

Public-Private Partnerships in the Transport Sector and the Draft Turkish Law

Elisabetta Iossa¹ and David Martimort²

April 15, 2011

A paper prepared for the World Bank

Abstract

We discuss potential benefits and costs of public private partnerships (PPPs) in the transport sector, building on the literature and lessons learned from the experience of others. We focus on (i) allocation of risk between the private and the public party; (ii) the payment mechanism; (iii) use of private finance; and (iv) the institutional framework, in particular public sector governance and accountability. We found that the risk transfer and pay-for-performance principles that characterize well-designed PPPs can provide incentives for the contractor to take into account the long-term benefits and costs of a PPP, from building through maintenance and operation. PPPs can deliver on their potential when demand for a service is stable and easy to forecast, the public authorities are competent to properly design tender procedures and contractual agreements, the authorities can commit to the contract, and political institutions are stable, reputable, and accountable. We then apply these insights to the draft PPP law in Turkey.

I. Introduction

This paper applies economic theory and lessons learned from previous projects to analyze the potential benefits and costs of public-private partnerships (PPPs) in the

¹SEFEMEQ, University of Rome Tor Vergata and Brunel University, CMPO and EIEF. Elisabetta.Iossa@uniroma2.it.

²Paris School of Economics-EHESS. Email: david.martimort@parisschoolofeconomics.eu.

transport sector and uses the results to assess Turkey's draft PPP law.

Background

PPPs as a form of procurement have received increasing attention over the last 10 to 15 years as part of a trend in which competitive tendering practices are gradually replacing direct contracts. In a PPP a public authority (local or central government or government agency) enters into a long-term contract with a contractor (one or a consortium of firms, often uniting a construction company and a facility management firm) to deliver a public service.³ A PPP contract typically lasts 20 to 35 years. The supplier designs the project, builds the infrastructure, and then manages and maintains the assets. Common contractual models are DBFO (design, build, finance, and operate); BOT (build, operate, and transfer); and BOO (build, own, and operate); all bundle building and operation into a single contract.

Typically, but not necessarily, the contractor also is responsible for financing the project. The contractor's revenues come from either users' fees or the government in the form of shadow tolls or availability payments; they are paid only when the service is up and running. Compared to traditional procurement, a PPP contract transfers to the contractor more risk (typically, construction and operational risks) and responsibility. When the contract ends, assets are transferred to the government on terms set out in the contract.

Worldwide Experience with PPPs

In Europe, the oldest highways and rail networks were traditionally built using public funding, whether regional, national, or municipal. Most road or rail projects currently

³Our focus is on for-profit firms. For a discussion of PPP benefits and costs when the contractor is a non-profit firm, see Bennett and lossa (2010).

underway follow this pattern. However, in 1992 the Private Finance Initiative (PFI) pioneered the PPP approach in the United Kingdom (UK) (Grout 1997); it soon spread to the rest of Europe, especially Spain, Portugal, Italy, and France, and is now being used to build transport infrastructure in Eastern European countries.

Using a proprietary database of PPP investments in Europe between 1995 and 2009, Kappeler and Nemoz (2011) found that between 2005 and 2009 transport-sector PPPs represented 41% of the number and 76% of the value of all PPP projects in continental Europe. Outside the UK (the biggest user of PPPs, representing about 10% of total investment in the transport sector in Europe), roads dominate transport PPPs, representing more than two-thirds of total PPP projects in number and value. Urban rail PPPs increased compared to the previous five years, and bridge, tunnel, and airport projects decreased. Transport PPPs soared in 2007–08 but in 2009 returned to the levels seen in 2001–06. Transport is the largest PPP sector in Europe; its share by value holds steady at just over 50%.

In the U.S. transport PPPs were initiated in the 1970s for inner-city infrastructure (Rosenau 2000) and are currently used primarily for highway and road projects (CBO, 2007). In Australia, New South Wales was the early adopter in the 1990s, opening the way for a series of toll roads and infrastructure projects.

In developing countries there has been a dramatic increase in private sector involvement in building and funding infrastructure over the last 20 years; the private sector has invested US\$180 billion in transport since the 1990s. Latin America accounts for 40 percent of all PPP transactions. Most are road projects, followed by railroads; in developing countries road PPPs amount to 47 percent of the value of total private projects and rail PPPs amount to 20 percent (Estache, Juan, and Trujillo 2008). According to the Private Participation in Infrastructure Project (PPIAF) Database, worldwide, transport saw the fastest growth of projects with private participation in 2005–06. Investment doubled in 2005 and rose another 30 percent in 2006, to almost

US\$30 billion. Investment in airports, railways, and seaports was substantially higher, though investment in roads declined.

PPP Effectiveness

There is no conclusive evidence of how well PPPs perform generally in the transport sector, though there is evidence that some have been successful. For example:

- The 2000 TransMilenio bus transport project in Bogotá significantly improved the efficiency, safety, and environmental impact of the system.
- The \$90m PPP contract for the Washington, DC, Metro led to a 600% increase in property values in areas affected.
- The 30-year contract for the port of Colombo in Sri Lanka saw the construction of three container berths and one passenger berth; the port remained operational throughout and throughput increased by 350% from 2000 to 2004.⁴
- In the seven years following its privatization, the PPP operator for the Italian motorway network reported that mortality rates fell by about 50 percent and usage of the electronic toll payment system shot up by 227%.⁵

PPP projects, such as the Perpignan-Figueras and HSL Zuid schemes, have often been delivered on time.⁶ The Australian Partnership Victoria initiative is considered to be a success, thanks to well-designed incentives, robust legislation, and contracts where outputs were well specified. Another success was the 13 km. high-level Confederation Bridge between New Brunswick and Prince Edward Island, one of the first Canadian procurements to use a long-term PPP to build and operate a facility (Conference Board of Canada 2008).

⁴See the case studies and reports of the National Council for Public Private Partnerships (NCPPP) at <http://www.ncppp.org/aboutus/index.shtml>.

⁵See www.autostrade.it.

⁶ *PPP Bulletin International* (Summer 2010) ~~Vol.~~ 1(4).

But there is also evidence of PPP failure, mainly because

- Weak governance leads to inefficient tender procedures, ineffective contract design, poor risk allocation, and badly designed incentives.
- High political risk makes it difficult for governments to fully commit to the project, its timing, and the contract.
- Inadequate institutions render contract enforcement costly and uncertain.
- The complexity of the project leads to high cost overruns and incorrect demand forecasts.

These factors undermine incentives for the contractor to perform and reduce the interest in projects of firms and investors. In numerous instances projects have been abandoned or brought back in house or prices have been unduly high because of lack of competition.

In the DFBO concession for the 43-km M1–M15 motorway in Hungary, for example, many commercial vehicles continuing to use an alternative toll-free road, to the point that the public party had to take over the concession and debt obligations (European Commission 2004). In the UK, because of cost overruns one of the contractors for the controversial London Underground PPP project filed for bankruptcy, leaving taxpayers to pay the bill; the service was brought back in house. The channel Tunnel Raillink suffered delays and cost overruns and was eventually restructured in 2007. The PPP operator for London Underground, Metronet, went bankrupt, leaving taxpayers to pay the bill. In the first year traffic on the Taiwan high-speed rail scheme was 32% below expectations, and the Sydney Metro project, believed to have cost A\$500m, collapsed in February 2011.⁷ Among other big projects that failed in Australia was the Cross City

⁷ Ibid.

