

# Infrastructure Financing with Unbundled Mechanisms

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# Introduction

During the last decade the role of the public sector in the financing of infrastructure projects has changed radically, both in developed and in emerging economies. On the one hand, budgetary constraints are now more restrictive. On the other hand, it is also widely accepted that the private management of public projects generates efficiency gains.<sup>1</sup> As a consequence, the role of the public sector is shifting from financier/owner/manager of projects to regulator and guarantor, and its involvement in the productive economy is shrinking. Simultaneously, private sector initiative is invading areas that were previously considered in the exclusive domain of the public sector. Such a situation has required a new dimension for public-private arrangements to allocate responsibilities, risks and profits.

The generalized response to this new environment has taken the form of arrangements in which private initiative is empowered to construct and finance the projects, retaining their ownership temporarily. In some cases, depending on the nature of the project and on the management capabilities of the public sector, the infrastructure is publicly operated on a lease basis, as is the case of some power plant projects.<sup>2</sup>

Alternatively, the private sector operates the infrastructure under a concession contract, as is the case with

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<sup>1</sup>On the broader issue of the effects of deregulation, liberalization and privatization there is no such generalized consensus, as pointed out in the survey on eleven sectors reported in Kwoka (1996).

<sup>2</sup>A good example of a BLT is the SAMAYALUCA II project in Mexico, which is partially financed by the IDB. Private sponsors invest in the construction of a power plant that is leased to a public agency CFE (“*Comisión Federal de Electricidad*”) to be operated. After 20 years the property is transferred to the CFE. This project is also a good example of the benefits of using a special purpose vehicle, in this case a trust, to solve legal problems.

the majority of toll roads. These arrangements, which are referred to as Build-Lease-Transfer (BLT) and Build-Operate-Transfer (BOT), respectively, have proved to be an efficient approach to develop infrastructure that the public sector by itself could not undertake.<sup>3</sup>

It should not be a surprise that BOT mechanisms have shown more success in developed and relatively stable economies, where they have a reasonable track record, than in developing countries. However, when the available experiences are examined in greater depth, in many cases we encounter the long and generous hand of the public sector behind the projects, with a variety of subsidies, guarantees and barriers to competition, as has been the case with many privately operated toll roads in Europe. We encounter also numerous cases of contract renegotiation due to spectacular errors in demand prediction.<sup>4</sup> With the experience of the industrialized economies, and in the absence of a better alternative, the use of BOT mechanisms has expanded to emerging and deeply unstable economies. To attract the private sector to projects located in these more complicated environments the use of BOT mechanisms has required the support of multilateral agencies (MLA) and the introduction of risk sharing agreements between the public sector and private concessionaires. This has helped to solve, at least partially, the problems resulting from high levels of uncertainty.

We argue that such a generalized use of BOT schemes, whose main characteristic is the concentration of all

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<sup>3</sup>We do not include private arrangements of the type Build-Own-Operate (BOO) which we consider strictly private.

<sup>4</sup>In relation with toll road privatization, evidence and alternatives: Engel, Fisher and Galetovic (1996), Fishbein and Babbar (1996) and Gómez-Ibáñez and Meyer (1993)

responsibilities (building, management and financing) in a unique private agent (or a joint venture of private agents), could be challenged on the grounds that the unbundling of these responsibilities is a more efficient alternative. More specifically, we argue that there are efficiency gains if financing is made through a neutral special purpose vehicle (SPV) sponsored by the public sector on behalf of the infrastructure users and payers. This has led us to consider the desirable characteristics of such a financing scheme, and as a consequence the role of the public and private sectors, as well as that of the MLA.

The issues that we present as problems affecting the BOT mechanism, together with the proposals that we make based on unbundled schemes, refer to those projects where the required investment is relatively large in relation to the importance of the net cash flows generated by the infrastructure, after maintenance and operating costs. These are typically represented by toll roads, urban water distribution systems and, in general, by those services that can be defined as *toll goods*. They include telecommunication systems, ports, airports, power transmission facilities, power distribution networks, etc. However, these are not the only type of projects that can be developed with unbundled mechanisms and financed by a neutral SPV. The proposal can be extended to other projects such as railways, urban transport, exhibition centers, wastewater treatment plants and solid waste management facilities. Nevertheless, in spite of the wide range of projects that could be developed by means of the scheme proposed in this paper, toll roads are the most representative example and the contents of this paper may be biased towards that particular case.<sup>5</sup>

Apart from the relative size of the required investment, we consider the presence of uncertainty as the funda-

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<sup>5</sup>The type of projects that will be considered does not include those producing tradable goods which generate non domestic cashflows. Obtaining resources for such projects using as collateral the future flows or receivables denominated in hard currency is a well-known case with numerous examples in various emerging markets (Doetsch(1996)).

mental issue behind the problems of BOT financing schemes. It is precisely the consequences of uncertainty that can be mitigated by unbundling the project and financing it by means of a neutral SPV.<sup>6</sup>

Once it is accepted that infrastructure projects can no longer be financed directly by the public sector, the project cash flows have to be the source of finance.<sup>7</sup> Such an assignment of costs to the beneficiaries, which may include others apart from the direct users, can be defended both in terms of equity and in terms of an efficient allocation of resource, in particular if it is possible to identify and price externalities. The use of cash flows as a source of financing is compatible with both BOT and unbundled schemes. Yet, unbundling may have some advantages when compared to BOT, because it yields a higher degree of freedom without requiring the public sector either to assume managerial responsibilities or to use public resources to finance the project. In addition, it will be shown that the use of a neutral SPV that allocates all costs directly to the beneficiaries mitigates the negative effects of uncertainty on the overall costs. Thus, in some cases (particularly in emerging economies) infrastructure devel-

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<sup>6</sup>The mechanism here proposed has as a main feature the fact that the period of concession is ex-ante undetermined, mitigating the consequences of uncertainty. In that respect it resembles the concession mechanisms proposed by Engel, Fisher and Galetovic (1996) to auction highway franchises, which allocates the concession to the firm that bids the least present value of toll revenue. Otherwise, the similarity between both mechanisms is limited, since their proposal does not question the BOT scheme. In a follow-up paper by the same authors, their proposal is extended to unbundled schemes (1997).

<sup>7</sup>Where user-paid tolls do not exist, the use of so-called *shadow tolls* to define the level of the periodic payment by the public sponsor to the concessionaire is not more than a means of postponing payments to reduce current public expenses. However, shadow tolls can be criticized on the grounds that such a traffic dependent revenue incorporates artificial risk into the problem, increasing costs unnecessarily. Such payment mechanisms have been established in the case of two British toll roads developed by means of BOT procedures and there are plans to use a similar procedure in future concessions in Spain. Shadow tolls are criticized on different grounds in Fishbein and Babbar (1996).

opment through BOT schemes may be an incorrect answer to public sector inefficiency and budgetary restrictions.<sup>8</sup>

Following Fishbein and Babbar (1996), there is a trade-off between two critical variables that are relevant in analyzing alternative approaches to private finance of infrastructure (toll roads in their example): on the one hand, the opportunities for innovation in design, pricing, risk sharing, etc., and on the other hand, the transparency and competitiveness of the concession process. BOT mechanisms can be implemented with a different degree of bias towards one or the other

set of variables. Projects in environments and with characteristics that require opportunities for innovation, the authors say, should trade off transparency and competitiveness for innovation opportunities. Such a trade-off exists also when the project is unbundled, but we claim that the possibility of defining each of the granting processes separately benefits the overall implementation process. In this case, however, a different trade-off may exist between the degree of independence of each of the contractual processes and the need for coordination by the public sponsor.<sup>9</sup>

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<sup>8</sup> There is a major difference between the issues of “project finance” which we address here and those of “municipality finance”, which we disregard. Of course, there are some similarities between both, because the sponsor of an infrastructure project is typically a municipality, and the credit rating of the municipality may be relevant if it acts as guarantor or enhances the project in any other way. The distinction primarily stems from the fact that some projects are capable of generating revenues and some are not. The latter situation may arise either because services are provided free of charge, independently of the possibility of establishing a price system, or because the service is a public good which cannot be individually priced

If there are no revenues flowing from the project to back the issue of debt instruments, the financing problem is of a different nature. The public sponsor, say a municipality, may be fully responsible for the project, either because it assumes the total cost and subcontracts construction and management, or because it pays a concessionaire which in addition to construction and management assumes responsibilities for financing. In such cases the risk taken by the investors which provide financial resources is the credit risk of the public sponsor. Therefore, the risk is the same as the one imbedded in financing the public sponsor itself, a question not addressed in this paper. Financing a municipality and coping with the risks involved demands a different approach. The proposal contained in this paper shows that, in certain

circumstances, it may be compatible for a municipality to sponsor a project and avoid both budgetary commitments and private sector recourse.

