

Public-Private Partnership Contracts: A Tale of Two Cities

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Abstract

This paper analyses regulation by contract in public-private partnerships (PPPs) for infrastructure services. Although the benefits of competition for the market and subsequent regulatory contracts are widely acknowledged, the literature identifies several failures in their design. When considering these limitations, it is useful to distinguish between two different kinds of regulatory contracts implemented: one utilized in a purely contractual PPP (concession) and the other associated with an institutionalised PPP (mixed company). This study uses contracts in the water sector to describe how major problems tend to arise in the preparation of public tender documents: the “best” bidder is often not the winner. Moreover, risks are not allocated correctly nor is effective monitoring ensured under typical contracts. These problems are present in both developed and developing countries. Comparisons between the two types of contracts show how external regulation can be useful in mitigating contractual problems. This critique of bidding procedures and contract design allows us to develop several implications for policy-makers; in addition, the study presents recommendations for improving regulatory contracts.

Keywords: public-private partnership; water utilities; concessions; mixed companies; contract design

1. INTRODUCTION

Competition in the market is absent in many infrastructure services. Some segments of network industries, particularly water utilities, are natural monopolies. To achieve production efficiency, such markets should have a single operator. This situation can harm the public interest when there are excess profits (redistributing income from customers to the monopolist) and reduced output causing misallocations (deadweight losses). Absent pressure from the capital market, the monopolist prefers the “quiet life”: incentives for production efficiency are blunted. One public policy response is to create a sector regulator who is supposed to promote better performance: ideally, to achieve levels of allocative efficiency comparable to those arising in the competitive marketplace. In addition, the regulator could implement public policies designed to expand access to infrastructure networks, particularly for the poor or for regions where costs may be relatively high (like rural areas). Of course, the sector regulator faces significant problems:

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- (1) **Expertise and autonomy**—agencies need technical skills for evaluating operator performance and funding sources that, while maintaining accountability, insulate them from undue political pressures;
- (2) **Information asymmetries**—lacking data on key performance parameters, regulators have difficulty establishing appropriate incentives (for improving both the short and the long-run performance);
- (3) **Regulatory capture**—regulators confront political pressures from various stakeholders (and are susceptible to influence by the operator or other powerful customer groups);
- (4) **Opportunism**—regulators may be tempted to behave opportunistically—extracting excessive rents from operators; and
- (5) **Authority**—the responsibility for water utilities and other ‘local’ infrastructures often is with municipalities, making it difficult to implement regulation either due to conflicts between different levels of government (local, regional and national) or due to high number of entities which would require oversight.²

An alternative to competition *in* the market is competition *for* the market (Chadwick, 1859). In this case, the right to operate a monopoly is subject to an auction. The winning bid would be the one to present the best offer (lower cost or higher rent), guaranteeing that in a situation of sufficient competition (no collusive behaviour) the winner would offer an average price close to the average cost, allowing for fair and reasonable profits (Demsetz, 1968). The conditions of operation (rights and duties) are signed in a written contract, leading to the term regulation by contract. The modern version of this kind of relationships is labelled public-private partnership (hereafter, PPP). Indeed, a PPP is a form of public procurement with cooperation between a public authority and a private partner aimed at ensuring the funding, construction, renewal, management and/or maintenance of infrastructure, or the provision of a related service.

The PPP (at least within the EU) is classified into institutionalised PPP (mixed companies) and purely contractual PPPs. These two models have very different features which are studied here with reference to two municipalities. Purely contractual PPPs encompass concession, *affermage*, and management contracts.³ Note that outright divestiture is not considered a PPP. Some features of PPP contracts include the sharing of responsibilities and risks between the public and private partners (in principle, risk is allocated to the partner better able to manage and mitigate it), a project life-cycle approach, and incentive (output) payment schemes.

Traditionally, in the water sector, PPP contracts have been the means to introduce private sector participation.⁴ With few exceptions (such as England and Wales and a

² In some countries a national regulator would be unconstitutional as it illegally interferes with the local autonomy. Furthermore, the number of local operators can be excessive. For example, more than half of the European Union (EU) countries have more than one thousand operators.

³ Concession contracts are, in turn, divided into public works or public service concessions, depending on whether the turnover of the private sector is predominantly originated in constructing public works or in the operation of a service. The Build-Own-Operate-Transfer (BOOT), Build-Own-Transfer (BOT) and similar contracts are included in the first group.

⁴ In the water sector, the PPP model associated with the purely contractual approach has been called French model of governance of the water sector. The full privatisation option (plus sector regulation) is

handful of other cases) full privatisation has not seemed to be an option in the water sector. Several reasons can be pointed out for this widespread implementation, including the importance of French transnational companies' worldwide, perceived inefficacy of regulation, and the limited duration of PPP contracts. Moreover, the sound principles of this governance and regulatory model also have contributed for the popularity of PPPs. Some countries adopted the PPP model early, especially in the water sector (e.g. France), but the neoliberal recommendations of the 1980's and 90's (associated with the need for managerial expertise and for funds to construct infrastructures) led a significant number of countries to implement infrastructure PPPs (Vining and Boardman, 2008).

The impact of private sector participation and PPP contracts in infrastructure, including water, has been positive. Most PPP contracts have provided value for money and have helped to solve serious problems of coverage and quality of service both in the developed and developing world. However, some outcomes have been problematic, with failures in many PPP contracts, including breakdowns and early termination of contracts. In fact, most PPP contracts are renegotiated. In a study for Latin America (with a sample of 1,000 contracts), Guasch found out that 75% of the water concession contracts were renegotiated on average 1,6 years after their signature (Guasch, 2004). Under this circumstance there is bilateral bargaining to restore a mutually acceptable situation for the parties, which undermines the legitimacy of the original contract award. Since there is no competitive environment at this stage of the process, the operator will always have more information on the implications of alternative contractual arrangements, putting the private partners in a position to imposing their will (Bajari *et al.*, 2005).

Most of the literature has focused on developing countries, where very often the lack of transparency and expertise within newly democratic governments, lack of procedures to prevent corruption, and a national focus on industrialisation, might contribute to unsuccessful contractual arrangements. In addition, citizen concerns over social programs and human rights add further complexity to private participation; objectives for expanded coverage might not have been met under previous government provision of infrastructure services, but political rhetoric still kept expectations high. Nevertheless, experience around the world suggests that the failures of contract regulation are not a matter of stage of development: see, for example, the cases of Atlanta in the USA water sector, the airport of Montreal in Canada, or the London underground in England.

This study draws lessons from a detailed analysis of two PPP case-studies in Portugal, one contractual (concession contract) and other institutional (mixed company). The institutional PPPs, little discussed in the literature but very important in some countries (e.g. the *Société d'économie mixte* in France, the *Stadtwerke* in Germany or the *Empresa Mixte* in Spain), are analysed in some detail. These rigorous comparisons represent a first-step towards better understanding the full implications of widely-utilized institutional arrangements. We conclude that in these cases the contract failures are even more serious than is generally recognised.

known as English model. Many water utilities in Latin America can be characterised as being hybrid of these two approaches (Foster, 2005).

This paper is organised as follows. Section 2 discusses PPPs in infrastructure, emphasizing their strengths and limitations, contract design issues and the common reasons why some contracts fail. Section 3 analyses the different models of PPP and private sector participation in the water sector and in the Portuguese market in particular. Then, Section 4 examines two different empirical PPP contracts in terms of the failures associated with the two institutional arrangements. One corresponds to a concession and the other to a mixed company. Section 5 provides key lessons for the design and monitoring of PPP contracts, followed by concluding observations in section 6.