Tunnel, which went into receivership in December 2006 owing \$570m.⁸

Structure of the paper: In what follows, Section II discusses allocation of risks between public and private sector in typical PPP projects and how payments must be structured to allocate risks efficiently and provide incentives for the contractor to perform. Section III analyzes the benefits and costs of using private investment to finance the infrastructure for provision of a service. Section IV discusses the role played by the quality of national institutions when the PPP contract is auctioned, with special attention to the political risk PPP contractors face and their potential consequences; governance issues especially as they affect commitment and renegotiation; the potential for corruption in PPP projects; and specific issues related to forming and training public authorities to manage PPPs and creating a system where they are accountable for their actions and therefore have incentives to ensure that the project is successful. Section V applies our insights to the draft PPP law in Turkey, and Section VI draws conclusions.

II. The Payment Mechanism and Risk Allocation

Objectives

The payment mechanism and the allocation of risks are central to PPP agreements. Payment must be structured not only to ensure that the project is bankable and the contractor gets a fair return on investment but also to offer effective incentives for the contractor to undertake the project. This requires careful thought about how different payment structures affect and are affected by the risk allocation and how the risk allocation and thus the payment structure need to be designed to attract potential contractors. In particular, the payment mechanism needs to ensure that the contractor

⁸ *Private Finance Journal*, September 2008.

has incentives to

- Adopt innovative approaches that reduce costs.
- Adopt innovative approaches that improve quality.
- Plan for the long term, taking into account both whole-life costing and whole-life benefits.

Providing incentives to the contractor to reduce costs is crucial. A contractor that anticipates that costs of the project will be low will bid more aggressively, which will result in a saving for the authority. The heavier the competition at the tender stage, the more future efficiency gains the authority will be able to appropriate. When the tender attracts little competition, the contractor will appropriate most of the efficiency gains in the form of higher profits.

As for incentives for the contractor to improve quality, in PPP tenders contractors compete for the right to provide the service, but once a contract has been awarded, the contractor is in a monopoly position for the duration of the contract. Throughout, the contractor will consistently aim to profit by reducing the costs of providing the service; if there are no clear incentives to promote quality, the contractor will be inclined to cut costs at the expense of quality. Even when consumers pay a user fee for the right to obtain the service and may therefore want to reduce demand when service quality decreases, the contractor may still be tempted to reduce quality excessively. The lack of competition will in fact cause demand rigidity, making it difficult for users to react effectively to low quality and higher prices. Think of train commuters with no alternative means of transport.

With regard to incentives for the contractor to take into account whole-life costing and benefits, better but more expensive designs may be cheaper to maintain, and a contractor who does not have a long-term view will have no incentive to choose the better design. This is in fact one of the main differences between PPP and traditional

procurement. The main feature distinguishing PPPs from more traditional procurement methods is the bundling of project design, building, and operation into a single contract. In traditional procurement design/build and operate are usually undertaken by two companies with separate contracts, or one is done in-house. A problem with traditional procurement therefore is that the firm that designs or builds the infrastructure may have incentives to cut quality to save on the cost of construction. The consequence is that five or ten years after the infrastructure is built, the poor quality leads to higher maintenance and operating costs and to expenses that could have been avoided had the construction been done to higher standards.

PPP agreements are intended to prevent this problem by bundling the design, building, and operations into a single contract and structuring payment in such a way that when the project is designed or the facility built, the contractor has incentives to take into account how shortcuts or impairment of quality at that stage will affect maintenance and operating costs down the road. This insight is reiterated in the literature on public procurement and PPPs (see Benz, Grout, and Halonen 2001, Hart 2003, Bennett and Iossa 2006b, Martimort and Pouyet 2008).⁹

The PPP payment scheme must therefore be results-oriented as fixed price arrangements are: payments must depend on output (thus the quantity and quality of the service provided) rather than on inputs (the cost to the contractor of providing the service) and should not be made until the service is provided and the infrastructure is built. Furthermore, the payment scheme must be structured to allocate risks efficiently. How project risks are allocated between contractor and authority is what provides the incentives.

⁹See also Schmitz (2005), who considers the possibility that the second-stage project can be more or less successful or more or less costly depending on the first-stage effort. The prospects of getting operational rents in the second stage are a powerful engine for first-stage incentives.

PPP Risks

PPP projects are complex. They involve design risk, demand risk, operational risk, political risk, legislative risk, risk of mis-specification, risk of changes in user needs, and many other risks. In transport concessions, for example, even when there is a reasonable level of confidence in forecasts, demand can be dramatically affected by competition from other modes, by what is happening in the wider environment, such as economic activity or tourism demand, and by the price of inputs (e.g., fuels). For toll roads, for example, uncertainty often comes from the availability of alternative toll-free roads and from general economic conditions that affect tourism.

The fact that PPP projects are not only complex but also protracted also means that many dimensions of infrastructure construction and public service provision cannot be contracted for because they are difficult to verify, costly to monitor, or cannot be anticipated at the time the contract is written. That makes it crucial to identify all the factors that can enhance incentives for the contractor to deal with all the dimensions that cannot be contracted for.

Contractor actions and choices can greatly impact the demand for, cost, and quality of infrastructure over the duration of the contract. For example, demand is affected by not only the quality of the infrastructure but also by the effort the contractor exerts in providing the service. For roads, the benefit enjoyed by users depends on the safety of the route and thus on the quality of the highway and how well it is maintained. For railways, demand depends on the quality and comfort of the trains, their service reliability, on-train services, ticketing efficiency, and so on. The effort of the contractor affects operational costs; more efficient ticketing systems, better timing of maintenance, computerized booking systems, etc., can all reduce operating costs.

Criteria for Risk Allocation

Efficient risk allocation generally has two objectives: provision of incentives and insurance against risk. Economic theory has therefore devised principles to achieve those objectives or produce an efficient compromise when they are in conflict:

1. Risk should be transferred to the party that can manage it more effectively by undertaking actions or making decisions that reduce the likelihood of adverse events, and by minimizing the consequences of any that do occur.
2. Risk should be transferred to the party most able to bear it, that is, the party that is less risk averse or better able to insure itself against the risk.

Point (1) ensures that incentives are provided through appropriate risk transfer. So, for example, to induce the contractor to take into account whole-life costing, the contractor must be made responsible for any cost increase that arises during construction and operations and can fully benefit (at the operational not procurement stage) from any cost reduction that can be realized by more efficient operations. To generate demand, the contractor must be made fully responsible for any increase or reduction in demand that may arise during operations. And so on.

Point (2) ensures that risk-averse parties are adequately insured against risk. A risk-averse private party that is asked to bear risk for incentive purposes will demand higher compensation as a risk premium. Since the public party is often more risk-neutral than the private party, optimal insurance suggests that the authority retain the risk. To evade a high risk premium for building infrastructure, the contract therefore needs to ensure that the contractor is fully insured against construction cost overruns. To evade a high risk premium for managing the service, the contract needs to ensure that the contractor's revenues do not depend on whether demand is high or low.

