use of project finance for the provision public services along with infrastructure in the areas of electricity, water supply, transport, gas and oil, and others has been the object of extensive academic discussion (Alonso-Conde, Brown, & Rojo-Suarez, 2007; Cheah & Liu, 2006; Gatti, 2008; Grimsey & Lewis, 2004; Nevitt & Fabozzi, 2006).

Authors define project finance as a way of financing an investment project that is economically sustainable, in other words, capable of providing the return on invested capital demanded by the sponsors through the cash flows generated solely by the project (Finnerty, 2007; Nevitt & Fabozzi, 2006).

A project-finance venture usually unfolds in two stages: construction and commercial operation. If the sponsors assume full financial liability for the venture up to the moment it becomes operational, it is classified as a "limited recourse" project. If the sponsors offer no guarantees at any stage, the venture is considered a "nonrecourse" project. In the case where the sponsors guarantee both construction and operation, the project is called "full recourse."

Another typical characteristic of a project-finance venture is its implementation for self-contained projects through a special purpose entity—usually a company whose sole business is the project itself (Yescombe, 2002). Unlike other traditional ventures, a special purpose entity has a limited lifespan that expires when the project terminates, which, in the case of public service concessions, coincides with the end of the concession period.

Project finance is suitable for large-scale investments, such as highways, hydroelectric plants, and ports and port terminals; the approach entails complex legal and financial engineering exercises involving sophisticated allocations of risks and returns. The main risks are economic (demand, exchange rates, interest rates, etc.), technical, environmental, or regulatory in nature. In a project finance venture, there may be several different capital suppliers, each with their own particular requirements in terms of returns on capital. It is easy to imagine how complex project finance contractual relationships can be and, accordingly, the actual transaction costs are relatively high.

The special purpose entity is responsible for the distribution of all cash flows from the venture among the investors and creditors. It should be noted that in a true project finance regime the investors receive their returns in cash and are free to decide whether to reinvest it in the project (Finnerty, 2007; Gatti, 2008; Nevitt & Fabozzi, 2006), thereby mitigating the so-called agency problem (Jensen & Meckling, 1976).

Case studies on project finance underscore the way by which investors unite to sponsor projects of common interest (Brealey, Cooper, & Habib, 1996). In short, project finance passes through similar stages to those of traditional forms of investment, such as:

1. Economic stage: A market analysis is conducted.
2. Technical stage: This involves considerations regarding the choices of production processes, project engineering, the physical layout of equipment, and scale.
3. Financial stage: Decisions are made regarding the composition of the project's financial capital and the cost of financing, including the analysis of economic viability.
4. Administrative stage: The project's organizational structure is laid out with particular attention to all aspects of the special purpose entity.
5. Environmental stage: The project's positive and negative external impacts are analyzed and valued.
6. Accounting stage: The accounting structure is defined, including accounts plan, various accounting balance sheets and displays, and accounting records.
7. Legal stage: This involves two main aspects: the contractual relations among the partners and the legal requirements of federal, state, or municipal governments.

The economic and financial evaluation of a project finance analysis is based on the indicators identified in the traditional investment analysis literature (Damodaran, 2006), namely: net present value, internal rate of return, discounted payback, cost–benefit ratio, return on added investment, and so on. The fundamental difference between a traditional project and a project–finance project is that in the latter each category of sponsor has different preferences regarding the project's financial indicators, especially the costs of capital. The determining factor of each sponsor relates to the perception of the risks involved. In theory, the greater the risk, the higher the returns demanded. Usually, the rate of return to be discounted from eventual cash-flows streams from an investment projects, including project finance, is determined using the well-known Weighted Average Cost of Capital (WACC) model alongside the Capital Asset Pricing model.

The WACC model uses the weighted average of returns (after taxes) that both equity investors and third-party financiers expect on their invested capital. The Capital Asset Pricing model is used to estimate the equity owners' cost of the capital. An alternative model for the same purpose is the well-known Gordon's Valuation model (Titman & Martin, 2010). The weighting factors in the WACC model represent the fraction of each source of capital invested in the project–finance project. The cost of the debt is given by the average value of the inner return rates on the company's bonds and obligations, weighted by the length of time for them to mature. In the case

of a project–finance project, there is no past information to be used to estimate the cost of the debt; therefore, it is common practice to approximate this using the return of the best alternative, usually the inner return rates of bond portfolios with credit classifications and maturity periods similar to those constituting the debt to be assumed to finance the project. Sponsors also calculate the cost of their own capital invested in the project on the basis of similarity—using the historical returns paid out by other companies of a similar nature (Finnerty, 2007; Gatti, 2008).

