

## DOCUMENTATIEBLAD

**PUBLIC PRIVATE PARTNERSHIPS FOR THE PROVISION  
OF INFRASTRUCTURE SERVICES: PROMISES,  
CHALLENGES, AND EXPERIENCE****Philippe Maystadt, Armin Riess, Timo Välilä \****Abstract*

*This paper examines the distribution of PPPs in Europe across countries and sectors and their quantitative importance, the economic pros and cons of PPPs and the applicability of the PPP model across sectors, PPP transaction costs, the role of the European Investment Bank in PPPs, and the PPP experience to-date. The paper finds a concentration of PPPs by country (UK and Portugal) and sector (transport and accommodation), little quantitative importance of PPPs, sound economic reasons for PPPs when they can generate significant cost savings and when the quality of public services is not too difficult to contract on, the PPP model promising for some services (e.g. roads) but not for others (e.g. clinical services), non negligible PPP transaction costs, and a regrettable bias in favour of PPPs because of decision processes that do not properly account for the long-term fiscal implications of PPPs.*

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# 1. Introduction

Mobilising private finance to fund infrastructure projects is not entirely new. On the contrary: historically, toll roads, bridges, canals, schools, railways, hospitals, and the like were often supplied by the private sector. Notably, there had been a long tradition of concession agreements in countries like France. This being said, what distinguishes a public-private partnership (PPP) from other forms of private sector involvement in the provision of infrastructure services, is that they establish a long-term, interactive partnership between the public and private sectors. Such a partnership has many salient features. One is that the public sector purchases infrastructure services rather than the infrastructure asset itself. Another is the allocation of risks between public and private partners, with each partner ideally assuming those risks it can control and manage better than the other partner.

PPPs emerged as an innovative way of financing infrastructure in the United Kingdom in the early 1990s and have subsequently spread around Europe and, indeed, the world. While the UK remains in unrivalled lead in terms of the width and depth of its PPP experience, numerous other European countries, including some new members of the EU, are well underway developing their own national PPP programmes.

But what explains the drive towards PPPs? Some observers point out that the emergence and expansion of PPPs has occurred against the background of long-term fiscal problems in most European countries, a downtrend in public investment, and concerns about the possible negative effects of reduced investment in infrastructure. Under such circumstances, PPPs have had obvious appeal to financially constrained policymakers: they offer a possibility to get infrastructure delivered while, at the same time, relieving the pressure on strained public finances.

Others consider PPPs part and parcel of a paradigm shift, calling for a greater role of the private sector in economic activities that used to be the domain of the government. Related, but not identical to this view is the notion that PPPs are better at delivering public services than the traditional way of supplying them. But are they? It is perfectly reasonable to suspect that PPPs, while offering a variety of benefits, involve costs, too. From a public-policy perspective, it is crucial to understand the nature of these costs and benefits and to assess when benefits can be expected to outweigh costs – and when not.

Against this background, the purpose of this paper is to review the evolution of PPPs in Europe, discuss the economic pros and cons of PPPs, and assess the experiences to-date, especially from the viewpoint of the European Investment Bank. We will proceed as follows. Section 2 looks at the distribution of PPPs across countries and sectors in Europe and analyses the importance of PPPs relative to public infrastructure investment. Section 3 discusses in a rigorous albeit non-technical fashion the economic pros and cons of PPPs and the extent to which the PPP model is

applicable across sectors. Possibly high transaction costs are one potential drawback of PPPs. Section 4 thus presents what is to our knowledge the first systematic attempt at estimating the quantitative significance of PPP transaction costs. Section 5 turns to the role of the European Investment Bank in PPPs, and Section 6 draws lessons from the PPP experience to-date. Section 7 concludes.

Before setting off, two clarifications are useful. First, we need to clarify what public investment exactly means. This is important because there is often confusion about the terms ‘infrastructure investment’ and ‘public investment’. It is true that the bulk of public investment is infrastructure investment—financing the construction, operation, and maintenance of roads, bridges, tunnels, schools, hospitals, prisons and the like. However, the reverse does not hold. That is, there is a whole lot of infrastructure investment that is not public investment because it is undertaken by commercial entities, be they public sector corporations or private sector ones. Examples include investment by energy companies in generation capacity; telecoms companies in networks; or rail companies in rolling stock or rail infrastructure. In all these cases the investment is financed and undertaken by commercially run enterprises and therefore recorded as private investment in national accounts statistics—even if the enterprise is publicly owned. Only investment that is directly financed from the budget of the government—be it at the central or subnational level—qualifies as public investment.