Clearly objectives (1) and (2) may be in conflict. If the contract fully insures the

contractor against construction and operational risks, it will have no incentives to contain costs or to increase demand. The conflict can be resolved by (a) transferring to the contractor part of the risk related to events it can control (see point (1)), and (b) insuring the contractor against risks that it cannot control. This does not weaken incentives, since the contractor cannot control the risks, but it helps to increase the value of the contract to the contractor. That can push up initial bids, or lower the initial price paid to the private party in a procurement agreement. More aggressive offers will more than compensate the authority for retaining the risks.

Options (a) and (b) are effected through the design of the price mechanism. A risk matrix spelling out how each risk is allocated between the public and private sector should accompany the contract and be consistent with it.

The Payment Mechanism

In PPPs payments to the private party may be based on user charges, availability, and performance, and the contract may allow for some degree of revenue-, cost-, and profit-sharing between authority and contractor. Choices of a payment mechanism relate to risk allocation and thus to different incentives and insurance.

In a payment mechanism based on user charges (real tolls, as for toll roads), the contractor receives revenues solely or mostly from charges to users. These can be independent of consumer type or vary with it, e.g., tolls can vary by vehicle type and time of day. In this case, the higher the demand for the service, the higher the revenues of the contractor; low demand will translate to low revenues. A payment scheme that makes the contractor the recipient of all user charges ensures that the contractor bears all demand risk and the authority none. This gives the contractor a direct incentive to improve performance so as to encourage service usage and increase revenues.

However, transferring demand risk to the contractor is costly for the authority because it raises the cost of capital. Investors in the project will need to be compensated for the

risk *they* bear. A contractor who expects that a project will carry higher risks will bid less aggressively, which will raise the cost of the project for the authority. The greater the risk borne by the contractor, the higher the cost of private capital for the authority, which may have to call for higher user charges to induce firms to participate. Also, contract duration may have to be increased to ensure that the revenue stream is sufficient to repay the investment. Excessive transfer of demand risk can wipe out a project's benefits because cost-covering user charges are so large that users prefer to seek alternative services, thus making the project unbankable.

Because of this trade-off between incentives and insurance, it is generally optimal not to transfer all demand risk to the contractor; the degree of risk transfer can be set higher or lower depending on a number of factors. As discussed by Iossa and Martimort (2011), when demand risk increases or operational risk is high, transferring demand risk becomes more costly (the risk premium increases), so that less risk transfer and weaker incentives are preferable. Less risk transfer is also preferable when the project is particularly complex, no precedent for the service model is available, and forecasting demand is particularly hard.

This suggests that for transport sector PPPs, only when demand can be significantly affected by the contractor's action should the contractor mainly bear the demand risk; otherwise, it should fall on the authority. In the Confederation Bridge project (Conference Board of Canada 2008) most of the project risks were transferred to the consortium, which placed a \$200m performance bond and a \$73 million letter of credit in case performance defaults exceeded \$200m. Reportedly, the project is a success. However, it was argued that too much risk was transferred to the contractor given that it had limited control over demand.

Methods of Payment

In a payment mechanism based on usage (shadow tolls), the procuring authority makes

the payments on the basis of traffic volume. The authority may then recoup revenues by charging users. Usually payments are determined by bands of usage, thus limiting the demand risk transferred to the private partner. Usage payments should carry less risk for the contractor than user fees because the users do not pay for the service, so in principle demand should not be affected by an income shock. Using low usage bands limits the risk to the private party that service demand will be lower than expected (Kerf 1998). In practice, lower bands provide a minimum usage payment to cover debt service but not enough to ensure a positive return on equity. On the other hand, high-usage bands cap the number of users for which the public party should make payments, limiting its financial liability.

In a payment mechanism based on availability, the authority rewards the contractor for making the service available regardless of actual usage. Because its revenues are independent of actual demand, the contractor bears no demand risk. Availability payments are typically used when the contractor cannot affect demand, as in the case of prisons or schools where the central authority allocates the users.

Mixed payment models are also possible; these may vary considerably in terms of risk allocation. Among them are minimum revenue or minimum traffic guarantees, cash subsidies, and up-front payments. Mixed models may have advantages in particularly complex projects, where demand can be affected by the contractor's effort in managing the infrastructure but the complexity of the project makes future demand extremely difficult to forecast. For example, for highways the contract charges a toll to users (as in Italy or France); for airports, the contractor receives a landing fee from airlines and a rental charge from lessees (say, airport shops); for railways, the contractor charges train operators for access to the network and passengers pay the operators for the service. The contractor may also receive a shadow toll from the government (as for highways in the UK). Kappler and Nemoz (2011) report that most highway projects in Europe stipulate up-front grants or discounts on toll revenues. In Portugal, the first toll roads were structured as real or shadow tolls, but in 2009 the payment structure changed to a

revenue model featuring a combination of availability payments and service charges, the proportions of each differing depending on projected traffic levels. Between 1990 and 2006, the majority of roads in Spain had a real toll payment structure, but the 2009–10) infrastructure program shows a move toward availability payments.

There is often the possibility that during the course of a PPP contract the needs of the authority will change, making it necessary to renegotiate some aspects of the contract. It appears that contracts that transfer all the risk to the contractor may be particularly costly to renegotiate (see Bajari and Tadelis 2001). When there is little risk transfer and a more input-based approach, renegotiation is cheaper. In these cases mixed models may be appropriate. Bajari, Houghton, and Tadelis (2007) tested how contractors respond when PPP agreements are incomplete because the initial specifications are changed after the contract is awarded. They showed that bidders respond strategically to contractual incompleteness and that adaptation costs, broadly defined, were an important determinant of the bids observed. Using a sample of US highway contracts, they estimated the costs of adaptation and bidder markups and found that on average adaptation costs account for about 10 percent of the winning bid. By comparison, profit markups based on private information and local market power, which are the focus of much of the literature on optimal procurement mechanisms, are much smaller.

Incentives for Quality

With both real and shadow tolls the contractor bears the risk that demand will not meet expectations, but due to its monopolist position, this does not ensure that it will have incentives to deliver a project that meets quality standards that reflect the priorities of society. To ensure that, it is necessary to link the payment to quality indicators. The same also holds true for situations where the authority bears the demand risk and availability payments are used, or when the risk is shared, because in those cases contractor revenues are less or not at all sensitive to the number of users.

To provide incentives to maximize quality, deductions should be applied to payments whenever quality falls below agreed standards and it is ascertained that this could be attributed to the contractor's effort. For example, deductions can be applied when train on-time performance falls below certain standards, or if there are rail crashes.

Depending on their complexity, PPP contracts may set 30 to 40 performance measures or as many as 300. For each performance measure, the contract specifies points to be allocated to each underperformance incident—the more serious an incident, the higher the number of points. For example, a disruption caused by a train crash might result in the loss of 10 performance points. Delays causing underperformance might cost one. At the end of a set period, usually a quarter or year, the accrued number of performance points is compared to a contractual baseline (setting a baseline helps to define a benchmark). When the number of performance points is higher than the baseline total, the contract sets out by how much the unitary payment is to be reduced.

Individual performance measures, baseline totals, and the equivalent cost of each performance point vary according to the contract (see Serco Institute 2007 for a thorough discussion of performance measures in PPP contracts). In the contracts for the London Underground, for example, the payment structure specified a monthly charge that covered infrastructure maintenance, renewal, and upgrading. The charge would then be adjusted up or down depending on contractor performance relative to the contractual baseline. Areas of performance specified were (i) *capability*, the capacity of the infrastructure, capturing average journey time; (ii) *availability*, the reliability of rolling stock, signalling, track, and station-based equipment; and (iii) *ambience*, the quality of the environment for passengers, including the condition and cleanliness of trains and stations and passenger access to information.