2. PPPs IN INFRASTRUCTURE SERVICES

2.1 Strength and limitations

Implementation of PPP contracts in infrastructure has undoubtedly generated benefits in terms of efficiencies, service quality, and network expansion (Murphy, 2008 or Vining and Boardman, 2008 and Marques and Berg, 2009a). Compared with the full privatisation option, they do not require very detailed information about costs, demand and other features of the projects, nor is a “traditional” regulatory agency or a contractual management agency required (Viscusi, *et al.*, 1995). In addition, PPPs do not promote overinvestment (a potential concern under rate of return regulation). During the duration of the contract, the private partner is interested in maintaining a good reputation which constrains possible hold-up behaviour by the operator.⁵ Note that the hypothesis of call-option or early termination of contract is possible and anticipated in contracts. Compared with the public provision (even without considering funding needs), their advantages are potentially greater, at least in the view of those favouring private enterprise over government operations.⁶ Beyond those anticipated in the contract, the PPP-holder captures additional gains associated with efficiency improvements and new service introductions: it has strong incentives to be innovative (Crew and Zupan, 1990). These profits will be passed to the customers when the PPP concludes. Expected rents are captured by the customers (government) in the competition *for* the market, where the abnormal profits were eliminated by the competition. Even without considering better efficiency in the private sector (emphasized in some streams of literature), in fact the PPP-holder is more accountable to customers and to the government since its duties are defined in the contract, including associated penalties (and rewards). As a rule, the operator in a PPP provides a higher quality of service, has greater likelihood of meeting the predicted budget, and higher probability of meeting deadlines than would a purely public organisation. Furthermore, another positive aspect of PPP contracts is the (potential) better allocation of risks leading to the development of risk mitigation strategies, cost savings, and service

⁵ Generally, the operator intends to remain in the market after the contract expires (or wishes to avoid early termination) and plans to expand its activities by winning other bids. Reputation affects future cash flows.

⁶ Indeed, the major reason to opt for a PPP contract is almost always the need for funding, primarily in the developing world. This view of a PPP as a PFI (Project Financing Initiative) and not as a partnership between two entities with common goals, in the opinion of the authors may be the noteworthy weakness of PPPs.

quality improvements. There is evidence that construction and operation risks are well managed by the private partner without a high risk premium.

Supporters of both full divestiture and public ownership provide a very different characterisation of PPP contracts than those noted above (see Williamson, 1976 and Goldberg, 1976). Critics point out the high information required, a need of a supervising entity responsible for contract management (which is, in fact, a regulator), the issue of overinvestment⁷ and the weak incentives for efficiency and innovation since renegotiation and *ex-post* opportunism can occur. The PPP bidding stage is also criticised for being excessively complex, very slow, and for imposing high costs on those preparing bids. Gaining access to the market is seen as an expensive game for participating bidders (often involving the “winner’s curse”). Frequently, the best bid (when evaluated in a comprehensive fashion) is not accepted: There is evidence that the winner is the one that is more optimistic or more opportunistic.⁸ Strategies of low-balling are common, where the winner expects to seek a contract renegotiation at a later stage. Furthermore, the number of bidders is usually small and the collusive behaviour is an issue of concern.

Another weakness associated with the PPP contracts involves contract monitoring. The contracts are by nature incomplete. For example, supervising quality of service requires expertise and careful auditing procedures for company-provided data. These present challenges for regulators. Furthermore, PPPs will probably tend to underinvest and provide a lower quality of service. Even if the contract defines standard or minimum levels of service or if these are award criteria in the bidding stage they may change over time: their monitoring is not automatic. Unpredicted events, the application of sanctions and the need for mediating conflicts turn the monitoring of the contract a fundamental task that should be performed by an expert and independent body: a regulator.

This critique of PPP contracts argues that they lead to higher costs, not only due to the search for profits by private companies but also to the higher cost of private capital, and the increase in procurement costs. In addition, service quality could be low due to underinvestment and the inability of the contract to specifically address all quality issues. Some argue that there is a loss of public sovereignty (flexibility, transparency and accountability) with PPPs in practice. As we will see next, most of the problems referred to are related to contract design: most of these issues can be addressed in a well-prepared contract.

2.2 Contract Design Issues

PPP contracts can be classified into short-run and long-run (or incomplete) contracts. The former have a length between one and five years, possibly up to 10 years and the latter have a length greater than twelve years (Klein, 1998). Designing PPP contracts to be signed between the Government and the private operator is challenging, requiring

⁷ This can happen in two ways, either by the imposition of minimum investments or if the plan of investments was an award criterion of the PPP in the public tender.

⁸ Although this circumstance might occur when there is one only award criterion, adding more criteria substantially increases discretion.

legal expertise regarding local and national laws and complementary legal authority. The main issue is balancing the initial preparation costs (affecting the incompleteness of the contract) against the transaction costs generated by probable renegotiation. As *ex-post* opportunism and renegotiation represent major failures of a PPP contract, the public body should try to avoid this contingency. Simply involve the following:

1. Allocating risks to appropriate parties;
2. Limiting the restoration of economic and financial equilibrium to the essential aspects borne by the public partner;
3. Assigning payments based on the outputs and performance;
4. Keeping the contents of the winning bid in the contract;
5. Constraining the possibility of bargaining after public bidding and contract signature, and
6. Clarifying the terms of early contract termination.

Generally, the choice between short-run and long-run contracts depends on the up-front investments or rents required. In the past, PPPs were often associated with long-run contracts since financing was the major issue of the contract. Currently, financing continues to be a key issue but the risk associated with this type of contract has become more important, especially in developing countries.

The advantages of short-run contracts are related to the systematic rebidding which reduces the information time horizon. Public bidding documents can contain less detail on cost and demand; in addition, quality of service supervision and monitoring requirements can be better focused. If the operator causes trouble or provides poor service quality, a new contract or extension can be rejected, damaging the private operator's reputation. Furthermore, competition is fostered with the shortening of contract duration, which has positive performance impacts.⁹ The main shortcomings of short-run contracts are threefold: (1) difficulty of including in the PPP substantial investment requirements, and (2) continuing obstacles to the efficient renewal of the contract, since the incumbent has information advantages (Zupan, 1989) and the inertia of politicians and bureaucratic decision-makers hamper the re-bidding process (Viscusi *et al.*, 1995).

Long-term contracts are appropriate when huge investments in long-lived (sunk) infrastructure networks are necessary and where the payback period is relatively long. However, as it has been noted, they are incomplete by nature since such contracts are unable to specify responsibilities under all possible contingencies (Williamson, 1976). They normally involve a higher risk and the added difficulty of designing mutually beneficial terms and conditions. Even with the inclusion of automatic mechanisms, rewards and penalties according to performance and the fulfilment of the contract clauses, bargaining during the contract will be unavoidable.

2.3. The Failures of Contracts

⁹ The enactment of the Sapin Law in France imposed a shortening to the duration of water utility contracts: the resulting increase in competition induced a reduction of prices in 10% on average (Guérin *et al.*, 2004). These authors found that more than 10% of rebidding contracts go to new private operators.

There are several reasons for the failure of PPP contracts. These sources can be sorted into three groups, those related to problems with access to the market, risk sharing, and monitoring (Marques and Berg, 2009a). These major sources of failure are briefly analysed below.

a) Access to the Market

To avoid political favouritism, the choice of the private partner should be made by public bidding. With enough competition, excess of profits will be eliminated. In the EU, for example, the rule requires choosing the most economically advantageous bid. Normally, there are several criteria to award the PPP, leading to the application of multi-criteria decision analysis to determine the winner. Unfortunately, rarely is the assessment methodology provided in the public tender documents, which limits transparency and unnecessarily reduces information available to bidders about what the PPP-granting authority views as important. Much of the time, bids suffer from a number of problems:

1. Assumptions underlying the bids are not comparable;
2. Superficial elements are evaluated rather than the essential ones;
3. The principles initially proposed (in the bidding documents) suffer changes at the evaluation stage (or in second stage when it exists) or when the contract is signed; and
4. Criteria like experience and financial health are considered as evaluation criteria instead of standards for bidder qualification.