Second, we need to clarify what we mean by PPP. To begin with, this paper does not consider so-called ‘institutionalised’ PPPs that involve mixed-capital entities held jointly by the public partner and the private partner.<sup>1</sup> By contrast, this paper concentrates on what has come to be known as ‘pure contractual’ PPPs, i.e., partnerships based solely on contractual links between the public partner and the private partner. But even these PPPs come in a great variety of types and forms, and it has therefore proven difficult to come up with a universally agreed definition. Nevertheless, it is possible to distinguish a set of fundamental economic features that arrangements ought to have to be labelled PPPs. The following list represents something of a consensus view of the characteristics a PPP should have:<sup>2</sup>

- A PPP serves a public-interest objective, such as the provision of infrastructure and public services. Obviously, the public-interest objective makes PPPs distinctly different from the provision of private goods by profit-maximising firms.
- In a PPP, the public sector enters a long-term arrangement with a private sector partner to ensure the supply of services (output) and the risks and rewards inherent in producing and supplying the services are shared between the public and private sector partners, so that each project risk is allocated to the partner best able to manage it

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1) See, for instance, European Commission (2004).

2) See, for instance: Allen (2001), European Commission (2003a) and (2003b), International Monetary Fund (2004), Hart (2003), Pollitt (2000), PROFIT (2001), United Nations Economic Commission for Europe (2000). See also Noël (2005), pp. 370-371.

- The construction, maintenance, and operation of the infrastructure asset are ‘bundled’, that is, only one party is in charge of building, maintaining, and operating the asset and, thus, of supplying the public service.
- There is private ownership of the asset. We will define the meaning of ownership more precisely in Section 3, but it is useful to mention here that for an economic analysis a party might be considered owner of an asset without being the owner in a legal sense such as a leaseholder<sup>3</sup>.

## 2. PPPs in Europe – where, in which sectors, and how important?

This section assesses the geographical and sectoral pattern of PPPs in Europe and examines the quantitative significance of PPPs relative to public infrastructure investment.

Before embarking on the analysis, however, a caveat concerning data is required. PPPs are a relatively recent phenomenon, and only in the UK have they existed for more than a decade. This relative novelty is reflected in the data available on PPPs. Until early 2004, there were no European-wide guidelines regarding the treatment of PPPs in national accounts statistics. Consequently, countries have treated them in various ways, and apart from the UK where data on flow investment through PPPs are available, it has been difficult to assess their quantitative significance. To get around this problem, the analysis below is based on micro-level data on individual projects structured as PPPs. The data come from the ProjectWare database (for non-UK countries) and other additional sources. This approach allows us to get an aggregate picture of the extent of PPPs, even in the absence of macro-level data. However, the project-level data generally only indicate the total value of each project (a stock variable), but gives no indication of the annual investment flows envisaged during the lifespan of the project.<sup>4</sup> This makes it difficult to assess exactly how much a particular project has contributed to aggregate investment, demand, and growth each year.