Deductions should be set so as to incentivize performance. Standard moral hazard theory suggests that they should be set so that the contractor will prefer to provide quality rather than incur deductions. If deductions are too low, it may be convenient for the contractor to underperform; if they are too high, risks increase and the contract may

require higher pricing. The deductions must then define the consequences of failure to meet the required quality level. The simplest approach is to categorize various types of performance shortcomings and use a grid of monetary deductions. An alternative two-stage approach is to assign penalty points to the private party any time a performance failure occurs, attaching more points to a serious and recurrent failure, and to set a rule that translates points into monetary deductions. Premiums can also be used to reward the contractor for going beyond the basic service standards.

A performance or surety bond can be used to ensure that construction will be completed if the private party goes bankrupt before the project is finished (Engel, Fisher, and Galetovic 2006). The bond is issued to the public party by a bank, an insurance company, or a specialized surety bonds company that guarantees a payment (typically about 10 percent of the value of the contract); it may also be issued to a private party for replacement and project completion (in the case of surety bond companies) if the original private partner fails to perform. When the public party requires a performance bond from the private party, the risk of losing the bond encourages the private party to comply with the contract (Guasch 2004; Engel, Fisher and Galetovic 2006). It also prevents the private party from walking away from the project if disputes arise. However, as with liquidated damages, a private partner asked to post a performance bond is likely to react by passing through the cost and the risk of losing the bond in the future, so performance bonds are not costless (for a more thorough discussion of liquidated damages and performance bonds, see Iossa, Spagnolo, and Vellez 2007).

Insurance

To ensure that the private party does not bear risks it cannot control, the contract should cover compensation events—events beyond its control that cause delays or increase operational costs, for which the operator is compensated (see, e.g., HM Treasury 2007). Changes in law and inflation indexation clauses typically fall into this category. When a

negative shock occurs during operations (for example, input prices increase, a national strike slows production, or a change in the law increases the cost of operations), the authority compensates the contractor. When there is instead a positive shock (for example, lending conditions improve so that the firm can reduce the cost of capital by refinancing its debt), the contractor shares the benefit with the authority by reducing the price for providing the service.

Because such exogenous shocks are outside the control of the contractor, providing for compensation events does not erode its incentives; in fact, by reducing the noise-to-signal ratio, compensation events clauses in effect reduce the risk premium and the cost of incentives. Letting the firm keep more revenues thus boosts incentives. The payment agreement may contain indexation or adjustment rules. For instance, it may allow for automatic adjustment of tariffs when the exchange rate varies. A typical provision is inflation indexation to adjust tariffs and unitary payments continuously. Since price and cost indexes are widely available, this economizes on transaction costs.

When indexation is used, choices must be made about the price or cost index to apply, the proportion of tariff subject to adjustment, and whether the indexation rule itself will be periodically revised. If the index used, such as the retail price index (RPI), is not specific to the sector its variations probably will not mimic the changes in the private partner's non-controlled costs. As a result, price adjustments may fail to track cost changes, thus distorting incentives. On the other hand, if the index is too industry-specific, its variations could be influenced by the tariff level of the regulated service and so be manipulated by the private party itself (Armstrong, Cowan, and Vickers 1994). The proportion of tariff subject to indexation also matters: to properly hedge against observable, non-controlled cost overruns without distorting incentives, the proportion of tariff subject to indexation should match the ratio of variable to total costs (HM Treasury 2007). Since fixed costs are known in advance, involving no risk, the proportion of the tariff that covers them should not be indexed.

The contract could also allow for periodic price review, say every three or five years. Reviews are useful to ensure that tariffs or unitary payments are adequate to cover long-run changes in a contractor's uncontrolled costs, e.g., technological changes modifying the cost structure, introduction of new inputs whose prices are not well tracked by the chosen index, etc.

A value-testing provision, for instance, sets out how to adjust prices periodically as the costs of providing a service evolve. In value-testing procedures, information on costs is collected directly, so applying the procedures has higher transaction costs than mechanical inflation indexation. But value-testing does have an important advantage: adjusting service charges based on accurate, specific cost information closely tracks the private partner's uncontrolled costs and thus provides incentives to control costs and properly select suppliers.

In practice, the main procedures used to test value are market testing and benchmarking. Market testing ascertains the market value of the main service inputs through a re-tendering to potential suppliers. The information collected is then used in the review of tariffs or unitary payments. In benchmarking, information on market prices of inputs is gathered to evaluate the private partner's costs and adjust prices. In implementing these procedures, the time when price reviews and testing will take place must be decided. There is a trade-off related to the length of the regulatory lag. If the first review is planned for early in the project, an operator could bid aggressively, win the contract with a low bid, but then increase it as the contract is adjudicated and the price is reviewed. If the review lag is longer, the private party is more exposed to the risk of misalignments between the initial fixed price and the operating costs and thus may require a higher service charge.

Further, the price adjustment should not be backward-looking: past changes in costs should not be considered in computing a new tariff. Otherwise the private party will have little incentive to reduce costs. If the private party anticipates that any cost reduction in

the present will lead to a tariff reduction in the future, it may prefer not to make an effort to control costs. Milgrom and Roberts (1992) refer to this incentive distortion as the “ratchet effect.” The situation is the opposite when the regulatory lag is large and the price adjustment is forward-looking—expected future changes in costs are considered when the tariff is set. In this case, the private party does have incentives to control costs because it can reap the benefit of lower than expected costs until the next price review (Laffont and Tirole 1993).

III. The Potential for Private Finance

Private Finance in Practice

We have so far discussed efficiency aspects of the use of PPPs, aspects that should be at the core of the decision whether to use a PPP or a more traditional form of procurement. In practice, though, efficiency aspects have sometimes been secondary. PPPs have mainly been employed out of a need for governments to use private financing for infrastructure.

Governments facing budget constraints, either because of international agreements restraining the level of public debt or because of financial constraints, have looked at the private finance aspect of PPPs as a way to build infrastructure and provide public services without having to incur the initial capital expenditure. However, the saving is only apparent. When private finance is used, governments still eventually have to pay for the infrastructure, either through government contributions *ex post*, higher user fees, or revenues that the government could have earned and did not. Engel, Fisher, and Galetovic (2011) make it clear that there is no advantage *per se* in using private finance. In fact, typically private finance is more expensive than public funds: the cost of raising funds is higher for private investors than for governments because the former are more likely to go bankrupt. Any benefit from private finance thus must come from reasons

other than the simple provision of funds.

The Role of Lenders

In Iossa and Martimort (2008, 2011) we showed that a potential benefit of private finance is the possibility that lenders have expertise in evaluating risks. Outside financiers can condition the repayment schedule on extra information they have about project risks or the contractor's effort. The superior information of the lender, compared to what the public authority can acquire, allows the lender to "complete" the contract with the contractor. With this better information, the extra round of contracting between contractor and financier has fewer costs and more benefits in terms of improving incentives. In this respect, bundling the task of looking for outside finance (whether through equity or debt) and operating assets can improve on the more traditional mode of public procurement, where the cost of investment is paid through taxation, and investment is not backed up by such expertise. With complex projects like PPPs, bundling can also alleviate the uncertainty that might prevent efficient risk allocation at the operating stage, thus enhancing the benefits of PPPs compared to traditional procurement (Iossa and Martimort 2011).