As mentioned earlier, the sponsors lend financial resources for the venture especially in the construction stages, while the creditors normally make their loans during the commercial operation stage. This means that there may be a WACC rate calculated for the construction phase and another for the operational phase.

In practice, the project finance cash-flows are often subject to sensitivity analysis, such as the Monte Carlo simulation (Alonso-Conde et al., 2007; Cheah & Liu, 2006). Other authors suggested the use of real options theory to assess the economic–financial viability of project finance (Alonso-Conde et al., 2007). In this case, if the option taken is to invest in the project through funding, the investment is said to create proprietary rights over the subjacent asset, that is, project cash flows. Even if the option taken is to postpone, or to abandon, or to convert, it must be analyzed in the light of real options theory, according to Copeland and Antikarov (2001), Dixit and Pindyck (1994), and Trigeorgis and Mason (1987). Those authors stressed that a real options analysis endows any project assessment with greater flexibility and robustness.

Taking real options into account, the net present value (*NPV*) of a project becomes:

$$NPV = NPV_T + ROV, \tag{1}$$

where NPV_T is the traditional net present value and *ROV* is the value of the real options.

It is readily apparent that the real options alter the traditional net present value, which represents investing now or never, and they may even go so far as to make a project, otherwise considered unviable, viable for a *ROV* sufficiently high.

Equation (2) represents the present value (*PV*) of the cash flow in the operational phase of a project finance venture (discrete time):

$$PV = \sum_{t=K+1}^{T} \frac{CF_t}{(1 + r^O_{WACC})^t} = \sum_{t=K+1}^{T} \frac{(R_t - C_t)_t}{(1 + r^O_{WACC})^t}, \tag{2}$$

where CF_t is the project cash flow in year *t*, R_t is the total project receipts in year *t*, C_t is the total costs in year *t*, including interest and debt amortization,

r^{O}_{WACC} is the weighted average cost of capital in the operational period, K is the final year of the venture's construction phase, and T is the final year of the entire project.

In turn, the *NPV* of the cash flow in the construction and operational phases of a project finance venture can be expressed as follows:

$$NPV = -\sum_{m=-k}^{K=0} I_m(1 + r^{C}_{WACC})^{|m|} + \sum_{t=K+1}^{T} \frac{CF_t}{(1 + r^{O}_{WACC})^{t}}, \quad (3)$$

where I_m denotes the investment made in time m and r^{C}_{WACC} is the weighted average cost of capital in the construction period. The first term on the right hand side of Equation (3) represents the time-adjusted value of the investments made during the construction phase as assessed in the final year of the construction phase (K). The *NPV* is referred to $t = K$.

Because the concession periods are usually long, Equation (3) can be modified to incorporate an explicit period of cash-flow estimates and another perpetual period so that we obtain (Copeland, Koller, & Murrin, 2000; Damodaran, 2006; Titman & Martin, 2010):

$$NPV = -\sum_{m=-k}^{K=0} I_m(1 + r^{C}_{WACC})^{|m|} + \sum_{t=K+1}^{T'} \frac{CF_t}{(1 + r^{O}_{WACC})^{t}} + \frac{\overline{CF}}{(1 + r^{O}_{WACC})^{T'}}, \quad (3a)$$

where $\overline{FC}$ is the perpetual cash flow, equal to $\frac{CF_{T'+1}}{r^{O}_{WACC}}$, corresponding to the time period from T' to T.

In this case, it should be noted that not all of the details of a project finance venture have been analyzed here. Legal aspects, such as the instruments for mediation, mitigation, and accommodation of risks, have not been addressed. Creditors are highly cautious in relation to offering nonrecourse financing for a project for two main reasons: first, the creditors want to be sure that the sponsors have no proprietary rights over the project's assets; second, the creditors are well-aware that nonrecourse debts admits the existence of a default option for the sponsors (Titman & Martin, 2010).