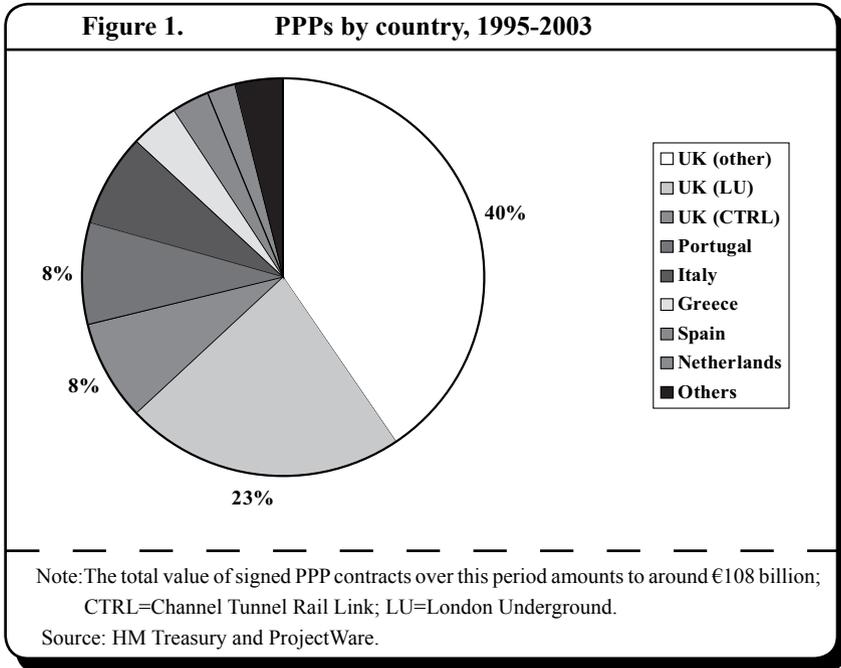
With this caveat in mind, Figure 1 tells us that the UK and Portugal were home to the bulk of PPPs in Europe, with PPPs measured in value terms over the period 1995—2003. The UK alone accounts for 71 percent of the signed value of all PPP contracts within the EU. Portugal, in turn, accounts for almost 10 percent of all PPPs, leaving only some 20 percent for the other countries.

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3) For example, the recent French law on PPPs (ordonnance n° 2004-559 of 7 June 2004) gives the private partner rights on the infrastructure which he builds and operates. These rights are all the rights of a legal owner, with as exceptions only those explicitly mentioned in the contract.

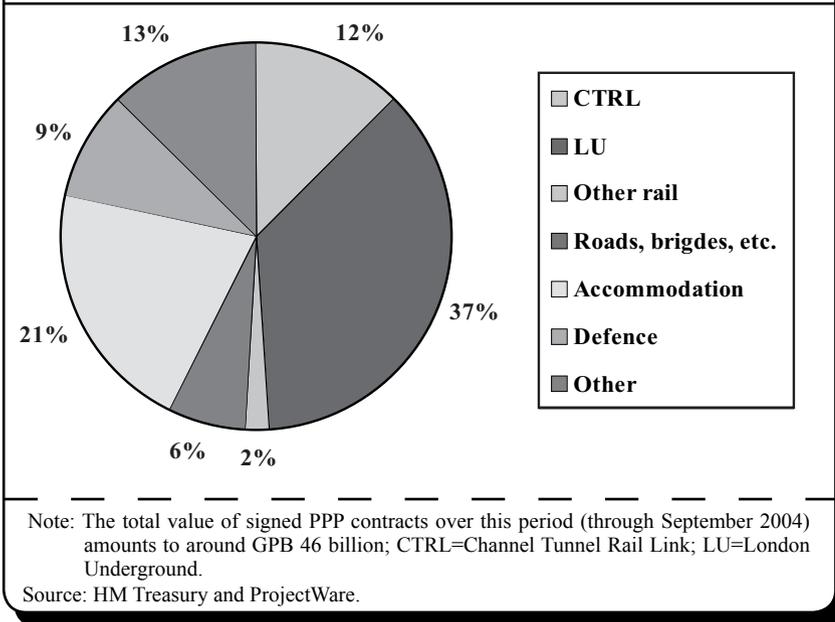
4) In other words, the data only reports the financial commitment at project signature, which may differ significantly from actual investment flows that materialise over the life cycle of the project. This being the case, the analysis should be interpreted as telling us something about the upper bound of the size of PPPs.

Although the UK share in PPPs is much larger than that of Portugal, the importance of PPPs relative to overall investment, sectoral investment, and – in particular – to GDP has been considerably higher in Portugal than in other EU countries (Moneteiro 2005). Related to this is the fact that compared to countries with a higher per capita income – such as the UK – PPPs in Portugal have often implied a major extension of infrastructure assets rather than small additions to the existing infrastructure.