We limit our interest to situations where the infrastructure project generates revenues which constitute substantial value to back the financing, leaving aside those cases in which the project has to be financed directly by the sponsor or, if by a private party, requires a full guarantee.

<sup>9</sup>An anonymous reviewer points out that there is another trade-off that must be considered: the one between efficiency through specialization and the mitigation of the effects of information asymmetries by bundling the different components of a franchise. The following example is given as a case in which the franchise holder internalizes the effects of its actions: a construction company is required to maintain the infrastructure to absorb the costs of inadequate construction. We agree with the general argument raised and, in fact, we mention in the paper that unbundling may not be the most efficient alternative in all cases because of both incentives and information asymmetries. However, in some cases, and this applies to the example given, the effects of information asymmetries can be corrected by means of contractual responsibilities. For instance, in the example of the road, by requiring post-construction responsibilities, as is the case for housing developers in some countries for long periods after construction (ten years in Spain).

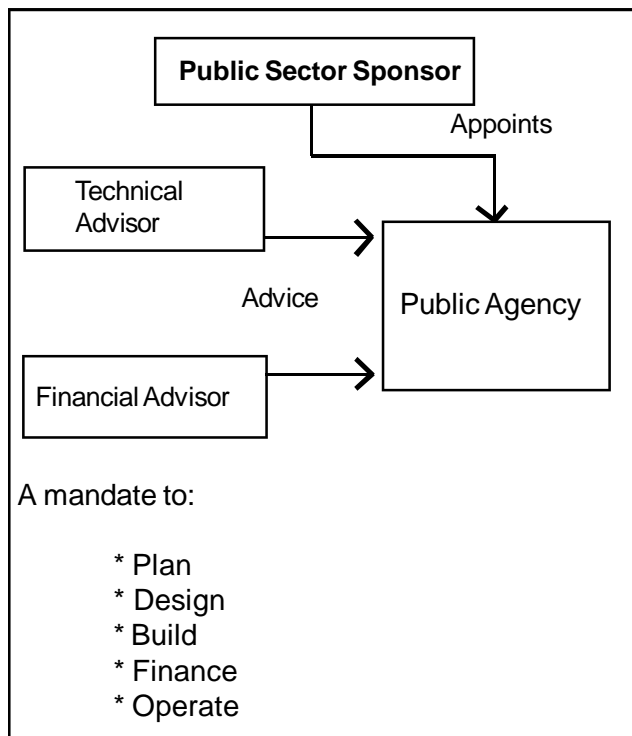
## Unbundled Mechanisms

The alternative to BOT mechanisms that we favor has two basic characteristics: first, the activities involved in the project are unbundled and, second, the financing is carried out by means of a neutral SPV. Even though these two characteristics are shown to be conceptually independent, we will refer to the joint proposal as the *unbundled mechanism*.

### Unbundling

A project includes various parts: building, operating, maintenance and financing. The unbundling of a project into its different parts is efficient for two reasons. First, some agents have superior know-how of a particular aspect of the project, say, its construction, but poor knowledge of other activities, as for instance, its financing. Second, unbundling reduces the risks faced by private contractors (in particular, the financial guar-

antees of the contractor are lower when the project is unbundled) so that more agents, particularly local companies (with sufficient technological know-how but insufficient financial capability), will be able to bid for the project, which increases competition on bids. Very often, BOT concessionaires are joint ventures of private companies that have an agreement among themselves to subcontract each of the different activities of the project. For instance, a typical joint venture for a toll road may include construction companies, operating experts and, in some cases, banks. Therefore, given the composition of joint ventures, BOT concessionaires cannot be criticized on the grounds of lack of expertise in one or another activity. The point we make is that the requirement that all the activities be included in the “concession,” and therefore jointly auctioned, limits competition. In addition, the risks and nature of each of the activities contaminate each other unnecessarily.<sup>10</sup>



For a large project (such as an infrastructure project) the costs of unbundling (such as creating different entities, monitoring the technological specifications during both the building and the operating stages, finding credit enhancement, etc.) may be high, but it will be offset by an improved allocation of risk. In such a way,

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<sup>10</sup>The Foothill/Eastern System is an example of an unbundled project. It comprises two public toll roads in Orange County, California. A special purpose newly created public agency, the Foothill/Eastern Corridor Transportation Agency, was empowered by the State of California to plan, design, construct, and operate the toll roads. Each of these activities was subcontracted to specialists: engineering consultants, construction companies, management experts, toll collection specialists, etc. The agency obtains financial resources by means of revenue bonds issued by a grantor trust. The revenues from the tolls (net of maintenance and operational costs) are pledged to secure the bond. The bonds are issued without recourse to the agency or the sponsors.

project finance brings “better financial and managerial discipline” (Stewart-Smith, 1995).

In what follows we go over the characteristics of an unbundled mechanism to develop an infrastructure project. This unbundling or separation of the specific tasks can be pursued more or less deeply depending on the project (for instance, maintenance can be separated from operation). It also makes it possible to define contracts with different maturities for the different activities. We do not go any further into these details because they are project specific. Yet, we do assert that there is an optimal level of unbundling that makes BOT a suboptimal solution.

### *The Concessionaire: A Public Agency*

In the first place, we assume that the process requires the public sponsor to empower a public agency to plan, design, build, finance and operate the infrastructure. That is, from a legal point of view, a public agency plays the role of the concessionaire in BOT mechanisms, but in this case the competitive process is imposed at the level of the subcontracting of the various activities of the project. The public nature of the agency is not a requisite. In Section 5 we discuss the possibility of using a private company to play the role of the concessionaire without falling into the BOT mechanism. The concessionaire is a vehicle that does not necessarily have a structure and whose purpose is to facilitate the contractual articulation of the operation, in particular if it is constituted as a commercial entity.

The agency, as concessionaire, is the owner of the concession and of the infrastructure until its transfer to the sponsor. The concessionaire contracts the construction, maintenance and operation of the project and constitutes the SPV as the financing tool. The agency is responsible for the preliminary technical, economic and financial studies that are necessary for proper definition of the subsequent contractual process.

The existence of the concessionaire, as distinct from the sponsor, facilitates the allocation of the separate

parts of the price paid by consumers to each of the subcontracts and to the SPV. If this role were to be played by the sponsor, who is generally an administrative entity or a government body, the allocation of the components of the price may present legal problems, while at the same time it will be more difficult to avoid problems of commingling with other public resources.

In addition, it is easier to manage the contracts over time if the contracting party is not directly the public administration. This consideration is particularly important because there may be elements in the contract that have to be modified by the concessionaire over the life of the project, such as, for example, the term during which revenues from the concession are allocated to the SPV.

Another function of the concessionaire is the possibility of grouping the interests of various sponsors, as is the case when several municipalities undertake a common infrastructure project.

Examples of such common projects are systems of solid waste treatment providing service to a group of communities or the development of regional highways, as is the case of the Foothill/Eastern Transportation Corridor in California.

### **Formal Instrumentation of the Concession**

A contractual instrumentation of the concession, as opposed to an administrative authorization, is important. The contractual form gives more legal guarantees to the concessionaire in case of amendments or breaches. At the same time, a contract facilitates the transfer to a subcontractor, if not of the concession itself, at least of certain guarantees and covenants of the concession contract. In relation to the latter point, the contract will explicitly stipulate the transferability of those guarantees and covenants, while leaving full responsibility to the concessionaire with respect to the sponsor, as regards the terms and conditions that define the concession in the concession contract.