Public–Private Models and the Project Finance Regime

The literature on project finance describes various arrangements of public–private collaboration (Finnerty, 2007; Gatti, 2008; Nevitt & Fabozzi, 2006). One of those arrangements is the perpetual partnership, which entails private initiative not only financing a public venture but also operating it for an unlimited period, while retaining the propriety rights over all assets. This model had been widely used around the world in both developed and developing countries (Gatti, 2008).

In a second arrangement known as lease-develop-operate-transfer, a private company leases government areas and facilities, carries out the necessary improvements, and expands and operates the venture under a contractual arrangement whereby the results are shared with the government for a specified period of time. This the most common arrangement in present-day Brazilian ports (Rocha, Gartner, & Cavalcante, 2011).

A third type of agreement is called build-operate-transfer (BOT), under which a private enterprise receives a given venture from the government, by tender or some other mechanism, in order to finance, construct, and operate it for a specified period. The venture returns to the government once the private enterprise has recovered its investments plus a suitable return. Usually the public authorities offer some kind of compensation for the return of the assets at the end of the concession period (Finnerty, 2007; Nevitt & FaboziI, 2006).

A slightly different model is the so-called build-transfer-operate (BTO), under which a private enterprise assumes entire responsibility for building the venture and, upon completion, all assets are transferred to the government, which, in turn, leases the rights to operate the enterprise to the very same company. The first lessee of the venture may or may not be compensated for the residual value of its investments on infrastructure and equipment (the discussion on residual, or scrap value is highly complex and will not be addressed in this article; further information on the issue can be found in Damodaran, 2006). Although similar to the BOT, the BTO introduces additional incentives since the builder agrees to pay a fixed lease from project revenues during the operational phase and, therefore, considers this when deciding the size and quality of the infrastructure and equipment.

The utilization reimbursement model is also worth mentioning. A private company builds, expands, and operates a public venture and the government is responsible for servicing the entire venture debt, being eventually reimbursed from revenues in excess of costs. The typical Brazilian model for public–private partnerships is very similar to this particular arrangement and is regulated by Brazilian Federal Law 11.079/2004. Its main characteristic is the government's commitment to ensure as fair return over the lifetime of the venture (Borges & Neves, 2005).

PUBLIC–PRIVATE PARTNERSHIP: THE CASE OF BRAZILIAN PORTS

Public–private partnership in the context of Brazilian ports assumes a BOT arrangement. The initial tendering process is organized for the construction and operation of a port, which is later transferred to government ownership without any repayment made to private enterprise. The analysis might be easily extended to consider a compensation payment to the private enterprise partner in proportion to the amount of the residual value.

The structure of the tendering process and concession contract maximizes revenue for the government in terms of all of the technical aspects established in advance, including terminal location and capacity. As such, the tendering process is one under which the winner is the highest bidder and, as Demsetz (1968) put it, since the concessionaire will hold a monopoly, the government will extract its expected surplus through the auction. A single company or a consortium can take part in the bidding process. In the case of a tender open to consortia, it must be the case that the number of companies competing for a venture is at least as high as the number of ventures. Such measures are designed to ensure competition in the auction as well as to enhance the venture's financial integrity and avoid excessive time spent by the government on project regulation.

In the case of stand-alone container terminals, the regulatory agency as well as the antitrust enforcement bodies must oversee any attempt to discriminate among cargo holders or any other anticompetitive unilateral conduct (Motta, 2004). This is of particular interest in cases where one of the members of the consortium also has its own cargo and might profit by imposing difficulties on its competitors in the product market. Macário (2010) noted that such dysfunctions tend to occur in public–private partnerships unless the government takes special care to avoid them. Another point of interest could be the possibility of vertical integration, as in the case where a shipping line is part of the consortium.

THE CONCESSION PRICING MODEL

Suppose that the government's effective participation in a given public–private BOT collaboration is represented by the lease of the area or real estate for which it expects to be remunerated.