For example, bidding documents in the water sector typically include criteria (sometimes with dozens of subcriteria) related to service quality and safety. These issues should not be negotiated for essential services: such criteria should be imposed in the terms of reference. When authorities utilize this kind of criteria, they have excessive discretion and the complexity of evaluation is increased. Furthermore, the substantial detail associated with such criteria increases bid preparation costs. To enhance the comparability of bids, all the variables should be standardised. By way of illustration, if the bidders use different assumptions regarding financial variables (consumer price index or the discount rate) or technical variables (population projections, customer mix estimates, or daily consumption patterns), the bids are not comparable.¹⁰ Another aspect of bid assessment is specification of the PPP bidding criteria as if it was public works procurement. Finally, among other PPP problems, renegotiation is one of the most important.¹¹ Thus, the criteria defined should take this reality into account.¹² As a final point, it should be emphasized that the tender documents are frequently badly prepared, increasing the cost of proposals, the risk of the partnership and a major role of the

¹⁰ Note that this standardisation is only for evaluating the bids; otherwise, the awarding entity would have to assume the associated renegotiation risks.

¹¹ One of the relevant aspects to consider is the robustness of the business case for extreme situations (e.g. substantial demand reductions or macroeconomic downturns).

¹² For example, two bidders may have a proposal for a water supply system but the shareholders of one of them demands a return on equity of 18% and the other requires only 12%. The financial and economic equilibrium of the business case will be determined by that rate, being the implications of renegotiation very dissimilar according to the winning bid.

bargaining later. If more studies and information are collected before the tender call notice, all the parties benefit, but mainly the public partner since the cost of capital will be lower and the probability of renegotiation as well (Crampes and Estache, 1998).

b) Managing and Sharing Risk

The main theoretical benefit in PPPs is that the risks would be assigned to the contractual party that is best able to mitigate the risk or to bear it.¹³ The optimal allocation of risks minimises their economic costs. From this view, the State should not transfer to the private partner the risks that are under its control; nor should the State (since it represents taxpayers) assume the risks that are out of its control.¹⁴ Most contracts have clauses protecting the private sector from bearing such risks while ensuring economic and financial equilibrium during the contract. Normally it is this clause that assigns the risks of the PPP contract. Some authors recommend that a risk matrix with contractual clauses addressing each risk should be developed and provided to the bidders (Marques and Berg, 2009b). This circumstance limits situations that may lead to *ex-post* opportunism.

Consumption and unilateral changes risks are generally the most important in PPP contracts. As far as the consumption risk is concerned, the public authority is frequently influenced by an optimistic bias, since this allows an increase in its rent in the short-term. It assumes high growth rates (unrelated to reality), justifying an unrealistically high up-front PPP payment or an initial reduced tariff.¹⁵ Usually, the practice is to include this risk in the clause relative to the economic and financial equilibrium and the private partner bears this risk only until a change of 10 to 20 per cent of the value predicted. In practical terms this risk is passed to the PPP-granting authority and consequently to the customers (or taxpayers). As regards the unilateral changes (political) risk, the situation is alike since it should be the public sector to support it. However, the contract should comprise clauses sufficiently deterring to avoid this temptation of the public authority.

c) Monitoring Contracts

The role of monitoring the contract is similar to the role performed by an external regulator, though the former activity might involve a little less discretion. The major problems of monitoring are related to supervising service quality, resolving contractual disputes, applying sanctions and performance rewards, participating in potential renegotiation (often involving alterations of investments for the business case), addressing early termination of the contract, overseeing asset transfer, and specifying terms for the renewal of the PPP contracts. The bidding documents should recognise the resources required to carry out the PPP monitoring. They should also be specific on how the monitoring will be performed, including (1) all reporting procedures, (2) the amount

¹³ Marques and Berg (2009b) classify the risks in PPP contracts into those associated with production, commercial developments, and contextual changes.

¹⁴ In the EU (Eurostat), the rule is not to consider the PPP's charges in the public accounts if the private sector has to support at least two of the three risks (construction risk, demand risk, and availability risk).

¹⁵ This risk can be eliminated if the contract length is variable, depending on the observed consumption and/or on the corresponding revenue (Engel *et al.*, 2001).

and circumstances under which sanctions can be applied, (3) procedures in the event of renegotiation, and (4) quality of service supervision. This last aspect is normally controlled by application of performance indicators and benchmarking. The public discussion of PPP contract performance can be an effective tool (a name and shame policy) so there should be regular public disclosure of performance results. Contract monitoring is often omitted in the bidding documents, despite its centrality to PPP contract success.

3. PPP IN WATER SECTOR

3.1 Different models

As mentioned above, models of privatisation (without full divestiture) can be classified into two major groups: contractual PPPs and institutionalised PPPs. Contractual PPPs include concession, *affermage* (leasing) and management contracts. The focus here will be on concession contracts since they are the ones most often applied. Of course, this model can have complications affecting whether the project is bankable or not. Investor perceptions of associated commercial and operating risks affect the cost of capital. Nevertheless, concessions have benefits to the extent that equity can be leveraged and that private participation improves incentives for high performance. Such arrangements are primarily adopted when large investments are necessary or the governments are maximizing up-front payments (rent-seeking). They are used recurrently in the water sector, as well as in other sectors, like transportation.

The main difference concerning the *affermage* contracts is that in this case new investment is the responsibility of the public sector although payment continues to be made by customers: the commercial risk is primarily supported by the private sector. Consequently, the duration of contracts is less, varying between 8 and 15 years. Their major problems are the risks associated to the non-fulfilment by the public sector of the investment obligations, which reduces both the cash-flows and public perceptions of the private company. This model is seldom adopted when considerable investments are required. Although this model is popular in the water sector in France, it is not widely applied elsewhere. Finally, for management contracts, there is no direct relationship between the private partner and the customers. The private partner is paid by the government for performing particular tasks. Normally, management contracts are implemented in areas like health or education (which are heavily subsidised by taxpayers) or in the management of wastewater treatment plants (where revenues are unlikely to cover costs). *A priori*, these contracts should have a short length, but sometimes they remain in effect for extended periods.

In the second partnership model, the institutionalised PPP, the public sector and a private company create a third company to deliver an infrastructure service or an existing public company sells part of its shares to the private sector. Generally, the public sector retains corporate control, although management of technical operations is normally carried out by the private company. At first glance, the model has sound principles, since sharing management responsibility can avoid some conflicts (Marra,

2007). Given that the public sector is now more accountable, there is less imperfect information and disputes can be resolved internally: outcomes can improve.