De Bettignies and Ross (2009) highlight another potential benefit of private finance: Even when private investors do not have more information than the authority, private finance may be beneficial if it helps to avoid refinancing of inefficient projects. When inefficient projects are refinanced for political reasons (say, an election is near and the government perceives that it might get more support if a project is completed), giving control rights to private financiers may be beneficial if it "hardens the budget" in the sense that it leads to termination of bad projects. Clearly, a contractor who anticipates that inefficient operations will be shut down also has incentives to improve the project to prevent its termination.

Considerations for the Authorities

The potential costs and benefits of private finance should not be confused with the potential benefits and costs of not using public subsidies and transfers. Whether project costs should be recouped through real user fees, shadow tolls, or even government contributions is a different matter. Governments have sometimes tried to minimize public transfers by forcing projects to be financially free-standing—to rely on user fees to cover the investment. This has created two sorts of inefficiencies: first, user fees have not followed distributional considerations (given the monopoly power the contractor has for the duration of the contract) that reflect societal preferences. Fees have instead been raised to the level necessary to ensure a balanced budget. Using an original database of 5,000 French local authorities to explore the impact of organizational choice and performance as measured by consumer prices, Chong et al. (2006) found that (i) the choice by local authorities to engage in a PPP is not random; and (ii) depending on the choice of PPP, consumer prices are significantly higher on average. While we cannot infer that higher prices were necessarily inefficient, this evidence suggests that to ensure bankability private finance may indeed result in higher prices.

Second, the duration of the contract may have been chosen inefficiently. When government transfers cannot be used to provide incentives, higher investment in infrastructure can be induced either by raising the tariffs charged to users or by increasing the length of the contract. Iossa and Martimort (2008) show that the longer the contract, the greater the contractor's investment, since the benefits accrue over a longer period. But the longer the contract, the higher the risk, especially demand and operational risk, that the contractor must bear. And as the contractor bears more risk, the cost to the authority will include a higher risk premium for the contractor. To discourage excessive risk-taking, less risk transfer will then be optimal, but that will erode incentives for the contractor. Thus, when public subsidies are used judiciously, the length of the contract should maximize the incentive for the contractor to invest in quality infrastructure and cost-reducing activities while also reducing as much as

possible the period during which the contractor enjoys monopoly power.¹⁰ When instead the government chooses the duration of the contract in order to minimize the use of public funds, distortions in incentives arise. With longer contracts signed, project risks will be higher, and less risk transfer to the contractor will be possible, reducing incentives.

IV. The Institutional Framework

The Role of Politics

Government support for PPPs does not always depend on efficiency considerations. In Europe the private finance aspect of PPPs has permitted the public sector to finance construction of infrastructure off the balance sheet, overcoming the constraints on public spending set by the Maastricht Treaty. This has made it more convenient—from an accounting point of view, not in real terms—to use PPP rather than traditional procurement for infrastructure projects. Even countries like the UK seem to have succumbed to the temptation to promote PPP on these grounds (IPPR 2001). This problem has been so generally recognized that in 2004 Eurostat made a decision on the accounting treatment of PPPs to ensure homogeneity across EU member states and

¹⁰Engel, Fiscer, and Galetovic (2001) also endogenize contract length in a setting where there is no moral hazard. The procedure they suggest is least present value revenue (LPVR) where the contract is awarded to the firm bidding the lowest LPVR and the contract ends when the specified LPVR has been reached. The tariff and the rate of discount (fixed or variable) are generally agreed during bidding or set in advance by the authority. If demand and tariffs adversely affect revenues, the concession runs until the LPVR is secured. Since the contractor is still the residual claimant on cost saving, this procedure provides incentives for it to operate at optimal costs because it fully captures any gains. LPVR should be used when the contractor cannot influence demand and when objective quality standards can be set, measured, and enforced, as with roads and airport landing strips.

limit accounting tricks used to comply with Stability and Growth Pact rules.¹¹

But temptations remain. Announcing that something will be built, be it a railroad, a bridge connecting the mainland to a large island, or a school or hospital, can increase electoral support. Making such an announcement is therefore particularly tempting for incumbent governments close to an election, especially if the full cost of the investment will materialize only many years later. This is the case of PPPs for schools and hospitals, where the initial investment financed by the contractor is repaid by the government over 25 years of operations.

Political risks clearly increase the cost of PPP contracts. They also discourage firms from participating. PPP contracts are particularly subject to this kind of risk because they are both long term and politically sensitive. It is not surprising that in countries where political institutions are unstable, tenders are not taken up.

Participation is also often a serious problem with PPP. The cost of participating in a tender for award of the PPP contract is often much higher than for traditional procurement. Though recognizing that sectors differ, it has been estimated that in the UK PPP tendering periods last an average of 34 months (NAO 2007) and that procurement costs can reach 5–10% of the capital cost of a project (Yescombe 2007).¹² Transaction costs are to a large extent independent of the size of a project.¹³ The high cost of responding to a tender discourages investors, and when the costs are coupled

¹¹In particular, it has been decided that PPP assets should be classified off-balance sheet if two conditions are met: (i) The private partner bears the construction risk, and; (ii) The private partner bears at least one of two other risks: availability risk or demand risk.

¹²The fact that transaction costs are to a large extent independent of the size of a project makes PPPs unsuitable for low-capital-value projects. The HM Treasury (2006) in the UK currently considers PPP projects for less than £20m to be poor value.

¹³This may suffice to make PPP unsuitable for low capital value projects. The UK HM Treasury (2006) currently considers PFI projects for less than £20m as poor value.

with inadequate institutions and high political risk, tenders may fail to attract bids.

Government Opportunism

Since PPP is mainly a contractual relationship, a critical issue is whether the public authority will accept its responsibilities for the specified tariffs, obligations, and payment schedules. Bundling project phases and long-term contracting allow PPP arrangements to provide efficient long-term incentives and to optimize the trade-off between investment, maintenance, and insurance over the whole life of the project. This helps to incentivize the contractor but it depends on institutions having solid commitment power. When commitment is limited, a long-term contract loses incentive power as time passes and the parties anticipate that it will be renegotiated. The contract then becomes in effect a sequence of short-term contracts, giving rise to what Laffont and Tirole (1993, Chapter 9) formalized as the ratchet effect.

The ratchet effect refers to the possibility that a contractor making high profits today will tomorrow face a more demanding payment scheme (lower tariffs), an intertemporal pattern of incentives that makes the contractor reluctant to convey favorable information early in the contract or to perform well. In lossa and Martimort (2008) we briefly considered the scope and consequences of government opportunism and showed that when government intervenes after the contractor's investment is sunk, incentives are weakened not just for that period or that contract. Rational firms anticipate the risk of government opportunism and require compensation for it, which will raise the cost of capital and weaken incentive schemes.¹⁴ Political opportunism partially nullifies the benefits of bundling, which suggests that PPPs should be preferred in stable

¹⁴This is the ratchet effect first formalized by Laffont and Tirole (1993, Chapter 9); it refers to the possibility that an agent that performs well today will tomorrow face a more demanding incentive scheme.

institutional environments. As the risk of regulatory opportunism increases, the case for PPPs lessens.