Before developing the price model, recall that the government has the right to grant a license for a new port under a specific regulation. Accordingly, the government sets the lease price in order to obtain revenues in excess of the normal level of the monopoly created by the concession itself. Henceforth, instead of regulating the price by using, for instance, a rate-of-return regulation approach, the government sets the lease value at the highest level possible. By doing so, the lease value might be set at a level above the traditional opportunity cost given by the second best alternative normally captured by market prices. At the end of the lease, the economic value of the asset takes into account the government-decided lease amount.

To estimate the lease amount, we use a modified form of the total payout model with constant growth rate. Following Damodaran (2006) and Titman amd Martin (2010), we take the market value of the lease at the time of the tendering process (L_1) and, considering that the real estate accrues revenues equivalent to the lease revenues, we apply a constant rate of

income growth (α) to have a series of leases $\left\{L_1(1+\alpha)^{t-1}\right\}_{t=1}^{T-1}$ that we use to obtain the value of the real estate at a given future moment (T), thus:

$$V_1 = \sum_{t=1}^{T} \frac{L_1(1+\alpha)^{t-1}}{(1+\delta)^t}, \tag{5}$$

where V_1 is the present value of the real estate, L_1 is the market value of the lease at the time of the tendering process, T is the lifetime of the project or the period stipulated for the concession, δ is the discount rate or return required by the government, and α is the growth rate of the concession value.

The value of the real estate can be estimated by assessment using the comparable assets method, which uses information on market prices of comparable transactions (Titman & Martin, 2010). The proposed approach consists of four distinct steps. The first step is to identify comparable or similar properties and their market prices. The second step involves determining which aspect is to be used for evaluation purposes. In the case of real estate, the usual measurement is the average price per square meter of comparable use in the same micro region. The third step is to make a rough estimate of the value by multiplying the price per square meter by the total area of the real estate being evaluated. The fourth step consists of adjusting the rough estimate to take into account any peculiarities of the property being valued. Furthermore, it should be noted that the real estate value has a close correlation with its proposed use as well as with the existing conditions regarding land and sea access infrastructures, electricity grid, sewage installations, and so on.

Given that the life of real estate is infinite, Equation (5) can be rewritten for $T=\infty$:

$$V_1 = \sum_{t=1}^{\infty} \frac{L_1(1+\alpha)^{t-1}}{(1+\delta)^t}. \tag{6}$$

With some algebra the following result can be obtained, provided that δ is greater than α:

$$L_1 = V_1 \times (\delta - \alpha). \tag{7}$$

Equation (7) means that the value of the lease revenues in year one is equal to a fraction $(\delta - \alpha)$ of the value of the real estate V_1. By making $L_1 = (1+\alpha)L_0$ and rearranging the terms we obtain the well-known Gordon's model:

$$V_0 = \frac{(1+\alpha)L_0}{(\delta - \alpha)}, \tag{8}$$

where V_0 is the value of the concession in year zero, the year of the tender, that is, the value stipulated in the official call to tender documents. To effectively value the concession in year zero, an estimate must be made of the concession value growth rate α and of the social discount rate or return δ, demanded by the government, as well as the underlying value of the real estate itself (V_1).

This approach is somewhat closer to the Ricardian rent model. The Ricardian model suggests that housing prices consist of the sum of the agricultural rent forgone on the residential lot, the rental cost structure, and the cost of commuting, which results in lower prices for residential housing lots at city limits. As such, the most important factor to explain the increase in urban housing rent is the growth of a city's population, since such growth changes the cost of commuting in terms of time (DiPasquale & Wheaton, 1996). In the case of the area of a port, the land value is influenced not by the cost of commuting but by the expected demand for port services, which, as noted, is the focus of consideration because of the government's decision to grant authorization for a new port.

Where Does δ Come From?

The parameter δ measures the discount rate required by the government when financing public projects. The public finance literature usually suggests that a lower than private discount rate (e.g., a social discount rate) should be used for public cash flow. This social discount rate measures the rate at which a society would be willing to exchange present for future consumption (Zhuang, Liang, Lin, & DeGuzman, 2007). The motivation for this discount rate is that the decision to invest in a public project means that the resources devoted to the project in question will not be available for private counterparts. Hence, the standpoint of efficiency, projects should be undertaken only when their potential social benefit is larger than the loss resulting from the removal of resources from the private sector.