Participants from the public sector, primarily local public sector agents, also like the model. They exercise their authority (and political power) over infrastructure services by being able to appoint the board of directors, approve major decisions and participate in (interfere with) daily management. However, companies that are jointly owned by private shareholders and government can lead to the worst of both worlds, achieving neither high profitability nor worthwhile social goals (Boardman and Vining, 2008). The problems revolve around political, contextual, and incentive issues. Governments in power at any level seldom acknowledge or criticise their own earlier decisions. Thus, risks tend to be passed on to customers via higher rates (or to taxpayers through implicit subsidies). In institutionalised PPPs, only the statutes of the firm and a shareholder agreement document regulate the relationships between the private and public partners. As the public sector is involved in management, key elements like price levels and price structures, quality of service and investments are periodically defined. This period is initially relatively long; despite having an initial public tender for the sale of shares, it is easy for the private partner to justify cost overruns to its public peer, leading to a need for tariff changes. For this reason, the incentives to be efficient and innovative are reduced. Furthermore, there are frequently generous management fees paid to the private firm by the mixed company; in addition, other services may be provided directly to the municipality by the mixed company or by the private firm.¹⁶

3.2 The Portuguese Experience

In Portugal the responsibility for the water and wastewater activities belongs to the municipalities.¹⁷ They can opt for a number of arrangements, including the establishment of private companies by means of concession contracts, municipal companies which can include a (minority) private shareholder, semi-autonomous organisations, or direct supply by the municipality. Private participation was not introduced in the sector until 1993. The enactment of legislation in that year allowed local municipal authorities to delegate water service functions to private sector companies through a public tender by concession contracts (purely contractual PPP). With the opening of the market to private participation, it became necessary to monitor and supervise this activity so that the national government created a regulator (Institute for Regulation of Water and Waste - IRAR) whose responsibilities included providing a non-binding opinion about the public tender documents (and the design of the contracts), as well as playing a role in renegotiation proposals, and supervising service quality.¹⁸ In 1998, new legislation allowed the creation of municipal companies according to three frameworks: municipal companies with (1) the entire capital

¹⁶ Frequently these 'benefits' are not evaluated in the public tender stage despite being a very relevant part of the project. For example, in the water and wastewater mixed companies it is usually the municipality that directly awards the stormwater service to the private sector. As this service is rarely directly purposed by customers, the municipality pays a generous fee for associated services.

¹⁷ In Portugal there are 300 retail water utilities. About 70% of the water (60% of wastewater) is provided (treated) by 18 public wholesale companies.

¹⁸ In quality of service regulation, IRAR compares concessionaire performance and promotes a public discussion of performance (yardstick competition via sunshine regulation).

associated with only one municipality, (2) with capital belonging to several municipalities or (3) either of the two situations, with a minority private partner (institutionalised PPP). In the latter case, the private partner should be chosen by public tender. IRAR, by law, does not have authority over these companies.¹⁹

In Portugal, as of December 2008, 38 public tenders for PPP were launched in the water sector, corresponding to more than 2,7 million inhabitants (26% of the total population). As of that date, 29 contracts had been signed, with five cancelled (5) and the rest still in negotiation. Of the 29, 24 correspond to a purely contractual PPP and 5 to institutionalised PPPs. The average length between the tender call notice and the contract signature was about 21 months. The average number of bidders was four: more than 30 different private companies participated in these public bidding procedures. The result was that now there are five major private players in the Portuguese water sector. Furthermore, in line with earlier observations about the fragility of contracts, 50% of the PPPs have already been renegotiated. The principal causes were consumption below the amount predicted, non-fulfilment of investment commitments assumed by the municipality, and unilateral changes by the municipality. This number is substantial if we consider that not a single contract was sustained beyond half of the stated duration and only about 20% reached a quarter of their contract period. In the next subsections we will analyse in more detail the causes for renegotiations and other failures.²⁰

4. CASE-STUDIES

4.1 Purely contractual PPP: Municipality A

The public tender documents and the signed contracts are quite similar in Portugal. The municipalities in general do not have competencies to perform these tasks; as a consequence, to save money, they hire local or low cost consultants with little experience in PPPs. In addition, municipalities tend to favour consultants they can trust politically. Frequently the players themselves lobby the mayors and provide them with “draft” public tender documents. Consider a recent bidding in Municipality A which is similar to (or better than) typical biddings.^{21, 22} Municipality A launched a contractual PPP, a concession with the length of 30 years encompassing the water and wastewater services. It embraced about 12,000 customers. The concession comprised only the retail segment since the municipality imported water from a public wholesale company and

¹⁹ To safeguard the principles of autonomy of local authorities, the local administrative bodies in charge of the system’s direct management (municipal councils, municipal services, municipal and inter-municipal companies), are only liable to IRAR’s action related to water quality for human consumption.

²⁰ Note that the problems identified and presented here do not mean that the outcomes are necessarily negative. Usually these companies have higher performance when compared with the public ones in Portugal (Marques, 2008a).

²¹ Although these facts are publically available and the entities are easily identified, we opted to keep them anonymous here.

²² Despite the youth of the PPP, it is considered one of the most successful in Portugal. The main point was that the municipality had a tariff system close to the real cost and the political vision that rents should not be extracted from the water services. Often when the private firm starts to operate, it has to raise the tariffs significantly (50% or more) to cover costs or create new tariffs (for example, for the wastewater service); such actions cause serious problems with customers, creating new opponents of the privatisation.

outsourced wastewater treatment. The municipality had a set of urgent investments which represented about 10 million Euros, mostly in wastewater infrastructures. The bidders were compelled to make these investments and to attain a specified level of coverage in the first six years of the concession. The municipality also asked for an annual payment (rent). In this atypical case it was only a residual value (about 1 million of Euros during the 30 year-period), since the tariff was already very high and it was acknowledged that a higher value would unduly hurt the residents. The mayor, who had a strong background in economics, took the politically difficult decision to raise the tariffs substantially in the year prior to implementing the contract, to cover charges from the wholesale company (more than 1 €/m³ in water and wastewater activities) and to improve the PPP's cash flows for making required investments. There were seven bidders: the public tender stage (including the design of contract) took two years to complete.

a) Access to the market

One of the major problems of this particular PPP was the absence of an economic and financial study of its viability. It is understandable that the municipality had not performed a public sector comparator study, but at least the public documents should have provided adequate elements about the operation and maintenance of the services and infrastructure records. This lack of data complicates the bids preparation process and increases the cost for bidders. The municipality asked for the bidding documents from a neighbour municipality (which has concluded its PPP process recently) and adapted these to its own needs. To improve transparency, the municipality asked for help from the regulator (IRAR) for the definition of criteria (and subcriteria). The regulator provided an extensive list of aspects that could be included as subcriteria. The municipality thought that *all* the identified topics should be included; with the best of intentions the complicated menu of issues were incorporated as criteria or subcriteria. There was a clear overlap in the set of issues to be evaluated, resulting in double counting that was very harmful in the evaluation. Table 1 presents the criteria and subcriteria considered and their weights.

The average tariff criterion was computed using a formula specified in the bidding documents attributing 100% for the minimum tariff proposed: all the remaining points were computed in percentage terms according to this framework. Note that current tariff system (at the date of bidding) was the baseline, but the bidders can, in some circumstances, raise prices and set another tariff for wastewater services (conservation tariff). The average tariff corresponds to the net present value of the sum of projected revenues, divided by the volume of water billed and by 30 (years). The remaining criteria were explained during the public tender stage by providing the aspects to consider in their evaluation.²³

²³ According to Portuguese law at that time, the methodology to evaluate the criteria and subcriteria should be provided to the bidders before reaching two-thirds of the time between the announcement and the actual presentation of the final bids. Without timely information, the bidders cannot develop reasonable business models as the basis for their bids.