Similarly, PPPs are sectorally concentrated, especially outside the UK. As much as 83 percent of the non-UK PPPs are in roads, bridges, and tunnels (based on a total value of € 31½ billion over the period 1995-2003), with rail transport and airports making up 5 percent and 7 percent, respectively. Reflecting its longer experience with PPPs, the UK’s sectoral distribution of projects is more balanced. But as Figure 2 shows, even in the UK, transportation (including the London Underground and Channel Tunnel Rail Link projects) accounts for over half of all projects by value. PPPs for providing accommodation services, in defence, and for providing other public services (such as water supply and waste management) account for 21 percent, 9 percent, and 13 percent, respectively.

**Figure 2. PPPs by sector in the UK, 1987-2004**



The category ‘accommodation’ warrants a few remarks – not least to set the stage for discussing the economic pros and cons of PPPs. Under this category we have aggregated PPPs shown in the underlying database as projects in health, education, police, and prison. To motivate this aggregation, it is useful to observe that the services of these sectors can be broadly grouped into ‘core’ and ‘accommodation’ services. To illustrate, patients in a hospital obviously need clinical treatment, provided by doctors and nurses. Clinical treatment and diagnosis, in turn, needs the support of other services, such as radiology and laboratory. It seems sensible to consider clinical services and clinical support services as core services. But patients are also expecting a reasonably comfortable stay: they want, for instance, to eat and be treated in a clean, well maintained, heated and possibly air-conditioned building; in other words, patients are expecting accommodation services not very different from those offered by hotels – the main difference being that patients, in contrast to hotel guests, would probably have preferred to stay home.

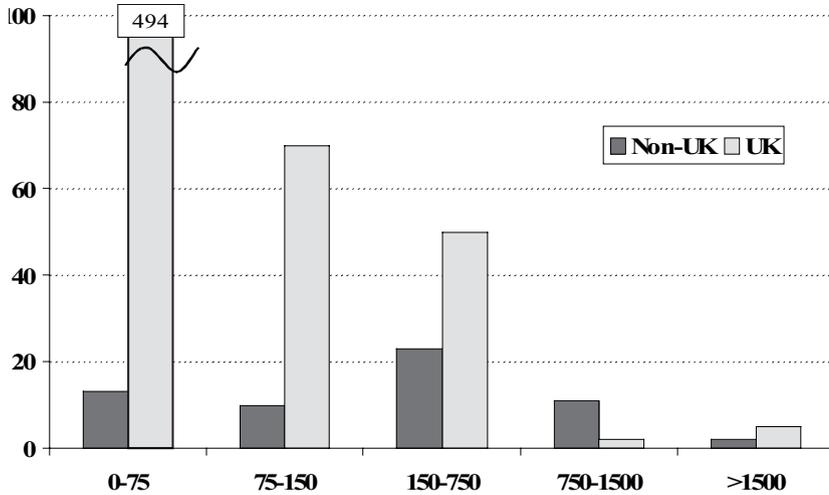
A similar distinction between core and accommodation services can be made for prisons, schools, and government offices such as city halls, police stations, and courts. This is most obvious for prisons and boarding schools, with accommodation services identical – in nature though not in quality – to those of hospitals. Core services in prisons reflect the unique purpose of prisons, and they include guarding, re education, punishment of inmates, and the like. Core services of schools essentially

comprise the education teachers provide, and for city halls, police stations, and courts, we could think of the activities that are the prerogative of the state – conducting trials for example.

The purpose, then, of aggregating PPPs in health, education, police, and prison under accommodation is to highlight that while these PPPs spread over different sectors, they concern the same economic activity, that is, providing accommodation services. Indeed, to our knowledge, most PPPs in these sectors provide only accommodation services. Admittedly, this does not apply to prison PPPs, which encompass core activities such as correctional services (see Grimsey and Lewis 2004, for instance), but given their small share in the total value of PPPs (3 percent), Figure 2 does not exaggerate the importance of accommodation services – in particular as PPPs in defence and other sectors might include projects aimed at supplying accommodation services.

As a result of the different sectoral distribution of PPPs in the UK and in other countries, the distribution of contract sizes is equally different, as illustrated in Figure 3. In the UK, the median contract is small, in the range of €15–75 million. Outside the UK, the median contract is within the range €100–500 million, as transportation projects in general and road projects in particular tend to be large in value. Put differently, in the UK as many as 80 percent of all PPP contracts are worth less than €75 million, while outside the UK, 70 percent are worth more than €100 million.