Private financing of major transport infrastructure makes investors especially vulnerable to opportunistic governments. First, infrastructure requires a large sunk investment that takes a long time to recoup, and assets can be moved elsewhere, if at all, only at great cost. Over a long period the risk of renegotiation may be pervasive, especially when the authorities in charge change. Second, transport projects often provide services that are essential to consumers, making choices, particularly those related to tariffs, politically sensitive. A government may increase its chances to be re-elected by promoting investment in public works, reducing tariffs, or undertaking other activities that have short-term benefits for some and long-term costs for many (see Guasch, 2004; Guasch, Laffont, and Straub, 2008; Engel, Fisher, and Galetovic, 2009).

Evidence of Opportunism

It is important in practice to assess the cost of renegotiating long-term contracts. The exercise gives an idea of possible gains from improving the institutional environment so that enforcing long-term agreements is feasible. Focusing on bus transportation in French municipalities, Gagnepain, Ivaldi, and Martimort (2010) estimated that those gains are roughly 15 percent of the total value. Because their model takes into account only the renegotiation cost induced by the ratchet effect, their result can thus be seen as a lower bound on those gains, because any distortion in earlier-stage investments that renegotiation might trigger are set aside in the analysis. In any event, the case for stringent enforcement of long-term contracts is made.

In Latin America and the Caribbean, for example, there have been numerous episodes where the government (possibly after a change) reneged on earlier promises, reducing tariffs or appropriating contractor profits, or passed law to nullify contractual clauses (see Guash, Laffont, and Straub, 2006). Political risk has also been a crucial factor in Central and Eastern Europe. A major obstacle to PPP policy in Hungary, for instance,

has been frequent changes in political attitudes toward PPPs and user tolls (see Brench et al. 2005): since 1990 each change in government has produced a different attitude and a different institutional framework for PPPs. This political risk discourages the participation of private firms in PPP tenders. In the UK, the political controversy that surrounded the £16 billion London Underground project of 2002–03 made lenders so nervous that at a fairly late stage in the procurement process the public sector had to guarantee 85 percent of the debt to ensure their participation When one of the contractors failed, the consequences for taxpayers were severe. It is therefore not surprising that private participation (in the form of PPP, privatization, or traditional procurement) is more prevalent in countries like the UK that have stronger and more stable institutions (Hammami, Ruhashyankiko, and Yehoue, 2006).

Even when governments agree to compensate investors for political risk, in practice they offer justifications when they to delay or prevent such payments. Thus, political and regulatory risk is de facto borne by the private sector.¹⁵ Political risk discourages potential investors and raises the cost of capital and the risk premium (higher tariffs or lower transfer price). Although there have been only a few studies on how political risk affects the cost of capital, it has been estimated that it adds 2 to 6 percentage points, depending on the country and the sector (Guasch and Spiller, 1999).

Renegotiation by the Contractor

Typically the situation in which contracts are renegotiated is very different from that in which the original contract was awarded; for one thing, now there is a bilateral lock-in rather than multilateral competition. Alternative contractors are out of the game, and the private provider is in a powerful bargaining position. For that reason, renegotiation or modification or simple enrichment after the contract is signed is subject to the risk of abuse from the private partner, with its strong bargaining position, or from both parties,

¹⁵See Strausz (2010).

when one is a public entity managing third-party money (see below).

Moreover, any expectation or even hope of abusing renegotiation that potential private partners may have tends to distort the competitive selection process, which could raise costs if there is wrong selection of supplier, projects, and terms of trade. Contracts need to be carefully drafted to prevent or discourage renegotiation and other contractual changes as far as is feasible. When it is absolutely necessary to provide flexibility in terms of contractual changes (for example, because user needs may change), contracts need to be drafted not only to prevent abuses but more importantly to prevent bidder expectation or hope of such abuses.

Iossa, Spagnolo, and Vellez (2007b) discussed at length the risk that contract renegotiation may lead to underperformance and bidding distortions, stating, for instance (pp. 40 ff.):

Contract design should build flexibility into the contract so as to limit as far as possible the need for contractual changes. At the contract drafting stage, a substantial investment in contract design should be undertaken to anticipate the possible changes that may be required with reasonable likelihood, and to describe and regulate all these changes in the original contract. This will create built-in contractual flexibility while reducing as far as possible the need for contract changes/renegotiation.

In some (rare) cases the need of potential change is anticipated but such that the exact form of the change is not clear, so that it is not possible to pre-specify the change in the original contract to have it priced at the competitive stage. If these anticipated changes are small in size and need to be operated swiftly, provisions could be inserted in the contract establishing that the private-sector party will have to implement the changes required by the public-sector party, within certain limits, and that compensation for the extra costs will be paid. Consideration should be given to the possibility to specify in the contract that the compensation

will be on a cost reimbursement basis, with a contractual obligation to ensure value for money for the public sector. Compensation will also allow for a mark up on the costs that should not be subject of bidding in the contracting stage as competition on mark-ups of cost-plus contracts tends to have counterproductive effects. The profit mark-up on changes operated under cost-reimbursement compensation will be chosen ex ante, according to standards of profitability in the sector and with the advice of external experts, and will be pre-determined by the contract, hence remaining fixed whoever wins the competitive phase.

The obligation of ensuring value for money for the public sector must be backed by benchmarking on both the definition of the mark-up and on the following cost assessment that the private-sector party provides after a change is required, before approval of the changes, to ensure that mark-up and projected costs are at market level. In this case a third party – such as a panel of experts -- should also be involved in the process of approval of the cost of changes before implementation, to prevent abuses of the flexibility created by the cost-reimbursement scheme.

Contract design can limit the possibly large negative effects of post-award contractual changes aimed at facing unanticipated change needs by inserting contractual clauses that limit and structure contract renegotiation. In particular, to ensure maximal transparency, the contract should define a detailed change protocol that should precisely structure the process through which any proposed change is requested, assessed, and, if eventually approved, implemented. Small changes, e.g., linked to adaptation to particular user needs, should not require changes in payments but be covered by the provision of the original contract and they may follow a faster procedure. For large changes that require pricing, transparency and value for money for the public sector become essential. Transparency of the contract change process must be guaranteed by contractual clauses requiring full and proactive disclosure of all acts at all stages of the

change protocol.

Transparency and accountability of changes should be further stimulated by involving an independent third party, an arbitrator or, better, panel of technical experts, as supervisor of changes and responsible for the governance aspects of changes. Their approval could be asked also in terms of real need for the changes and appropriateness of the decided changes and their pricing. In case of changes required by the private-sector party and implying revision of prices, the change protocol should require the third party and the public sector to ascertain and publicly explain that the shock motivating the request for change was not an event that is part of reasonable business risk that a competent private partner would have anticipated and priced in the initial bid.

The contract should also establish a freeze period, the longer the larger the relative weight of the construction phase in the PPP and possibly longer for demands for contract changes coming from private partners. The rigidity induced by such contractual clauses will deter opportunistic renegotiation, which typically expects revisions of terms much earlier, [and] stimulate investment in in-built contract flexibility, while leaving open the possibility to accommodate efficient changes later on, when it is more likely that substantial unanticipated changes in technology or demand may take place that effectively require contractual changes.