Table 1 – Criteria Weights for a Purely Contractual PPP

Criteria	Subcriteria	Weighting	
A) Average tariff		70%	
B) Quality of service		10%	
	B. 1) Quality of studies		25%
	B. 2) Procedures of operation, maintenance and control		25%
	B. 3) Procedures of reading, billing and collection		15%
	B. 4) Procedures of supervision and control of works		20%
	B. 5) Procedures and schedule of quality certifications		15%
C) Safety of the provision		10%	
	C. 1) Technical staff and their organisation structure		35%
	C. 2) Capability to respond in case of emergency		50%
	C. 3) Access to technical resources and their appropriateness to their investment plan		15%
D) Strength of financial and contractual structure proposed		4%	
	D. 1) Proposal of tariff system		50%
	D. 2) Financing model		25%
	D. 3) Appropriateness of the financial projections taking into account the plan of proposed investments		25%
E) Quality and appropriateness of the plan of proposed investments		4%	
	E. 1) Ability to meet the service coverage targets		60%
	E. 2) Scheduling of the tasks		40%
F) Payment to the municipality and its temporal distribution		2%	

The methodology suffered from three very serious problems: lack of standardised assumptions, inappropriate (sub)criteria, and lack of consideration of the probability of renegotiation for the different bids. First, the key-variables in the project were not standardised; thus, the bids were based on very dissimilar assumptions regarding population and customer growth, future consumption patterns, leakage targets, and macroeconomic variables (e.g. CPI). The differences in some of these factors reached almost 50%: thus, the resulting bids were not comparable. This inconsistency clearly led to the winner's curse: the concession-granting authority is likely to accept the most optimistic, rather than the best, proposal. An after-the-bid adjustment could standardise all these variables, but it would be preferable for the bidders to initially know (and follow) this framework. The choice of a particular pattern can benefit or harm a particular bidder. However, this adjustment procedure is clearly superior to the first one, though the selection of the final winner might be challenged on the basis of a change in the evaluation procedures. Thus, the adjustment process should have been announced in advance. Of course, if that is the case, the bidding document could just specify key assumptions (like population and consumptions forecasts), since these will only be adopted for the purpose of bid evaluation not to assume the risk associated.

The second problem relates to the remaining (sub)criteria, which were not appropriate for a PPP. Part of these subcriteria constituted risk to be borne by the private firm. In addition, most of the other subcriteria should have been imposed and not subject to competition. They led to excessive discretion and greatly complicated the evaluation process. The bidding documents expanded to thousands of pages, raising the preparation

costs as well. Furthermore, bidders copy the text of each subcriterion from previous bidding activities and do not bring any added value. In addition, neutral criteria should also be avoided: for example, when failure to fulfil a certain goal implies that the bidder is excluded from the bidding process. Finally, it should be stressed that the subcriteria should be assessed with an output based approach rather than one that emphasizes inputs. For example, the amount to be invested was given primacy, but what if the investment is excessive (or unnecessary), as when innovations bring down capacity expansion costs?²⁴ Also, investments after the execution of the plan (those capacity expansions after 25 years) are not adequately evaluated in the tender; perhaps for this reason, all the bidders proposed minimal investments after this point in time.

At first glance we might think that the weights given these subcriteria are small, so these elements are unlikely to affect the choice of the winner. This conclusion would be incorrect. These subcriteria are almost always evaluated in a comparative basis where there are usually 5 classifications, such as very good, good, reasonable, weak and very weak. The difference between very good and very weak counts 100% of its weight. In the average tariff, normally the one classified in first place gets 100% but the last one can have nearly 90%; for this reason, the weight of 70% is not as relevant as it seems *a priori*.²⁵ The subcriteria (flawed as they are) did matter in the final evaluation.

The third problem is that the criteria evaluated did not consider common problems of PPPs, like the probability of renegotiation (and associated events). The robustness of the business case to potential adverse situations was not evaluated and the associated adjustments required for restoring of financial equilibrium were not taken into account. The documentation required in the subcriteria related to financial and contractual strength mainly focused on the equity put into the project by the private firm and to the letters from banks regarding project financing. These elements are indeed important, but the former is nearly always neutral because rather than a firm commitment, the bidder only made known its financing intention.

b) Managing and sharing the risk

The second major failure of this regulatory contract is that the risk is not shared appropriately with the private sector. In fact, according to European law, this contract should not be considered a concession since the private sector does not bear the major risks. If we examine the clause regarding the restoration of economic and financial equilibrium in the public tender and translated in the signed contract, we observe that the most important risks are transferred to the municipality (See Table 2).

²⁴ Similarly if sub-contractors (including subsidiary of the private companies) are not handled via arms-length transactions that minimise cost, the cost of meeting expansion targets is likely to escalate.

²⁵ Often, there is a maximum tariff, resulting in little room for maneuver by bidders. In this circumstance the average tariff proposed is quite similar for the bidders.

Table 2 – Risks affecting the financial and economic equilibrium of the PPP

Changes requiring restoration of financial/economic equilibrium	Risk
Change greater than 20 % (up or down) of the annual volume of water distributed predicted by the bidder	Consumption (demand)
Change greater than 20 % (up or down) of the annual volume of wastewater collected predicted by the bidder	Consumption (demand)
Expansion or reduction of the system scope concerning the works predicted by the concessionaire	Several
Change of the amount of investments proposed by the business case of concessionaire	Several
Meaningful change of the rules or legislation which leads to the alteration in equipments and procedures	Legal/regulation/operation
If the concessionaire has to bear charges related to the factors that could not be predicted at the date of contract signature as, for example, new taxes, tariffs or taxes determined by new legislation	Legal/regulation
Change greater than 20% of the annual average value of Euribor (6 months) when compared with the previous year	Financing
If the price of wholesale services (water and wastewater) suffer a change different from the one proposed at the date of public tender	Operation

If we consider the demand (consumption) risk, the scheme displayed in Table 2 is seen to be highly perverse: encouraging excessive optimism and exacerbating the winner's curse.²⁶ The PPP granting authority is doubly penalised, not only in the hypothesis of not choosing the best bidder if it predicts an optimistic volume of water billed but also as a higher probability of a need to revise the contract to achieve the financial and economic equilibrium of the PPP. Most of the other risks, except those related to unilateral changes by the municipality should be borne by the private sector. For example, with this contractual clause, the private firm does not have incentives to predict other investments beyond those compulsory in the public tender documents. The consequences are quite visible since their inclusion in the bid diminishes the likelihood of being awarded the concession. The best strategy for the bidder is to negotiate directly with the municipality without competition after winning the bid. Of course, legal and the regulatory risks can be allocated to the public sector, or preferably passed onto customers. For such contingencies, it may not be necessary to deal with a negotiation. The contract signed between the private company and Municipality A also allocates rights of way or eminent domain (expropriation) and *force majeure* risks to the municipality. For the latter risks acceptable reasons may exist; for the former, the rationale is less clear, although in this case the private sector upholds the compulsory need for public rights of way contained in the law.²⁷

²⁶ In several contracts in the past the percentage foreseeable was of 10%. This absurd value means that if a rainy year is followed by a dry year, the economic and financial equilibrium is able to be renegotiated and re-established.

²⁷ The expropriation risk is one that the public sector supports in the water sector, since historically it has great experience in such negotiations; it is better to have local land owners bargaining with the office of the mayor of the municipality than with a manager of the private infrastructure operator.