*Construction*

The construction contract should be a turnkey compromise granted by the agency through a competitive tendering. Implementation should take into account the above referred trade-off between innovation opportunities and transparency. The standard mechanisms of guarantee, insurance and fines, common to BOT concession contracts in relation with construction, should be applied in this case also.

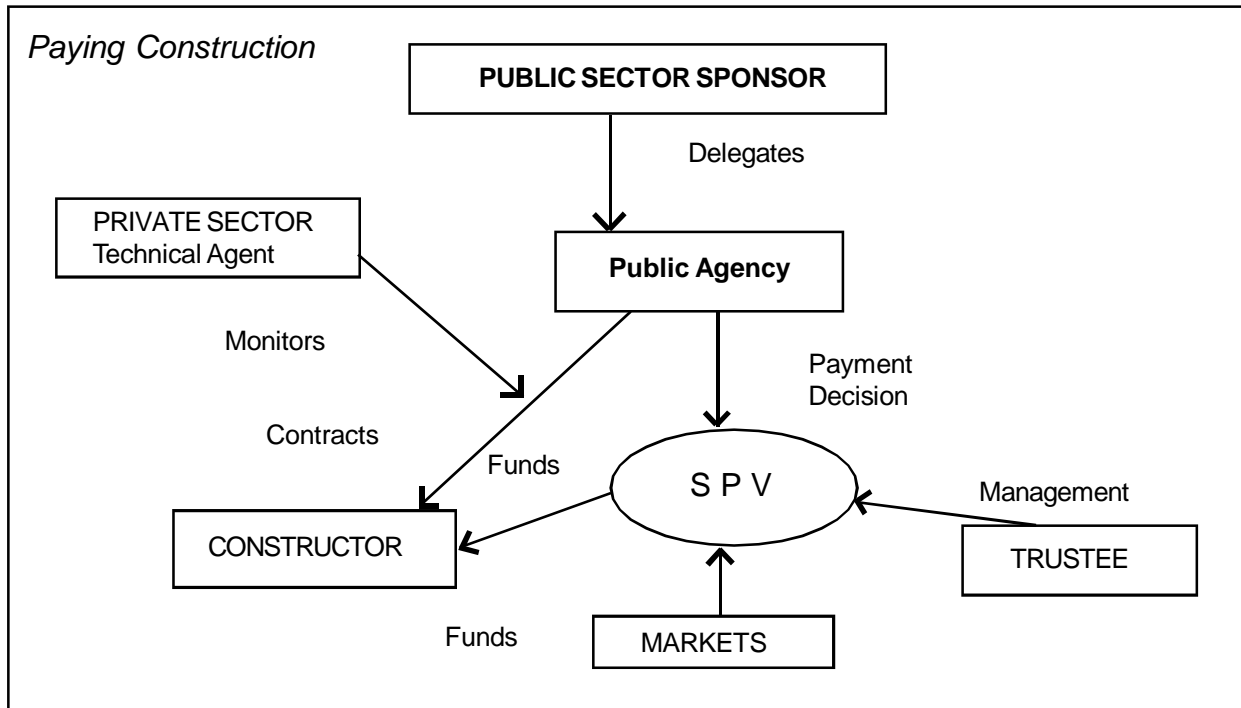
The agency will require the assistance of technical advisors both through the granting process and to supervise construction. Typically, the role of such an agent is played by private sector engineering consultants, who carry out the preliminary technical studies and designs.

The construction contractor is paid by the SPV. The latter maintains the funds obtained from the market in

an escrow account, and pays following standard procedures of control and supervision by the technical agent on behalf of the agency. The guarantee of payment on time should have a positive effect on the construction contract bidding process and reduce the construction bill.

The construction contractor may be required to participate in the SPV with equity or subordinated debt both as a means of improving the structure of incentives and to facilitate financing. However, it has to be taken into account that such a requisite is inherently inconsistent with the notion of unbundling.

Depending on the type of infrastructure the constructing contractor may be responsible also for maintenance. That activity, distinct from the post-construction responsibilities, should be treated as an independent contract, linked to the cash flows of the project.



## *Operating*

The proposed scheme is compatible with the existence of two separate functions, construction and operation, and either unique or separate contractors.<sup>11</sup> However, separation (which certainly introduces elements of flexibility and can increase competition) may not be the most appropriate formula for certain types of projects or economies. For example, the relationship between construction and management of a highway may not be the same as for a water distribution system. There may be also a difference between the degree of involvement required from the sponsor for the management and control of the various contractors, depending on the project and according to the level of development of the country. Consequently, it may be an adequate choice in some cases that a unique entity assume jointly the responsibilities for construction and operation, or at least for a number of years after construction is completed. However, the convenience of unifying the responsibilities of construction and operation is in general difficult to justify on the basis of technical or management synergies, while, at least on a theoretical level, the separation of these two activities introduces elements of efficiency.

Nevertheless, even in those situations with a unique contractor, it is not advisable that the term of the operating contract be as long as that of the concession. Such equality (which is implicit in BOT contracts in order to permit the concessionaire to finance the construction) is neither necessary nor advisable in this case. This last consideration is important because it is reasonable that changes in circumstances may occur at some point during the necessarily very long period of the concession, that require modification of the terms of the management contract.

Operation has to be understood differently depending on the type of infrastructure. In some cases, operation includes management of the service, fee collection and

maintenance. At least in theory, all these activities are separable, but we are not implying that their unbundling gives rise to more efficiency in all cases.<sup>12</sup> Unbundling the project raises the issue of incentives, including those of other agents apart from the operating contractor. As an example, consider the effect of unbundling on consumers if they are unable to associate service quality and payment. We do not discuss these issues in these paper; on the contrary, to simplify matters, we consider the operating contract as comprehensive of all the aforementioned activities.

The revenues from the infrastructure, which are assumed to be collected by the operator, are considered to be the property of the agency (the concessionaire). Thus, the concessionaire becomes responsible for paying the operator. Such payment may be defined either as fixed, as revenue dependent or based on a mixed formula. Once again, the incentive issue will be a determining factor in the selection of the payment structure. In addition, risk allocation considerations will have to be taken into account. In particular, the existence and conditions of recourse from the operator to the agency and the sponsor are crucial. In the case of non recourse and in the absence of guarantees, payments to the operator depend exclusively on project revenues, with all their characteristics of risk. Clearly, for the project to be self-sustaining, revenues have to exceed the cash flows needed for the operating contract; otherwise the project will have to be subsidized.

The characteristics of the contract granted to the operator can be independent of the financial parameters. Both the remuneration of the operator and the period of concession can be determined exclusively by the specific nature of the operating problems of the particular infrastructure. In most cases it will be possible to define a shorter maturity for the operating contract than for the concession, which will be at least as long