Corruption in PPPs

Few studies have yet analyzed the impact of corruption on PPP contracts. However, Martimort and Pouyet (2008) built a model that entails elements of moral hazard (efforts at the design and operating stages are non-verifiable) and asymmetric information (the innate marginal cost of providing the service is private information). The general argument is as follows:

Because PPP contracts rely on high-powered incentives, they are susceptible to leaving considerable rents to the private firm; these are socially costly because they impose an extra burden on the public budget. Where the public officials drafting PPP contracts can be corrupted, those information rents become stakes for capturing the public chain of command. For instance, a contractor can pretend to have high marginal costs to recoup higher payments from consumers or larger subsidies from the authorities. Fighting the threat of capture calls for lower-powered collusion-proof incentive mechanisms (Laffont and Tirole, 1993, Chapter 13) that are less sensitive to the discretion of civil servants and reduce the stakes for collusion. Unfortunately, such mechanisms also cannot exploit all the synergy gains a PPP contract would otherwise generate. In other words, in a collusive environment, more traditional forms of contracting may be more attractive.

Martimort and Pouyet (2008) showed that well-designed PPP contracts should be accompanied by well-designed incentives for bureaucrats to fight collusion. Whether this fight is ultimately won and corruption is never an equilibrium phenomenon depends on whether “the culture of corruption” is already established in that society.¹⁶ Ensuring compliance from public officials is costly; it may require setting up monitoring structures, raising incentives through career concerns or wages, duplicating agencies to allow cross-checking, and so on. When civil servants are heterogeneous in their propensity for being corrupted (a feature inherited from the underlying social culture), some may find compliance attractive and others do not. Ensuring general compliance may be so costly that some degree of corruption will inevitably arise.

We extrapolate on those findings to make predictions related to the field of transport. There from an asymmetric information viewpoint the size of earlier investment in infrastructure is likely to be the most sensitive parameter. It is hard for the public to assess whether a given project has the correct dimensions. Moreover, corruption may

¹⁶See Tirole (1992).

involve public officials not only at lower levels of the chain of command but also much higher up, especially for projects with considerable national value. In other words, there is no single level of the public chain of command that can ensure well-crafted design of incentives to prevent corruption throughout the public hierarchy. In those contexts, international comparisons are valuable checks against abuse. Even though there may be a relative scarcity of comparable projects, experience on cost overruns in the course of other projects may be useful. International agencies may be particularly good sources of information for a first assessment of the suitability of PPP contracts.

Competence and Accountability

Because they cover design, building, maintenance, and operation of infrastructure over a long period, PPP contracts are highly complex. With regard to operations, the complexity may be low if the contractor is responsible only for simple, low-skilled repetitive tasks that are not critical to service (e.g., routine janitorial services in smaller buildings) or for routine facilities management of buildings and basic civil infrastructure. Complexity grows for maintenance of laboratory testing facilities, complex civil engineering structures, or technical equipment (e.g., IT networks, medical equipment, and basic training technology). The greatest complexity arises when what is provided are technically demanding services that require specialist or sophisticated project management skills, such as operating complex medical or process engineering equipment.

The complexity of a PPP project is important because authorities must have the competence to design the tender and the contract appropriately. PPP contracts are based on an output specification approach: the public party defines the basic standards of service and the private party chooses how to meet and possibly improve upon them. This approach supports a performance-related pay scheme, where the contractor is

paid for the agreed service (characteristics and quality) and receives deductions or a premium for performance below or above the baseline.

This output-based approach comes with a greater risk of contract misspecifications by the authority. Problems may arise because the outputs specified, which are the basis of the contractual obligations, are ill-described. Such contract-drafting mistakes can be very costly for the public party because the extended term of most PPP contracts makes renegotiation later very costly. The contractor is in a position of monopoly power and may exploit that position to seek a high price for changes.

Similarly, the more complex a PPP project, the more the authority needs the expertise to design the tender efficiently, design an appropriate pricing mechanism, and efficiently allocate risks. It is not unheard of for the matrixes that spell out how risks should be allocated between the public and the private sector to have as many as 250 entries. Given the economic aspects of the design of payment structure and contract, public officials involved in negotiating PPPs need considerable training beforehand.

The Role of the Authorities

Lack of incentives for the authority and thus inadequate effort in acquiring and processing information can cause contract misspecifications, wrong risk allocations, and poor incentives for the contractor. It therefore becomes critical to identify governance mechanisms that make the authority accountable for its actions. This may not be easy. Labor market regulations constrain the use of incentive mechanisms for the public sector, and lack of a financial stake makes it difficult to provide incentives in the first place. Also, because PPP contracts are generally long-term, when mistakes are discovered the public employee responsible may have already moved on.

To improve governance, a number of countries have created dedicated PPP units—centers of expertise—to manage the private contractor or support local authorities in the

design and management of their own PPP projects.¹⁷ Different approaches have been taken to governance of these units; some have been set up within the public sector (e.g., Central PPP Policy Unit in the Irish Department of Finance or the Unita' Tecnica della Finanza di Progetto in Italy), others outside (Partnership UK, a joint venture between the public and private sector with the latter holding a majority stake). Clearly, independence is better secured when such a unit falls within the public sector, although incentives may be more difficult to provide, especially if there is no system for making officials accountable.

Standardized Contracts

Another instrument for reducing the possibility of mistakes by local authorities is the use of standardized contracts (see, for example, the contract used in the UK [HM Treasury 2007]). By standardizing parts of contracts for specific sectors, governments can reduce the likelihood of contract and output misspecifications. Further, such contracts can benefit from the experience of previous projects and internalize externalities among contracts. Standardized contracts also reduce the costs of agreeing and drafting the contract, provided both parties are willing to accept the standardized terms.

V. PPPs in Turkey

The Rationale

In this section we discuss the draft of the PPP law in Turkey as of 14 May 2010. The Turkish legislature has clearly stated that the rationale for the use of PPPs is

¹⁷Bennett and Iossa (2006b) discuss the potential benefit of delegating contract management to a joint venture PPP. On the benefit of dedicated PPP units, see also Rachwalski and Ross (2008).

efficiency and public interest. Only where PPPs are considered the best organizational mode will their use be justified. PPPs must be able to secure "best value for money" by providing infrastructure for the provision of public services with a cost/quality balance that satisfies the public interest. Article 4 of the draft law states that "the primary objective in PPP projects shall be to secure public interest and contribute to economic and social development" (section 1.a) and that "PPP models shall be applied in cases where they offer economically more efficient and appropriate solutions relative to the realization of projects with their own budgets for administration" (section 1.c).

It is not clear, however, how to assess whether the PPP option is the best available alternative. In the UK and other countries, the administration must demonstrate that the PPP option is potentially better than a public-sector alternative before it can be authorized. This is done by quantifying and comparing how much the project is expected to cost if realized through traditional procurement methods (the Public Sector Comparator) and through a PPP. Inevitably, the quantification is to some extent imprecise, because there are many aspects of a project that are not defined ex ante—improvements on the project design is in fact part of the bidding process. However, the comparison helps to set a benchmark for the PPP and forces the authorities to think through carefully which is the best organizational mode. Construction of the Public Sector Comparator also helps to make the authorities accountable for their choices, especially if the PPP option reveals itself ex post as much less cost-effective than was originally anticipated.