The issue of risk allocation is critical in PPP contracts, due to three major reasons. First, a better allocation reduces economic costs. Second, it provides incentives for a sound management of the PPP. Third, it mitigates the need to enter a renegotiation processes. Again, the authors emphasize the serious consequences that inappropriate assignment of risks brings to the public partner; for the public interest is harmed by excessive (and unnecessary) dependence on bilateral bargaining.

c) Monitoring Contracts

There are three major issues related to monitoring contracts: application of sanctions, early termination, and investment plans (and values at the end of the contract). This particular contract has problems with the application of sanctions. In addition to the reduced values (the more serious correspond to about 1% of an annual turnover), the scheme presumes that the public sector will actually apply a sanction to the private firm which has available a set of appeal mechanisms that may stop the process.²⁸

However, the application of sanctions is almost impossible. The major explanation is that the burden of proof resides with the public sector rather than to the private operator. If this was reversed, the situation would be different. It is reasonable for the private firm to have various ways to defend itself, but the application of sanctions should be automatic, particularly those related to the quality of service (for example, where customers receive a payment if operator does not keep an appointment). Alternatively, there could be a change in the annual rent payments to the municipality, reflecting penalties and the possible performance rewards.²⁹

A second issue is the possibility of earlier termination of the contract at initiative of the public partner. In the past, this situation has been quite harmful for the public sector. The conditions of early termination have tended to be draconian, including significant compensation for the operator, reducing the value of this mechanism for the public partner. Consequently, in Portugal there has never been a PPP contract termination in any sector (transportation, energy, health and environment)! The particular contract for “Operator A” includes return of not only the non-depreciated investments made and the debt payment, but also the net present value of the “annual lost returns on equity” for all years since the moment of termination until the end up of the contract (predicated on the business case) and 20% of technical assistance contract for that period (even though no services would be rendered).³⁰ This was an improvement over other municipalities, since for other contracts this value attains values of 30% or more of the turnover in each year (in addition to the non-depreciated investments and the debt payment).

Such language can be construed as another regulatory contract failure. The possibility of termination by the public authority can be controversial, but the conditions imposed

²⁸ For this reason, in Portugal, fifteen years after the first concession contract signature, no sanction had ever been applied. Perhaps this result reflected outstanding operator performance, though this is debatable.

²⁹ Note that the issue of service quality monitoring, is particularly troublesome under regulation by contract. In Portugal it is mitigated by the existence of a regulator (IRAR) that carries out sunshine (name and shame) Regulation which has proven to be relatively effective (Marques, 2008b).

³⁰ Since the technical assistance contract represents 4% of the turnover, it represents 0,8% of the turnover in each remaining year.

under the contract for municipality A make it impossible for a municipality to cause early termination of the contract. This weakens the performance of PPP projects and is detrimental to the public interest. Why does not the private firm support at least part of the risk? Are current terms and conditions legitimate? A more balanced solution might allow for the non-amortized investments to be returned to the private operator, along with a sharing (for example 50%) of the net present value of the (expected) equity returns for all years between the moment of termination until the deadline of the contract end. Such an early termination penalty limits opportunism by the municipality, while making the threat of early termination credible.

Finally, the supervision of the investment plan and the quality of the assets warrant attention. There are clauses in the contract which regulate the transference and the state of the assets (in particular the renewal), imposing a requirement that investments should be maintained to have a life expectancy comparable to two thirds of their life cycle. This implies significant investments which should be supervised by the public authority. However, this particular contract did not determine how this would be done; nor did it specify the consequences if the private sector was unable to fulfil its investment obligations. What are the incentives to maintain the network when the concession nears the termination date? In the authors' opinion, outcome targets should be imposed rather than investment obligations. However if minimum investments were predictable, at least in the renewal period, there would be the possibility of mitigating conflicts, discretion and misunderstandings in future bidding processes.

4.2 An Institutionalised PPP: Municipality B

Only seven public biddings of institutionalised PPPs were launched from 1998 through 2008. Although the public tender documents were similar, some of them allow for a second stage of explicit negotiation. When both partners fully understand the project (absent collusive behaviour) the two bids which pass into the second stage improve significantly.³¹ Usually, in the second stage the criteria negotiated consist of the value of shares payment if the bids are similar.³² However, the bidder(s) might be asked to improve a particular criteria to a higher desired level or, at least, to the level of the other bidder. This process is highly complex; municipalities tend not have competencies to perform these tasks adequately. The public partner is often myopic and politically-driven: myopic insofar as few resources are devoted to bidding document preparation and proposal evaluation and political in that elected officials prefer advice from those they trust but who lack expertise.

Consider a recent public bidding in Municipality B.³³ Municipality B called for an institutional PPP (mixed company) which included water, wastewater and stormwater services. The private firm would have 49% of the shares, with the municipality retaining

³¹ In the water sector it has been usual to have two bidders, but there can be more. In a high-speed railway PPP launched recently in Portugal some argued that three bidders would significantly improve competition.

³² This is called the BAFO, i. e., the 'best and final offer'.

³³ Recall that we have opted to keep the municipality anonymous.

the remaining 51%. The term of the PPP was indefinite³⁴; the municipality would only negotiate with the firm classified in second place if the negotiation with the winner was not successful.³⁵ The PPP encompassed more than 30,000 customers and included wholesale and retail segments. The municipality had a set of critical investments to be carried out representing about 60 million Euros, mostly in wastewater infrastructure. The bidders were required to make these investments and to reach a pre-defined level of coverage in the first 6 years of the PPP. The municipality also asked for an up-front single payment of 18 million Euros. Although the source of water was inexpensive, at that time, revenues from customers were less than costs. In addition, the tariff system, which had not been changed for many years, was imposed as maximum in the public bidding. Six bidders participated in the public tender.

a) Access to the market

The institutionalised PPP model has some advantages when compared with the concession model. To create the mixed company (and to call for bidding) it is necessary to present an economic and financial viability study (business case) which allows for the municipality to better understand its situation; similarly, the information provides bidders with substantial data. Yet, the process can have a perverse effect, as occurred in this case. For example, the up-front payment of 18 million Euros to the municipality did not include a commensurate increase in the average price. The evaluation criteria, despite having a better structure than in typical concession contracts, still had problems. In general, the contract documents, including the bidding documents in mixed companies, are not subject to analysis and comments by the regulator. In this particular case, however, the municipality asked IRAR for help in the defining criteria and subcriteria. Table 3 presents the criteria, subcriteria and the respective weights adopted.

³⁴ On the whole the PPP is established for a specific period, for example 30 or 40 years. This option was not the adopted in this case.

³⁵ This scheme is slightly different from usual arrangements because although two bidders go on to the second stage, negotiations with the second only occur if the negotiations with the winner of the first stage do not yield a mutually acceptable contract. Having a potential rival “in the wings” puts some pressure on the first stage winning bidder to bargain in a reasonable manner.

Table 3 – Criteria and weights for an institutionalised PPP

Criteria	Subcriteria	Weighting
A) Average tariff		50 %
B) Appropriateness of plan the investments proposed		20 %
	B. 1) Technical quality of designs	30 %
	B. 1.1) General design of the infrastructure	60 %
	B. 1.2) Survey of current situation and description of infrastructures assets	40%
	B. 2) Scheduling of work tasks	40 %
	B. 2.1) Management, supervision and control of work	60 %
	B. 2.2) Management of contingencies in work	40%
	B. 3) Specifying the required service coverage targets and linking these to compulsory investments	30 %
C) Quality of bid		10 %
	C. 1) Procedures for meter reading, billing and collection	20%
	C. 2) Procedures for receiving, processing, and addressing complaints	20 %
	C. 3) Control of quality	20 %
	C. 4) Training plan	20 %
	C. 5) Information System	10 %
	C. 6) Strategy to pick up new customers	10 %
D) Economic and financial viability study for a period of 30 years		10 %
	D. 1) IRR of the project	40 %
	D. 2) Equity to total assets evolution	20 %
	D.3) Return on equity evolution	10%
	D.4) Appropriateness of the structure of costs	10%
	D. 5) Financing structure	10 %
	D. 6) Appropriateness of the financial projections, taking into account the proposed investment plan	10 %
E) Proposal of statutes and shareholders' agreement		5 %
	E. 1) Governance structure of the mixed company and conditions for nominating members of governing bodies	50 %
	E. 2) Conditions for the municipality call option	30 %
	E.3) Proposal of fair distribution between shareholders	20 %
F) Statements of commitments of guarantee of investments		5 %
	F.1) Quality of bank which provides the letter of credit	50%
	F.2) Quality of the letter of credit	50%

Table 3 contains problems that can result in the selection of a winning bid that is not necessarily the “best”: some criteria are inappropriate in that they do not differentiate among bidders or merely complicate the evaluation process. For example, consider the quality of a bank. How are points to be awarded if the banks are all regulated by credible oversight agencies? Most of the subcriteria for B (appropriateness of the proposed investment plan) and C (quality of bid) are either arbitrary or non-informative.