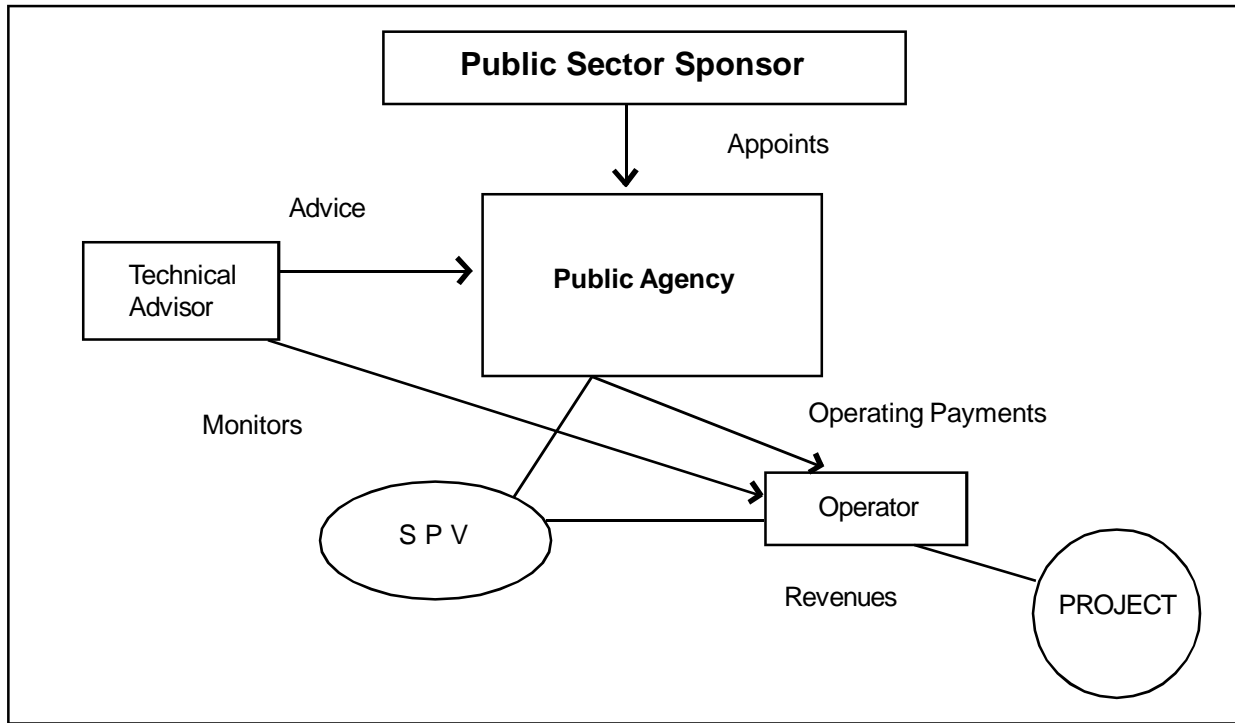
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<sup>11</sup> We do not refer to separation in subcontracts typical of most BOT concessionaires that take the form of joint ventures.

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<sup>12</sup> An example of the complete unbundling of these activities is the Foothill/Eastern Corridor toll road. In other types of infrastructure, say, urban water distribution systems, separation may be more complicated.



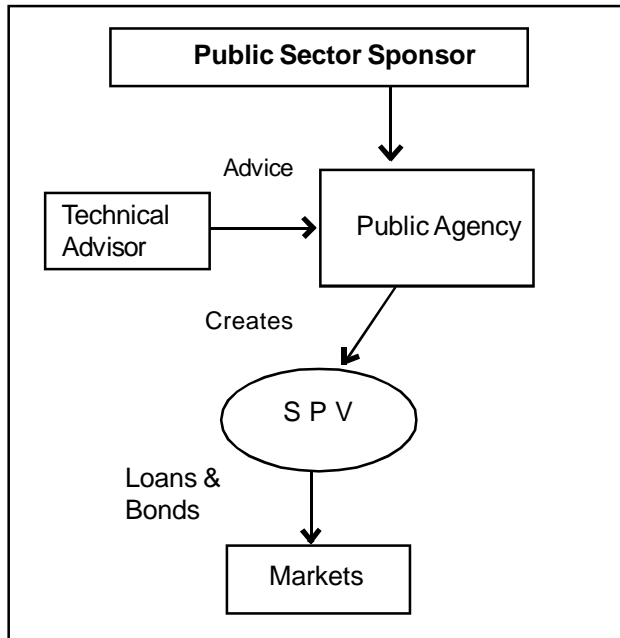


as the life of the SPV. Such an independence allows for a flexible contractual policy which may take into account changing market conditions.

To enhance incentives and to facilitate financing, the operator should be required to subscribe a portion of the subordinated debt of the SPV. As was mentioned in the case of the constructor, such a requirement may be interpreted as contradictory to the objectives of unbundling, but it can be shown to be compatible. In that sense, notice that a major characteristic of unbundling, among other things, is that the characteristics of the operating contract, in particular the concession period, are not determined by the overall financing requirements of the infrastructure. The point is whether it is possible to attain such independence and still require the operator to invest in the project through the SPV. The answer depends on the characteristics of the SPV and, in particular, of the subordinated debt. The SPV that we propose and explain in the next section, has an open-ended right to the net cash flows of the infrastructure until all its liabilities are cancelled, allowing for the definition of a subordinated debt tranche to be subscribed by the operator without influence on the characteristics of the operating contract.

### Financing

Project finance structures are better designed by the use of special purpose vehicles, a common legal technique used in the world of private financing to isolate and administer risks. An SPV is an entity with legal status that allows for a favorable treatment of accounting, fiscal, regulatory and financial issues. Typically, creating an SPV allows privately managed infrastructure projects, either at the stage of construction and/or operation, to enjoy some degree of isolation. In addition, in most cases the use of an SPV is a requirement imposed on the private agent by either the public sector, the financiers, the guarantors or the contractors of the project. From a conceptual viewpoint we may distinguish between those vehicles that focus on the isolation of the project as a legal entity and those which are designed as a purely financial instrument. According to this distinction we may refer to the former as *special legal purpose vehicles* and to the latter as *special financial purpose vehicles*; with the understanding that, in all cases, the purpose of the vehicles, one way or another, is risk isolation, and that there is not always a clear cut separation between both types. Moreover, special legal purpose vehicles typically also play financing roles.



In the unbundled scheme described in this paper, a separation between legal and financial vehicles is proposed. The role of the *legal* vehicle is played by the concessionaire, which we have proposed to be a public agency. In its turn, the *financial* vehicle is a trust-like entity, sponsored by the concessionaire. The financial SPV, as is herein proposed, can be considered as neutral, in the sense that it is an instrument to channel resources to the project, both from consumers and from the public sector, limiting undesired transfers to third parties.

The SPV, sponsored by the agency, will have its particular legal definition (*fideicomiso*, *patrimonio autónomo*, *fondo de titulación*, grantor trust, etc.) depending on the jurisdiction. In any case, what is required is a legal vehicle that, minimizing fiscal and operational costs, is capable of obtaining resources from the market, secured by the pledge of the cash flows from the infrastructure. The ideal SPV requires a legal framework that allows for tax neutrality, flexibility to design contracts and free access to products and markets. In all cases, a trust or similar juridical instrument is required.

## Assignment of Cash Flows

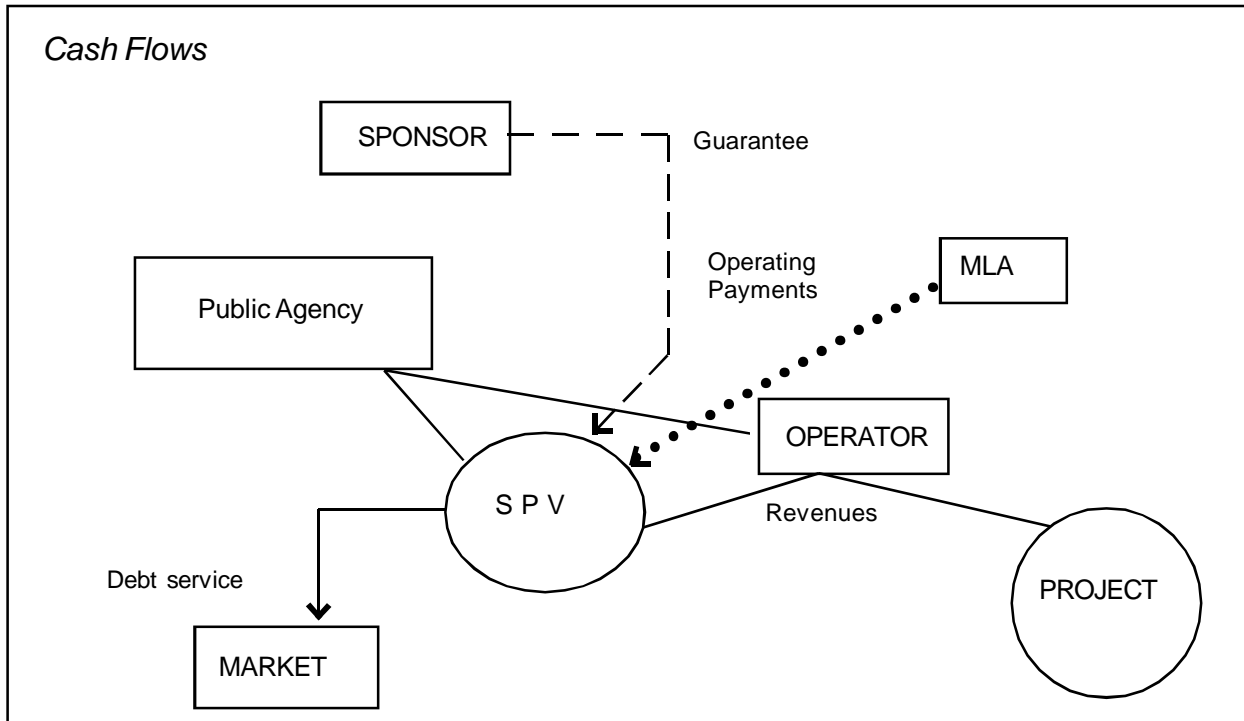
Future revenues from the infrastructure have to be ex-ante divided and assigned to cover ongoing costs and financial liabilities. That is, the price paid by consumers should be split in (at least) two basic parts: operating and finance. Such a partition could be explicit for the consumers, by reflecting in the corresponding instrument of payment (road toll, water bill, etc.) the different components of the price. Such information, which could include the existence of subsidies and which would show the intergenerational redistribution effect implicit in the financial part, may have a positive effect on the social acceptance of the burden of payment.