In the case under analysis, it is private investment that will be substituting public sector investment, and the resources eventually obtained by the government, as shown in Equation (7), would actually originate from private enterprise. Accordingly, it seems to be reasonable to make δ equal to the average cost of capital used by the private sector, which, in the case of the port sector in Brazil, might benefit from a subsidy offered by the government through the state-owned Brazilian development bank—Banco de Desenvolvimento Econômico e Social (BNDES). Therefore, in Brazil δ can be approximated by the difference between the market interest rate for capital investments and the TJLP rate (Long Run Interest Rate fixed by the Brazilian Monetary Council), which is the long-term interest rate used by BNDES for businesses loans.

In another situation, assuming that the terms of the contract allow the government to terminate the cooperation in case of default, receipts from

the concession would, in the final analysis, still be risk-free because it would always be possible to contract with a new partner. In that case, δ could be made equal to the average value of the internal return rates paid by long-term government bonds, weighted by the period of maturation of the bonds, bearing in mind that, in theory, returns paid on Treasury bonds are risk-free.

Where Does α Come From?

The proposed model assumes that the concession revenue will grow at a rate of α, so that its value at any given time t will be given by:

$$VO_t = VO_0(1 + \alpha)^t. \tag{9}$$

Corporate Finance manuals suggest that the rate α be equal to the sum of the profit retention rate multiplied by the return on retained profits (Brigham & Ehrhardt, 2008; Copeland et al., 2000). The profit retention rate is the ratio between retained profit and total profit, that is, the percentage of profits retained. The return on retained profit is considered to be similar to the return on liquid assets. By using the financial statements of existing national and foreign ports with similar characteristics to ports that are up for tender, it is possible to construct a probability distribution for the α rate using, for instance, a Monte Carlo approach.

Additional Remarks on the Concession Model

For a partnership between the government and a private enterprise to be entirely cast in the mold of a project-finance project, the government would have to join forces with a group of project sponsors in order for the government to become only one among several capital providers. It could be the case that the government provides the land necessary for the venture in exchange for a share of future profits. Such circumstances obviously require the government to be part of the special project entity; however, that is something that a project finance structure can easily handle.

It must also be pointed out that if the actual value of the concession is given by equation (8) then, among other items, the government will be obliged to publish the following information in the tendering process documents: the initial concession value (VO_0), the expected growth rate of the concession value (α), and the timeline of the venture (T). This information is crucial in that it enables bidders to construct their cash flow predictions and set their bids. The winner of the bidding process is the bidder who offers the highest amount for the concession.

Finally, if the partnership arrangement is of the full-recourse type, the most relevant variables for bidding purposes will be the value of the real estate and the social discount rate or return demanded by the government

(δ). Another point to note is that when a port area is being leased by tender it will have practically the same value for all the bidders, although they may vary in their estimate of its worth (Klemperer, 2004). Therefore, the winning bid is the one that has placed the highest value on the real estate, and the remuneration of the government will be given by the value created by the concession.

CONCLUSIONS

In 2009, the Brazilian government published a document identifying land for the installation of new ports and port terminals. Given that (a) the government does not have sufficient financial resources available to conduct such ventures on its own and (b) such projects are capable of functioning as independent profitable economic entities, this paper suggests the establishment of public-private partnership arrangements under the aegis of a project finance regime. As one of the sponsors of the new port, the government's stake in the project is the land, which is remunerated accordingly. A useful mechanism to set remuneration is developed in this paper.

The model assumes that the government grants the area of a new port and receives a revenue flow from leases. Considering the opportunity created by the government's decision as a regulator of creating a new port, the government should extract the above normal profits, leaving to the venture only a fair return. This is accomplished in two ways: tender of the lease itself and revenues derived from the lease of the area.

Regarding the value of the lease, the paper makes the point that the present value of the lease generated by the real estate in light of the future existence of the port is a good measure of the economic value of that asset. This is because the decision regarding a new port lies in government hands and because all stakeholders expect the port to continue to exist even after the end of the contract.

Finally, it is worth underscoring that the importance of this paper lies in its attempt to foster a discussion on the different concession models and models for pricing concession values for new ports and port terminals to be built.

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