The items only increase the complexity of evaluation, foster undue discretion, and raise the cost of bid preparation. However, the most serious problems occur with the more important criteria: A (average tariff), D (economic and financial viability) and E (governance and shareholder benefits).

The average tariff is computed as usual: the ratio of the net present value of revenues and the cumulative volume of water billed. However, only the revenues of water and wastewater activities were included; stormwater revenues, which by law are not directly billed to the customers, were not included. Nevertheless, the municipality (with taxpayer funds) can transfer to the mixed company the amount corresponding to stormwater cost. For this particular bid process, this portion was not evaluated; yet, this component differs dramatically among bidders (a fivefold difference between the “best” and the “worst” bid). Since some bidders recognised this inconsistency, they took advantage of the scoring system by increasing substantially payments for this particular service.

Another problem with this specification of subcriteria is that the economic and financial viability study of the company comprises part of the bidding document; therefore all bids should be based on its pre-specified assumptions, including population forecasts and expected trends in consumption *per capita*. Nevertheless, there was room for creative accounting in the evolution of these variables between the first and the last year. As it would be expected, the various bids reflected some important differences, making them non-comparable. Furthermore, the bidding document (base case) study and associated assumptions justifying the 18 millions Euro payment (and only a small price change) was very optimistic, leading to unrealistic volumes of water billed. Consequently, the business case would need to be altered within a few years of the partnership. Hence, it would be crucial to give greater weight to the conditions demanded by the private firms to participate in this game, for example the internal rate of return of shareholders and other financial indicators that make the mixed company vulnerable. The internal rate of return of the project is included but it is only worth 4% of total weight. This indicator may (or may not) be not be the most appropriate indicator when considering the implications for renegotiation and re-setting tariffs. The return on equity is important as well, but has a weight of just 1%. By de-emphasizing relevant factors and giving weight to less important (or less discriminating elements), the system seems designed to fail in the search for the “best” bid.

One critically important aspect of the evaluation is the cost structure, which is only worth 1% of this particular evaluation scheme. In addition to the traditional costs, which should be analysed, particular features determine whether a bid is good (realistic) or bad (likely to lead to an unsatisfactory outcome for the winner, requiring subsequent renegotiation). For example, the charges for the stormwater activity and all the fees related to management, technical assistance and other charges (which can amount to substantial sums) are evaluated here with a weight of 1%. Other concerns include the structure of financing and the end-point: whether shares in the mixed company (49%) must be re-purchased by the municipality or are automatically transferred to the municipality. This is also a crucial issue which limited comparability of the bids. Although this feature could be defined in the bidding document, the weight of 1% is far too low.

Last (but not the least) the weight given to the proposal of statutes and shareholders' agreement is unreasonably low (only 5%). In this kind of PPP, the regulatory contract corresponds to the shareholders' agreement (and also to the statutes) where the relationship between the partners is established, and the operating rules for the company are defined (including the allowed rate of return and the financial indicators that affect tariff reviews). In addition, the shareholders' agreement specifies the nature of the call option. As time passes, the winner's initial bid loses importance as investments, tariffs and other conditions are changed. However, the statutes and the shareholders' agreement remain in force. These documents regulate the PPP: they should not be of minor importance in the evaluation.

b) Managing and sharing the risk

The problem of risk sharing is more serious in the case of institutional PPPs. Indeed, mixed companies do not bear risks: they are transferred to customers. The bidding documents identify the situations that constitute the causes for restoring the financial and economic equilibrium of the mixed company considered here, as highlighted in Table 4.

Table 4 – Risks affecting the financial and economic equilibrium of the PPP

Changes requiring restoration of financial/economic equilibrium	Risk
Abnormal change of volumes not predicted in the economic and financial viability study of the public tender	Consumption (demand)
Significant expansion of capacity requirements not predicted in the Plan of Investments	Several
Meaningful change of the rules or legislation which leads to the alteration to the conditions reflected in the initial bid	Legal/regulation
If the mixed company has to bear charges related to the factors that could not be predicted at the date of shareholder agreement signature as, for example, new taxes, tariffs or taxes determined by new legislation	Legal/regulation
Change greater than 30% of the annual average value of Euribor (6 months) relative to the date of signature of financing contract	Financing
If there is any unilateral change initiated by the municipality, implying changes in the business case of contract	Unilateral changes
If some form of force majeure takes place	Force majeure

These clauses relate to almost all the risky situations, though with some imprecision. However, the shareholder agreement document clarifies these circumstances by establishing the conditions where a change in the proposed main financial indicators is recovered in the next tariff review (annual). In this way, the rate of return and other indicators are always guaranteed. Note that the risks are not supported directly by the municipality and that the benefits of this arrangement belong to the municipality as well (51%), although management and other fees paid directly by the mixed company accrue to the private firm and its managers. However, customers bear the risk and costs can drift upwards, leading the authors to conclude that the public interest is harmed by poor contract design in this instance.

As mentioned earlier, the issue of risk allocation is key in PPP projects. In line with the literature, these contracts have a high failure probability (Vining and Boardman, 1989; Jamison *et al.*, 2005). Since the municipality is inside the mixed company, there will be political and ethical difficulties that may generate controversies due to the duty to protect the public interest and simultaneously remain loyal to its partner, (especially because of its co-responsibility for key decisions). Furthermore, a dispute leading to a deadlock may compel the municipality to purchase shares under the call option, which is unacceptably costly in economic terms. Thus, this category of PPP yields an inferior performance when compared with the other kinds of PPP or even with direct public sector provision.³⁶

c) Monitoring the contracts

Monitoring institutionalised PPPs is not easy. The public partner responsible for this role is part of the process and so have more responsibilities than the private partner. Hence, it is unlikely that it will apply sanctions or take measures against itself. As it is co-responsible for the activity of the mixed company, it tends to accept proposals to raise tariffs without much resistance. The existence of an external regulator provides oversight in some countries; however, in Portugal, such regulation is not possible yet because it interferes with local autonomy. The public partner is held accountable periodically by the voters in elections. However, given asymmetric information between voters and insiders, political leadership is unlikely to be penalised unless performance falls far short of expectations.³⁷ Service quality is not so troublesome since the private firm is interested in increasing capital expenses and in over-capitalisation if the return is greater than the cost of capital (Averch-Johnson Effect). In addition, often there is a contractor who promotes investments because of its higher profit margins.³⁸

The problem of contract renegotiation and tariff adjustment is related to the call option. However, in this case of the mixed company, the problem is more serious since there is no end-point for the PPP: the call option works as a mechanism for early termination of the contract in concession contract. The problem is that in mixed companies the specified compensation arrangements greatly penalise the public partner. Normally, besides reimbursing the private partner for non-depreciated investments and existing debt, the compensation includes the discounted sum of shareholder net cash-flows which are yet to be received (say, for 30 years), plus the discounted residual value plus a percentage of the turnover of previous or subsequent years. To complicate the situation,

³⁶ A recent study found negative productivity growth for Portuguese municipal companies, including mixed ones; this performance is worse than under either public or private service provision (Cruz and Marques, 2008).