To simplify, we call “net revenue” the part of the cash flows which are left after payment of the ongoing commitments acquired by the agent in the operating and maintenance contracts.<sup>13</sup> These net revenues are pledged to the SPV to secure its liabilities. Depending on the characteristics of the operating and maintenance contracts, the commercial risks imbedded in the project cash flows will be shared one way or another between these contracts and the SPV. As was mentioned above, it may be desirable from an incentive point of view that the operator be paid on a revenue dependent basis, at least partially. In that case, the risk absorbed by the operator will result in an equal reduction of the risk assigned to the SPV.

The contract between the agency and the SPV will entitle the latter to receive the net revenues until all its liabilities are canceled. That is, the life of the SPV is undetermined and dependent on: *i*) the total revenue flow, *ii*) the economic conditions of the operating and maintenance contracts and *iii*) the financial conditions of the SPV’s liabilities. Such a contract between the agency and the SPV turns out to be a contract between the infrastructure users and the SPV investors.

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<sup>13</sup> If the amount of revenues allows for it the costs of the agency could also be netted out.



Consequently, it is justified that the SPV be structured and its liabilities placed under strict competitive procedures.<sup>14</sup>

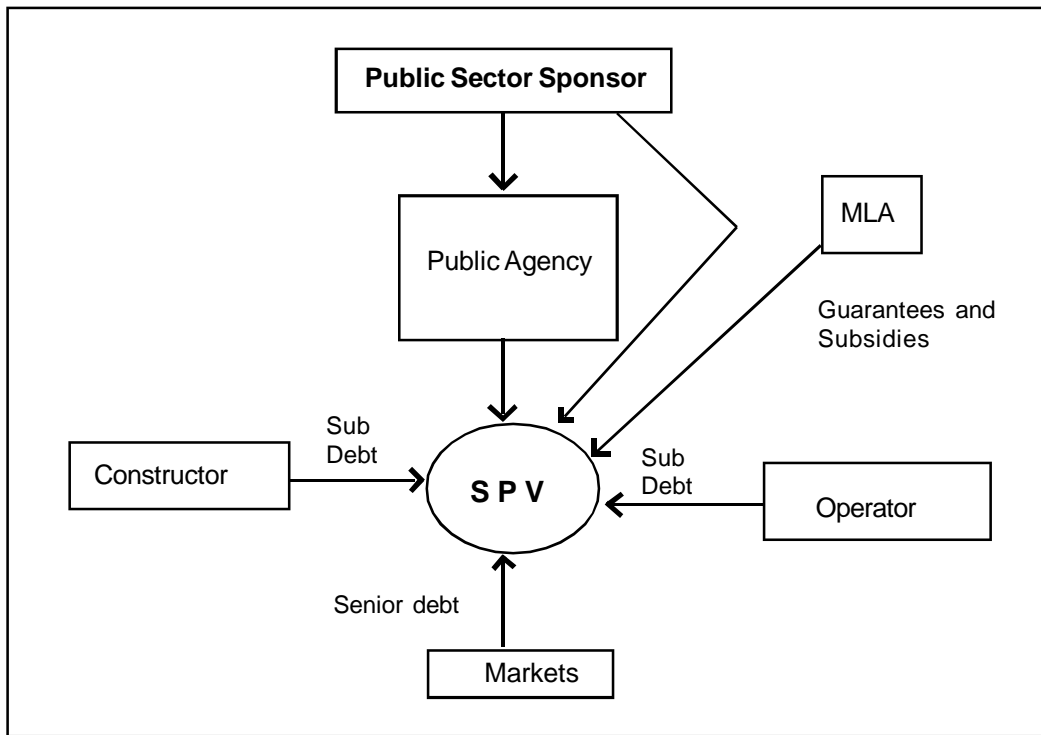
The characteristics of the net revenue flow, in particular its variable and uncertain nature, pass through the SPV determining the characteristics of its financial liabilities, taken as a whole. In most cases, such variability and uncertainty will require the liabilities to have principal payments that also vary. In turn, to reduce costs by minimizing interest rate risk premiums, the liabilities will generally have to be defined as floating rate instruments. Therefore, in the absence of alternative sources of revenues or subsidies, the life of the liabilities of the SPV, taken as a whole, will be determined by the net revenue flow and by interest rates

(and currency exchange rates if funding is done in a foreign currency).

We are assuming that the SPV obtains its resources in the market. However, the expected life of the SPV may be excessive for investors, in particular in emerging economies. These are characterized by financial markets that are not sufficiently developed and by political, regulatory and general macroeconomic risk, affecting either the project or the financial investors. The importance of these risks increases dramatically with the time horizon of the investments, and it has to be taken into account that some projects may require financing for 25 years and beyond. To cope with that problem, the public sector sponsor should provide a guarantee that limits the maturity of the SPV. Such a

<sup>14</sup> An example of such a competitive procedure in a very similar framework is the case of the securitization in 1996 of the rights resulting from the nuclear moratorium in Spain. An SPV, *Fondo de Titulización* under Spain's legislation, structured under the supervision of the government, publicly auctioned an amount approximately equivalent to six billion U.S. dollars in bonds and loan participations. For a description of that transaction see Trujillo (1996).

guarantee does not imply a direct cost for the public sector, but rather the obligation to establish the necessary conditions to enable the liabilities of the SPV to be refinanced with a new SPV.



## Insufficient Revenues

In the scheme described above, financing the infrastructure is equivalent to financing the SPV. The latter is assumed to be a nonrecourse entity, managed and represented by a trustee, with the right to the future net revenue flow as its unique source of income. The use of such a neutral vehicle does not guarantee the project's viability. The question remains as to whether the SPV is by itself capable of attracting market resources to finance the project.

We are assuming that the right to receive future revenue flows, granted by the public sector to the agency (as concessionaire) passes to the SPV and lasts until the latter pays back all its debts, that is, until financing has been completed. Such a condition would be difficult to implement if the special financing entity were privately owned. However, the SPV proposed is an instrument of the public sector, on behalf of the consumers, which does not generate either profits or losses.

Funding the SPV in the market will be more or less difficult, that is, more or less costly depending on the soundness of the expected revenue flow and the combination of project and political/regulatory risks passed to the investors. Success will result from the appropriate mitigation of those risks, when possible, or from their efficient allocation among the parties involved: the public sponsor, guarantors if any, the contractors, the SPV investors, the consumers (as toll payers), and the government as collector. We do not include either the agency (the concessionaire) or the SPV, since they are assumed to be neutral entities.

In principle, the financial package of a project is expected to be based on its future revenue flows, if these are considered sufficient to support the required debt and remunerate the capital invested. However, in many cases, at the time of structuring the project financing, future revenue flows may be considered insufficient in

the absence of subsidies to cover operating costs and finance construction, and hence are incapable of attracting investors. Such a situation, caused either by the intrinsic lack of capacity of the project to generate sufficient revenues or as the direct consequence of an inefficient price policy, is aggravated by the uncertainty associated with the flow of revenues and by all the other various risks perceived by investors.