The Bidding Process: The Contract

We have reiterated throughout how risk allocation is central to the success of the PPP (see in particular Section II). The risk matrix accompanying the contract should clearly state how risks are allocated, and that should be reflected in the payment mechanism and the design of guarantees, such as performance bonds or revenue guarantees.

A well-drafted implementation contract before the tender is thus crucial. Once a

contractor is selected, it is very difficult to negotiate provisions such as pay for performance (and thus payment deductions and sanctions for substandard quality). The Turkish Draft PPP Law, Article 7, provides that "Before announcing the tender, the administration shall submit the draft implementation contract as a basis for the tender to the Ministry of Finance" (section 1). Article 4 briefly states the central principal of risk sharing: "In risk sharing, it is essential that the risk be undertaken by the party that can best manage it" (section 1.g). Article 21 states: "It is essential that investment and operation risks be undertaken by the private sector. Demand risk may be shared between the administration and the private sector, and the types of risks that may arise under the project, how risks will be shared, limited, and managed, and the sharing of returns generated by the project shall be specified in the implementation contract in compliance with the principles to be set out in the by-law to be put into force through the Council of Ministers Decree."

However, the law does not describe—and doing so would be difficult—how optimal risk allocation can be achieved in practice. It is thus possible that in practice the risk allocation is not efficient and does not provide incentives for the contractor to perform well. Optimal risk allocation could, for example, be compromised by excessive use of revenue/profit or demand guarantees or by poor design of the payment structure, with deductions for underperformance set too low or too high.

That is why it is advisable that a central and independent authority with specific expertise on PPP contracting—a PPP advisory unit—support the administration from the earliest stage of the bidding process. The Ministry of Finance (MoF) and the State Planning Organization (SPO) should also consider drafting standardized contracts for each sector of PPP intervention and mandate their use by the authorities in charge of each PPP project. The authorities could be given the opportunity to modify the contract only after giving the MoF or the SPO a clear and reasonable rationale in writing and the agency finds the rationale reasonable and authorizes the change in writing.

Another critical aspect of contract design is its duration (see Section III). The duration must be chosen not so much to ensure that the project is bankable but to optimize risk-sharing and incentives. Article 14 (section 2) of the draft PPP law states that the maximum duration of the contract is 49 years. This is higher than would be seen in countries with a long experience of PPPs, such as the UK or Italy, and does not seem to be compatible with ensuring that public services be delivered at reasonable cost.

In PPP projects competition between providers occurs *ex ante*, at the bidding stage, but once the contract is awarded, the contractor has a monopoly position. Thus, there is competition "for" the market but not "in" the market. A 49-year contract inevitably ensures a very long period of monopoly power, which undermines the bargaining position of both current and future administrations. During execution of the PPP contract it is probable that changes in user needs or external conditions will require renegotiation of some specifications—which is indeed very frequent. An extensive contract duration inevitably creates a rigidity in provision of the service and raises the cost for future administrations to respond to new user needs and circumstances.

A long-term contract also raises governance issues. Current administrations may not have sufficient incentive to consider how payment obligations will affect administrations that inherit the contract (see Section IV). Letting the choice of the current administration impact administration obligations for 49 years thus may not be advisable.

Finally, ensuring bankability cannot be the reason for a long contract duration. Government contributions set as a function of project performance can help ensure bankability without compromising incentives or giving the contractor a monopoly for too long a time. This use of government contributions is recognized in the draft law: Article 21 (section 2) states:

In order to ensure that projects are economically and financially feasible, the administration may provide public contribution through various direct or indirect instruments. The instruments involving public contribution and the

implementation principles and procedures applicable to the guarantees to be provided by the administration shall be set out in the by-law to be put into force through a Council of Ministers Decree.

The Bidding Process: The Procedure

Articles 9 and 10 of the draft law describe procedures that may be used in awarding PPP contracts: open bidding (section 1.a); restricted bidding (section 1.b); competitive dialogue (section 2); and, in exceptional cases, negotiation (section 12.c). These are common procedures; no comment is necessary. We note, however, that there is limited scope for using restricted bidding because typically the number of bidders is already limited by the cost of bidding, and it is not clear what advantages might result from limiting the number of eligible candidates the administration will invite. We also note that the draft law does not specify criteria for selecting the most appropriate bidding procedure, although Article 12 does state that the bidding strategy and procedure will be prepared by a commission to be set up and coordinated by the SPO Undersecretariat with MoF participation. The governance issues discussed in Section IV are relevant here; it is advisable that there be set procedures to ensure transparency and accountability.

The Renegotiation Process

Article 14 (section 4) of the draft law regulates the renegotiation process. Transparency and accountability can be enhanced by having an independent third party supervising contractual changes (see Section IV), and in fact Article 14 states:

Changes in basic elements in favor of the administration and changes in case of force majeure conditions shall require High Planning Council (HPC) clearance in the case of projects launched with HPC approval, and SPO clearance in the case of projects launched with the approval of the SPO Undersecretariat. Contractual

modifications other than basic elements may be concluded between the administration and the authorized company.

Benchmarking, freeze periods, and market value testing (see Section IV) could also be specified in the contract to further restrict the possibility of opportunism during renegotiations.

Monitoring, Evaluation, and Coordination

Article 17 (section 1) of the draft law provides that

The SPO Undersecretariat shall be responsible for monitoring and evaluating PPP projects; preparing reports relating to these projects; outlining the annual status of PPP projects for publication in the annex of Council of Ministers Decree on the Implementation, Coordination, and Monitoring Annual Program every year; ensuring coordination among the related public and private sector institutions for the formation and development of project ideas that may be carried out through the PPP model; conducting research and studies on these matters or having them conducted; and performing activities for educating and informing related groups of the public as well as raising public awareness.

It is important that a procedure be in place to ensure that reports and information gathered by the SPO are readily available to the general public. Transparency at this stage is necessary to ensure accountability, facilitate monitoring by the public and the media, and show future bidders that the administration will meet its promises to monitor projects closely. When underperformance is observed and recorded, and when this is reflected in payment deductions, future bidders will be incentivized to bid more efficiently and perform well.

Some countries argue that too much information on the performance of a PPP contractor may undermine the competitiveness of the firm in bidding on future projects.

While disclosure of certain aspects of the contract may be disadvantageous, the benefit of disclosure for the general public will typically outweigh those costs. Commercially sensitive information cannot justify lack of transparency about the price paid for public services and the performance of the provider.

VI. Conclusions

The use of PPPs in transport is widespread. This paper has reviewed the theoretical literature on PPPs and applied those insights to PPP in transport, citing successful and less successful projects that have been undertaken in Europe or elsewhere in an attempt to identify the potential benefits and costs of transport PPPs.

Our analysis has pointed out that the risk transfer and pay-for-performance principles that characterize well-designed PPPs can help give a contractor incentives to take into account the long-term benefits and costs of a project, from building to maintenance and operation. The analysis suggests that PPPs are potentially more beneficial when better-quality infrastructure can have a significant impact on the social benefits at the operational stage, when demand for the service is stable and easy to forecast, when the public sector is competent to properly design tender procedures and contracts, when the government is committed to the contract, and when political institutions are stable, reputable, and accountable. Under these conditions, the contractor has incentives to perform well through efficient allocation of risks and through an appropriately designed payment structure and contract duration.

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