³⁷ In addition, voters base their choices on a bundle of attributes, where water utility performance is generally unlikely to be a salient feature of political performance. However, widely available yardstick comparisons can at least identify the strongest and weakest performers, which can lead to political challenges of parties in power.

³⁸ Normally, in PPPs the tender includes a construction contract between the bidder and a contractor (which often belongs to the bidder consortia). Experience indicates that the margins that the contractors have are abnormally high (50 to 100% more than traditional public works procurement). One alternative could be to have two contracts, one for investments in infrastructures and other for operating the service (Hart, 2003). Another possibility would be making the public tender compulsory for all new works that may occur *ex-post*. Chong *et al.* (2006) highlight the importance of *ex-post* competition mechanisms for cost containment.

every time parties disagree, there could be a deadlock. The shareholder agreement document states that if the dispute is not resolved within a short deadline (30 days) the public partner must exercise the call option. This requirement resembles blackmail. The private partner forces the public partner to accept its requests, since the terms for a call option normally agreed upon are very unfavourable. Thus the contract is structured so that the private firm is likely to attain its objectives.

5. KEY-LESSONS

The theoretical model of mixed companies (institutional PPPs) does not match the sad reality of contracts as they are actually drawn up. The authors acknowledge the soundness of the theoretical principles, but the problems of designing and implementing regulatory contracts are much more serious than generally recognised in the literature. What can be done? First, it is important to recognise the role of an external regulator from the very start of the tender design process. Second, the design of public tender documents should include automatic mechanisms connected to contract monitoring (e.g. penalties). Third, at all stages procedures should ensure transparency and accountability. For example, tariff proposals should be subject to a standard administrative procedure, including customer and other stakeholder participation; major decisions should be publically approved in the Municipal Parliament, not in closed meetings between self-interested parties. Finally, in addition to being subject to corporate law, the mixed company should fulfil the major principles related to public law, such as the public access to reports. Financial accounts and management plans should be considered to be administrative documents, made available for citizen review and consultation and subject to the Court of Auditors and intervention by other public entities.

The two different PPPs analysed above suggest some key lessons for the future. One can identify eight key principles that are fundamental for successful PPPs and effective regulation by contract.

- 1. Design Tender Documents with Great Care:** The design of public tender documents is the cornerstone of a successful PPP. The signed regulatory contract is constrained by the bid itself, which (in turn) depends on the tender documents. Inappropriate simplifications and poor design at this stage jeopardise the success of the PPP over its economic life. Sometimes, politicians seek discretion in the bid evaluation process, which runs counter to designing and awarding a contract whose aim is to protect the public interest. Template documents should be defined, recognizing that ‘one size fits all’ is not acceptable. The draft of a proposed contract design should be provided as an annex in the public tender documents.
- 2. Establish Accountability to an External Regulator:** Having an external independent entity (regulator) monitoring the PPP benefits citizens. Its involvement should begin with the design of tender documents, since local authorities granting the PPPs are unlikely to have the experience, resources, and expertise required for such work. Even when the law gives final authority to local municipalities, the external regulator can provide a reality-check on the

terms and conditions of the contract and can support the municipality in evaluating the performance of the PPP.

3. Prepare Baseline Studies: There is strong evidence of the need for more comprehensive studies prior to launching a PPP. It is undeniable that one more Euro spent at this stage represents savings of several Euros in the future. The optimal situation should involve developing a public sector comparator (a baseline) and providing bidders with a template for a business plan that would pass a benefit-cost test. Sometimes this is not possible because the decision of for a PPP is political and irreversible and does not depend on the value for money of the project. At a minimum, the documents should provide complete information about trends in infrastructure system operations and the objectives of the PPP. Samples of the kinds of information required during the monitoring process are important as well.

4. Priorize Selection Criteria: The cases underscore the importance of choosing the right criteria for selecting a private partner. A PPP contract is different from traditional procurement (public works or outsourcing contracts). Since the probability of renegotiation and alteration of the initial regulatory premise is substantial, the criteria should include an analysis of how such situations are to be mitigated and when disputes occur, how the public interest is to be defended. In addition, some of the technical and quality criteria should be imposed, and not be subject to competition, since such elements only introduce complicated comparisons across multiple performance dimensions.

5. Facilitate Competitive Bidding: Competition should be facilitated since competition *for* the market is one of the most important benefits of this model. Preferential treatment of particular competitors is totally inappropriate. More bidders for the PPP imply more value for money. Only the documentation strictly necessary should be required, reducing the high costs for participating in the bidding process. Excessive bonding requirements for the tender stage and other measures that reduce competition should be avoided. The bidders should also understand that the idea behind a PPP by the public sector is a partnership where both sides benefit.

6. Allocate Risks in an Explicit Manner: An appropriate allocation of risks is fundamental for the success of the PPP, not only to minimise the likelihood of renegotiation but also to save money (mitigating risks, thus reducing the economic cost of bearing risk). Thus, the contract should provide the right incentives to the private partner. A risk matrix should be provided as an annex in the public tender documents, allocating each risk to the respective contractual clause.

7. Simplify Monitoring and Sanction Procedures: The process of monitoring must be simplified (to reduce red tape and to identify clear contract violations). Therefore, the application of sanctions related to customer service quality should be implemented automatically, along with performance rewards at the organisational level. It is easier for the private sector to increase collections,

reduce water losses, and perform other aspects of due diligence than for the public partner to do so.

8. Ensure Transparency: All the activity of a PPP-holder should be endowed with transparency. For example, procedural transparency should be present during the process of setting prices, evaluating metrics, and approving business plans: all the stakeholders deserve to be informed of actions affecting their welfare. Publicizing PPP firm activity promotes accountability and facilitates yardstick comparisons (which are essential for public input).

6. CONCLUDING REMARKS

This paper discussed the regulatory contracts for PPPs in infrastructure industries. Using two cases from the Portuguese water sector, two approaches of PPP and regulation by contract were compared: the purely contractual PPP (concession) and the institutionalised PPP (mixed firm). We started with a theoretical discussion on the merits and shortcomings of PPPs. The concept of PPPs has positive elements: expanding the use of this regulatory and public procurement model is justified by its sound principles. However, PPPs have problems connected to the design and incompleteness of contracts which, as a rule, start when the public tender documents are performed.

Next, we analysed in more detail the different kinds of contracts with regard to their extension: balancing resources required for rebidding contracts against incompleteness (as well as the existence of opportunism *ex-post*). We also tried to explain why both of these contracts are popular in infrastructure services when some of relevant literature points out that they are inappropriate for these industries. The major plus is associated with financing, although funding capital investments might be handled in other ways. In section four major failures in the regulatory contracts are analysed. We divided these into three kinds, one related to the access to the market, another to risk sharing and the third one to contract monitoring. Although they are related, the failures in each one are sufficient to turn a PPP into a nightmare option.

Then we turned to two archetypical examples in section five, where we analysed failures concerning the two regulatory contracts. We adopted an empirical view to highlight the extent of these failures in detail and some insights are provided on how should they be avoided or mitigated. Comparing the two kinds of contracts, the institutionalised PPPs seem to have more failures and to be more detrimental to the public interest. These costs can be mitigated by recognizing that successful PPPs depend on 1) carefully designing public documents (including a contract draft and associated templates); 2) introducing an external independent entity (regulator) to assist the PPP process; 3) sponsoring comprehensive studies prior to launching the PPP (including the public sector comparator and cost-benefit analysis); 4) choosing the right criteria for awarding the PPP; 5) stimulating competition (since it provides value for money); 6) defining an appropriate sharing of risks and including the risk matrix in the public tender documents; 7) simplifying the monitoring process and associated penalties

and rewards and 8) ensuring that the major activities of the PPP-holder are transparent, including formal opportunities for public participation.

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