We define the revenues of a project as *insufficient* when the value of the resources required for construction, maintenance and operation exceeds the value of the expected future flows, discounted at market yields representative of the financial characteristics and risks assumed by investors. That is, an insufficient revenue situation is one in which the project is not capable of standing by itself. Such a definition of insufficiency implies that the assumption that revenues flow indefinitely to the SPV is not a guarantee for the project to stand by itself. In other words, an indefinite flow does not guarantee that its present value exceeds the resources needed for the project.

A situation of insufficient revenues relates basically to income generation capacity and to commercial risk, but it is also determined by the other risks affecting the project. All kinds of project risks influence the perception of the reliability of future revenues and the same has to be said in relation to political and regulatory risks, which are taken into account by investors when selecting the appropriate level of the discount rate. Therefore, if revenues assigned to the SPV are considered insufficient, as defined above, the project requires either subsidies to supplement market resources, or the mitigation of risk affecting investors, to either increase expected revenues or reduce discount rates.

At the limit, situations of insufficient revenue would include any situation where private investors are unwilling to finance the SPV in its totality, since, at least

in theory, every perceived risk has been taken into consideration to define expected flows and appropriate discount rates. However, as earlier stated, it is useful to separate what can be considered as *pure* insufficient revenue situations, that is, those characterized by a poor expected performance of the project given its objective risks, from those problems caused by subjective risks of a political and regulatory nature, which could be mitigated under the right contracts. In most cases, these risks represent situations of extreme loss or whose economic consequences are unknown or, at least, very difficult to assess. As a result, exposure to these subjective risks is considered critical for the investment decision. If the particular risk is not completely eliminated or dramatically mitigated, the investor may not consider investing, independently of how favorable are other characteristics. An example of the latter is convertibility/transferability risk, but we can include also the potential problems that may be caused by decisions of the sponsor affecting project cash flows.

In the rest of this section we cover the problem that we have denominated as of *insufficient revenues*, leaving aside the issues pertaining to regulatory risk.

### **Coping with Insufficient Revenues**

The intervention of the public sector in a project, either by granting subsidies or by mitigating risks, may be justified either by the existence of positive externalities, by redistributive policies, or by other considerations of a political nature. We assume that the objective of the sponsor is to intervene to enhance the project up to the point at which it can be assumed by the market, minimizing the cost of the intervention. The mechanism of finance described herein allows for such an efficient intervention by the public sector, in particular if subsidies and guarantees are granted to the SPV. We describe several alternatives to enhance the project. First, we consider the use of equity or subordinated debt subscribed by the sponsor. Second, we mention the possibility of granting guarantees as an alternative to the disbursement of resources. Third, we describe enhancements in the form of options attached to the senior debt.

### *Subsidizing by Means of Subordinated Debt*

As a simple formula of direct subsidy, the sponsor could take a share of subordinate debt in the SPV. With a sufficient proportion of subordinate debt, the senior debt may be competitively placed with the sole guarantee of the expected future net revenue flow. The sponsor may subscribe subordinated debt below market price or when a market for the debt does not exist. This is a form of subsidy to the project with the inconvenience that it involves the disbursement of resources. Nevertheless, it has to be pointed out that the need for a subsidy, because *ex-ante* the project is not self-standing, does not imply that *ex-post* revenues may not prove to be sufficient to cover all costs and pay back the “subsidy” with interest. On the contrary, a subsidized project may provide revenues that the market was unable to foresee. If that is the case, subsidies will return to the sponsor; in other words, if eventually the project generates “excess” revenues, these will not be transferred to private parties. Subsidies given to the SPV are easily structured to facilitate their recovery as they become superfluous, but subsidies given directly to builders, operators and investors are more difficult to control and recover.

If public resources are available, the participation of the sponsor in the SPV by means of subordinated debt or equity is highly recommended, both from the point of view of the enhancement of senior debt and for risk mitigation purposes.

As mentioned above, the builder and the operator may be required to subscribe subordinated debt of the SPV. But such a requirement cannot be a solution to cope with a problem of insufficient revenues. This requires either external subsidies or risk mitigation. The investment in the SPV by the builder and the operator pursues a different objective; namely, reducing the proportion of resources obtained from the market and enhancing incentives. However, we have to account for the possibility that the benefits of requiring such investment are partially offset by an increase in the cost of construction in the competitive bidding process. An adequate yield assigned to the subordinated debt, including a premium representative of the risks

of investing in the SPV, will reduce the distortion of construction prices.

### *Guarantees*

The sponsor may subsidize the project by means of a wide variety of guarantees granted to the SPV. A possibility is a guarantee of the minimum level of revenue received by the SPV. Alternatively, the guarantee could be designed to assure that the SPV is able to service its debt, and could be either granted directly to the vehicle or through a third party acting as liquidity provider. A guarantee to limit the maturity of the SPV (and refinance it by means of a new vehicle) is also a form of subsidy. In those cases in which the SPV incurs currency exchange risk, the subsidy could be the total or partial mitigation of that risk.

Instead of subsidizing by means of investing in the SPV or guaranteeing its income or senior debt, the sponsor may guarantee a subordinated debt share subscribed by a third party. However, in addition to the endorsement by the sponsor, if the subordinated debt is supposed to be taken by private investors, it must have characteristics and expected yield that justify the investment on a market basis. It is possible to assign a high yield, but in general it is difficult to define other attractive financial characteristics when the subordinated debt is the residual of the senior debt in an infrastructure project financing.

Subordinated debt may take various forms, depending on the characteristics of subordination, risk limits, risk premiums, etc. In all cases its basic role is to provide a cushion to protect senior investors, by absorb-

ing indiscriminately all those risks affecting the SPV which have not been specifically covered. In that sense, guaranteeing subordinated debt has different implications, from a risk point of view, than granting guarantees to specific risks, as it may result in the coverage of all kinds of risks without distinction.

If the sponsor has a poor credit-risk rating, as likely to occur in projects sponsored by municipalities, it is important to avoid guarantees which eventually may require the disbursement of funds. In some cases it may be sufficient for the sponsor to guarantee the implementation of price policy changes.

### *Using Put Options*

As a form of subsidy, senior debt may be issued with an attached put option that, under predetermined circumstances, allows the investors to put their bonds to the sponsor or to an alternative guarantor. The circumstances under which the option can be exercised may refer to the evolution of project revenues or to precise events which may endanger SPV cash flows. In such a case, the credit risk of the option seller becomes the relevant issue.

An alternative to a put option that prepays senior debt is the possibility of putting the bonds in exchange for debt of predetermined characteristics, either issued by the sponsor or by a third party. Such a swap of risk could be definitive or temporary. That is, investors may have the option to return to the original debt if the solvency of the SPV is restored. Again, the risk of the issuer of the debt becomes the relevant risk for the investor.

## The Benefits of Unbundling

The positive effects of the *unbundled mechanism* (unbundling the project and SPV financing) on the overall cost of the project derive principally from the more efficient allocation of the *objective* risks affecting the project. The mechanism allows for the mitigation of the uncertainty that typically characterizes both the revenue flow (demand) and the financial cost (interest rates and exchange rates). It also allows for a better treatment of *subjective* risks of a political and regulatory nature. In addition to the reduction of the overall cost (which in some cases can make a project economically viable), the *unbundled mechanism* provides the sponsor with a higher degree of flexibility, particularly in the characteristics of the operating and maintenance contracts and in pricing policy.<sup>15</sup>

Starting with the effect of risks on the construction contract, we argue that the isolation of the funds obtained by the SPV in an escrow account will guarantee the contractor that, upon satisfaction of the commitments of its contract, the payments will be received in due amount and time. Such a guarantee should result in less inflated contracts than those typical of BOT concessions.

In the case of the operator, we can assume that the uncertainty affecting its economic performance is limited to the commercial risk which has been left in the definition of its revenue policy. Indeed, with generality, we can assume that operating costs are much less affected than revenues by uncertainty. In addition, un-

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<sup>15</sup> An anonymous reviewer points out that “...*the advantages (of a public SPV) are not clear, since those that are claimed are counterbalanced by the incentive problems inherent to public agencies and by the disadvantages of an endless multiplication of public agencies.* An alternative scheme is proposed by means of the following example for a franchised road... *a construction company builds and maintains the road, in exchange of a fixed (in present value) sum; an operating company working on a fixed term lease collects tolls, keeps a predetermined sum as payment for its services and gives the remainder to the construction company until the sum owed to the company is collected. Under such scheme, there is no need for the elaborate system of SPVs. The government must be able to check the revenues collected by the operator, but that has an order of difficulty easier than being an efficient operator of an SPV.*”

These comments show some confusion in relation to the role of the SPV and its public or private nature. On the one side, we may consider the concessionaire of our scheme as a kind of SPV, in the sense that it could be an ad-hoc agency set up to play the organizational and supervisory roles, previously described. Such an agency could be public or private and

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may perform other activities unrelated to the infrastructure under discussion. Most of the roles which we assign to the agency-concessionaire are played by the franchise holder of a BOT, but it is not clear who is playing those roles in the reviewer’s example. On the other side, we have the financing SPV, which is a completely different kind of entity, both in its role and legal nature. The financing SPV (basically a grantor trust), is neither public nor private but a pure neutral instrument, technically owned by its investors and which we could, being somewhat liberal in terminology, consider the property of the infrastructure users. Comparing its role with the reviewer’s example, the SPV receives the net revenues from the operating company and pays the investors, not the construction company. The latter received its payment at the termination of construction (hence no need for present value calculation). Therefore, the difference between proposals, in relation to financing, is that in the reviewer’s example the burden of financing is for the construction company, that passes it to the infrastructure payers through its demand of a future cash flow (in present value), while by means of an SPV such a cash flow demand (its present value) is determined in the financial markets, where the SPV obtains its funding. We claim that the latter is necessarily more efficient.



bundling allows for a shorter contract maturity. The combination of less uncertainty and a shorter maturity reduces renegotiation risk and post-contract opportunism and, as a consequence, gives rise to more realistic bids.<sup>16</sup>

It may not be possible, nor desirable, to eliminate all commercial risk from the operating contract; however, a reduction of the uncertainty affecting the contract may reduce the overall cost. Such a possibility, always at the expense of increasing the variability of the cash flows assigned to the SPV, could take the form of a risk sharing cap-floor agreement that leaves the revenue of the operator in a band. A shorter maturity of the operating contract, in relation to that required by a BOT mechanism, facilitates the implementation of such a guarantee.<sup>17</sup>

The effects of uncertainty on the cash flows assigned to the SPV are absorbed by the open-ended nature of the horizon and by structuring its liabilities with variable payments and floating rates. In addition, as was mentioned above, refinancing guarantees and liquidity facilities could be provided by the public sponsor. With such a financing scheme, an overestimation of revenues or higher than expected interest rates will be transformed into an extension of the period of financing and a longer period of payment by consumers. By contrast, underestimation of revenues or lower than expected interest rates will benefit either the consumers or the public sponsor, depending on the allocation of the excess revenues when financing concludes.

Another effect of unbundling is the possibility of having flexible price policies. On the one hand, the flexibility derives from the shorter maturity of the concession period for the operator, compared to BOT schemes. On the other hand, contracts may include

admissible price modifications whose effect is automatically passed on to the SPV. In addition, the definitive structure and level of prices affecting consumers can be postponed to the termination of construction, allowing for a better adjustment of prices to market conditions, thus reducing the errors in demand estimates. In the case of BOT schemes, which require establishing the price policy for the complete time horizon before the concession is granted, the possibility of price flexibility is very limited. By contrast, the degree of flexibility with regard to pricing policies acceptable by the SPV investors may be larger.

The *unbundled mechanism* also makes the intergenerational distribution of costs more attainable. The period of financing can be extended independently of the operating concession, adapting the financing horizon of the infrastructure to its real depreciation and use. BOT mechanisms bias the redistribution of the burden of financing towards the present generation. This is notorious in the case of infrastructure projects that are built to last for decades if not for centuries. The problem is that under strictly private solutions, as is the case of BOT concessions, investors are unable to consider horizons beyond certain limits, a problem aggravated in emerging economies. On the contrary, “institutional” arrangements such as transfers among consumer groups can also be explicitly attained by allocating excess revenues of the infrastructure to other projects that yield a deficit.

The *unbundled mechanism* may be more efficient if subsidies and guarantees are given to the SPV. With such an intermediation, public sector transfers will benefit consumers directly by, *ceteris paribus*, reducing either prices or the length of the period of financing. In addition, subsidies can be designed in such a way that they return to the public sector if eventually shown to be unnecessary. In any case, public sector transfers to consumers (granted through the SPV by means of subsidies, guarantees or subordinated debt), can be justified in terms of the future tax revenues to be generated by the project. By facilitating the viability of a project the public sector creates a source of future public resources.

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<sup>16</sup> On this issue see also Engel, Fischer and Galetovic (1996).

<sup>17</sup> An example of such a guarantee can be found in the BOT concession of the Cali-Florida toll road in Colombia in 1996.

In many cases and not only in emerging economies, there is social resistance to paying directly for the infrastructure service. We argue that payment by consumers will be socially more acceptable if the proposed SPV structure is implemented and appropriate information of prices is given. The alternative, from the point of view of consumers, is that the infrastructure is fully paid either by its users or by all taxpayers (through public sector support). Consumers do not profit from the fact that a BOT concessionaire has underpriced a concession. Such a case always ends up either in the bankruptcy of the concessionaire, or in

public subsidy or the renegotiation of contracts. Thus, the underpricing of a BOT will not result in a permanently lower burden for the users or the taxpayers .

The *unbundled mechanism* may make financing in the local currency more attainable, thus reducing currency exchange risk and cost. An SPV structure, secured by the open-ended contract with the infrastructure users, may be positively perceived from a risk point of view by local institutional long-run investors. However, in some emerging economies these sources of funding are very scarce.

# The Role of MLAs

From a theoretical point of view, the existence of multilateral agencies is justified because financial markets fail to provide an efficient allocation of funds. This could be either because of the existence of one of the traditional sources of market failure, such as externalities generated by the project, or, more likely, because of the asymmetric information problems typical of financial markets, particularly where multiple countries and currencies are concerned.

One of the major problems in financing infrastructure projects in emerging economies is the lack of domestic long-term capital. The absence of developed long-term domestic financial markets stems from a more fundamental financial market imperfection. In such economies, in our view, the key explanation for the lack of long-term funding that can be tapped by such projects is the excessive risk that investors attribute to the projects, an attitude justified by the intrinsic instability of institutions in general and the economy in particular, and the absence of the government's ability to commit to a stable regulatory policy.

More specifically, as noted by Barrientos (1995), "certain types of risks, particularly those concerning the maintenance of stable political and regulatory conditions over the long term, or the effective governmental or agency performance of contractual obligations remain difficult for the private sector to absorb or manage." This explanation is also consistent with two other characteristics of financial markets in emerging economies. First, government guarantees by themselves are generally not sufficient to attract long-term funding. Second, the success of privatization programs in some countries (for instance in Argentina) indicates that capital does exist that can be invested in long-term projects, provided that investors expect their profitability not to be impaired by political decision.

Traditionally, the role of multilateral agencies (MLA) has been to provide long-term capital to economies lacking such funds for projects generating long-term cash flows. In these operations, the MLA acts as a monitor of the project, but also of the government sponsoring it, which usually provides some guarantees. From that perspective, the role of the MLA is that of a bank, which lends long term, using its monitoring ability to identify the right investment opportunities. The MLA's access to the major financial markets complements this scheme by allowing it to obtain funds in the most efficient way.

Still, as the role of public and private sectors has evolved, the environment in which the MLA operates is bound to change.

## **The New Financing Environment**

Traditionally, MLA financing has been a source of funds for investment projects sponsored by the public sector. With the decreasing role of the public sector in the economy, this has begun to change. Private sector participation in providing equity to projects channeled through BOTs or BLTs has increased, but as Barrientos et al. (1995) point out, "...alternative avenues must be sought to mobilize additional private resources for the productive sector." Indeed, if the role of private sector funding in the project is mainly to provide equity, this may prove to be expensive, and even unreliable, since, even in developed industrial countries there may be a shortage of this type of funds.

In addition, the increased involvement of the private sector through equity participation, although welcome, raises a new issue because of the access of the project to (public) MLA financing. Indeed, the MLA support may result *ex post* in an unintended transfer of resources from the MLA to the private sector if the project is successful.

## The Use of Special Purpose Vehicle Financing

If the policy of the MLA is to provide support to the projects by means of loans, the use of a neutral SPV shows some advantages. In the first place, the MLA as a lender is better protected if financing is given to the SPV instead of the concessionaire.<sup>18</sup> However, the characteristics of lending, which may implicitly contain a portion of subsidy, can be designed to recover the subsidy part if the project eventually is self-sustaining. In addition, the “public” nature of the SPV makes it politically more acceptable for the MLA to transfer resources to the project. Moreover, financing given to the SPV could be conditioned on the guarantees of the public sponsor in relation to regulatory risks.

However, the role of the MLA may change, reducing its concentration on traditional lending activity and increasing two other types of activities: credit enhancement and strengthening the legal and regulatory framework.

The use of guarantees granted by the MLA to the SPV is an alternative to direct loans. Guarantees could be in the form of a line of credit (LOC) given to the SPV, limited both in its volume and in the circumstances under which it can be used. Alternatively, guarantees could be granted to a third party that issues the LOC. Such guarantees are less costly than loan disbursements and reduce currency exchange problems. Political and regulatory risks taken aside, the risk that the given guarantees result in the disbursement of funds by the MLA is mitigated by the open-ended nature of the SPV.<sup>19</sup>

By providing guarantees, the MLA may indicate that it has monitored the whole structure of the project, that each agent is able to perform its contractual obligations, that the incentive scheme reduces moral hazard and that, overall, the project is sound and correctly designed to produce the long-term cash flows the investors expect. The use of guarantees also enables the MLA to target more specifically the types of risk that it will cover, concentrating its resources more on systemic risks (eg. currency convertibility) and avoiding coverage of risks related to purely commercial factors.<sup>20</sup>

The strengthening of the legal and the regulatory framework is a type of activity that MLAs already accomplish,<sup>21</sup> but which would be emphasized if the techniques of project finance were to be more deeply used. Indeed, the stronger the legal and regulatory framework, the easier it is for the sponsor to commit in a credible way to develop a stable regulatory policy. In the case of unbundled concessions, which require a high degree of coordination to implement the process, there is an additional role for the MLA. That role is as advisor for the preliminary financial and legal structures of the projects, supervisor of the contract granting processes and, during the life of the project, mediator in the case of disputes over the effect of policy changes on the level and allocation of cash flows.

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<sup>18</sup> In most cases, the MLA requires a counter guarantee of the government, making the argument of better protection unimportant. However, it has to be taken into account that in some cases the cash flows of the SPV have a higher credit quality than the local government itself.

<sup>19</sup> On the use of guarantees by the MLA see Barrientos et al (1995).

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<sup>20</sup> The interest rate reduction obtained through the guarantees of the MLA can be spectacular as reported in Hass and Bender (1996,) for the case of Chile’s Pan American Highway in which interest rates were reduced from 12% for a nonguaranteed project to 8% with the guarantees.

<sup>21</sup> See Rivas and Vives (1996) “IDB Group Support for Private Infrastructure.”

# Implementation

Unbundling could be criticized on the grounds of the higher degree of difficulty which may be required to implement the projects, in relation to a BOT alternative. Indeed, we have mentioned that unbundling may give rise to a trade-off between the degree of independence of each of the contractual processes and the need for coordination by the public sponsor. Such a problem can be mitigated from the point of view of the public sponsor by means of two alternatives that amount to the transfer of responsibilities (at a cost) to the private sector.

In those cases in which it is advisable that the public sector minimize its responsibilities of coordination, two alternatives can be proposed. A radical proposal is that the role of the concessionaire, instead of being carried out by a public agency, is carried out by a private company. Such an alternative should not be confused with a BOT mechanism. The proposal is that a private agent, subject to the conditions established by the public sponsor, implement the process of subcontracting and monitor the contracts, while simultaneously structuring and launching the SPV. That is, a private company acts as a service company for the project but without assuming the project risks.

Alternatively, implementation could be simplified by requiring that private participants present a joint proposal that covers all the activities of the project: construction, operating and financial resources by means of the SPV, each activity under its independent contract and in all cases subject to the conditions established by the agency acting as concessionaire. This alternative reduces the problem of coordination for the public agency, but at the cost of reducing competition, and therefore losing one of the benefits of unbundling.

## The Project Steps

The following is a list of the basic steps for project implementation and a short description of the contents of each step. The need for coordination and the importance of timing in the granting process are obvious.

### i) *Public Sector Decision*

Project identification  
Public/private agency appointment  
Instructions to the agency to initiate the project

### ii) *Preliminary Technical Studies*

The agency appoints a technical agent to:

Define technical characteristics  
Evaluate rights of way  
Perform environmental studies  
Perform preliminary cost approach: construction, operation and maintenance  
Make first traffic and revenue studies  
Define first proposals for toll policy

### iii) *Preliminary Financial Studies*

The agency appoints a financial advisor to develop the preliminary SPV and design and assess the viability of the project. The preliminary cost and revenue results from the technical agent are used by the financial advisor as a basic input.

Basic legal structure  
Cash flow analysis

Viable sources of funds  
Role of MLA  
Credit enhancement proposals  
Need for subsidies or guarantees to mitigate market risks  
Mechanisms to mitigate regulatory risk

iv) *The Bidding Process*

The public agency with the technical agent and the financial advisor defines the parameters of the bidding process. The advisors are not permitted to participate or be related to the participants. They will act as advisors to the public agency in the final decision.

Parameters for the Bids

Design specifications  
Basic toll structure  
SPV basic principles

Guarantees granted by the public sponsor  
Other third party guarantees (MLA, etc.)  
Limit on concession period (operating)  
Minimum structure of insurance, guarantees and fines

Construction Bid

Construction specifications, schedule and costs  
Performance guarantees  
Participation in the SPV with subordinated debt

Operation and Maintenance Bid

Operation and maintenance characteristics and costs  
Proposal for toll to be assigned  
Performance guarantees

Participation in the SPV with the subordinated debt  
Traffic studies

Financing Bid

Legal and financial structure of the SPV  
Regulations  
Source of funds  
Guarantees and credit enhancement  
Underwriting commitment: costs, characteristics and guarantees  
Dependence of the proposal on the definitive toll structure  
Expected cash flow analysis  
Pre-rating analysis

Bid Selection Criteria

Design specifications and construction costs  
Operation and maintenance specifications and cost  
Support provided through subordinated debt and its costs  
All In Cost paid by the SPV  
Experience and strength of the contractors  
Strength of the underwriting compromise  
Toll policy flexibility  
Participation of local companies

v) *Project Initiation*

Adjudication resolved  
Licenses and rights of way available  
Contracts signed  
Trustee selected  
SPV launched  
Funds deposited in the SPV's escrow account  
Construction starts

## Final Comments

The disadvantages of BOT schemes are caused by the severe uncertainty affecting most projects and under which their contracts have to be signed. Those contracts incorporate unnecessary risk and have a high risk of renegotiation. High inflationary and unstable environments, common to most emerging economies, further complicate problems.

Schemes based on the unbundling of project activities and financing through neutral special purpose vehicles, created on behalf of the infrastructure users and payers, reduce risks and allow for an efficient use of public subsidies and guarantees, minimizing undesired transfers to the private sector.

The main criticism of these unbundled schemes is the lack of efficient public sector institutions to articulate the project and supervise the private sector participants. However, such a situation does not occur in some countries and, if necessary, it is possible to expand the role of the private sector to perform the coordinating role.

The problem of financing projects in domestic markets, and avoiding currency exchange risks, is common to both BOT and unbundled schemes. However, we argue that the latter are in a relatively more favorable position to attempt to find local long-run investors.

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