**Figure 3. Number of PPPs by signed value (€ million), 1995-2003**



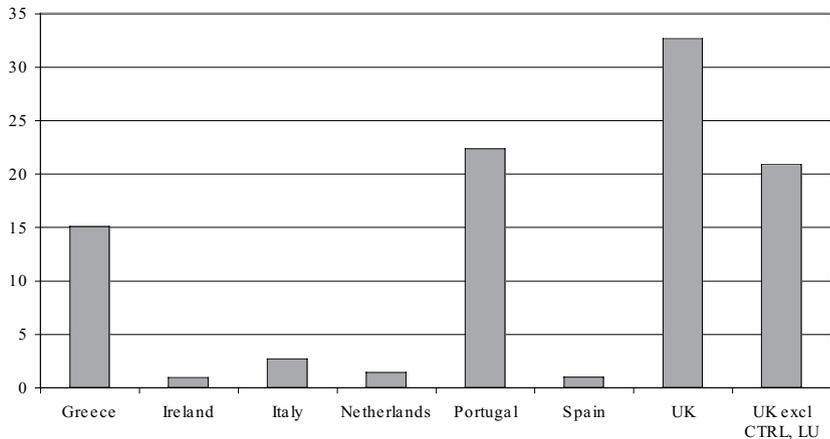
Note: Vertical axis: number of projects. Horizontal axis: contract size in millions of €. Source: HM Treasury and ProjectWare.

To assess how important PPPs are in financing infrastructure, let us relate their size to public investment. This task is complicated by the fact that apart from the UK, no data exist on annual investment flows emanating from PPPs. However, the stock data used above on the signed value of PPP projects can be used to approximate their investment flows.

As Figure 4 shows, the only countries where PPPs appear to have some persistent importance in volume terms are Portugal and the UK.<sup>5</sup> In all other countries even the stock value of signed PPP contracts is small compared to annual public investment flows, or they represent a small number of projects. The latter is notably the case in Greece (three projects).

5) The UK figures for 2002-03 include the London Underground project, which alone accounts for more than 70 percent of the total signed value of PPP projects in those years.

**Figure 4. Value of signed PPPs in % of public investment, average 1995-2003**



Sources: ProjectWare; HM Treasury; New Cronos; European PPP Report 2004; European Investment Fund.

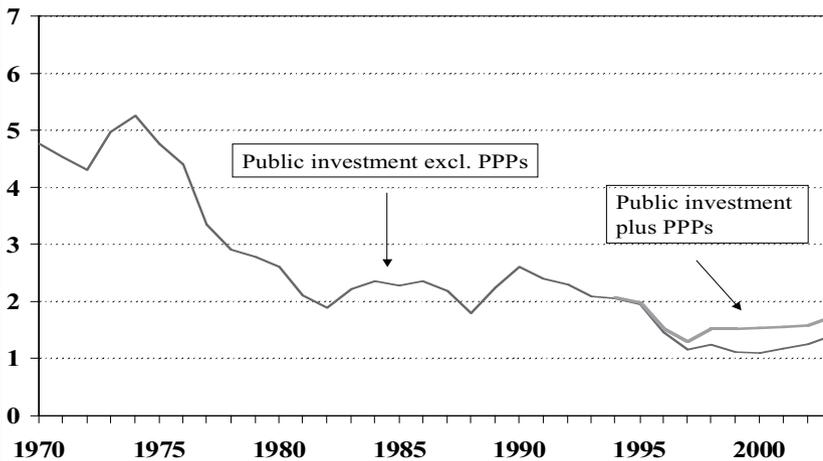
In the UK, investment through PPP has equalled 15—25 percent of total public investment in the past five years (including the London Underground and Channel Tunnel rail Link projects). This being said, even in the UK, PPPs have only marginally offset the decline in public investment,<sup>6</sup> as illustrated in Figure 5.

While no corresponding flow-to-flow comparison is available for Portugal, one can use the stock figures depicted above to estimate their investment flow implications. Assuming that investment related to a project starts the year it is signed, and assuming that investment flows are equally distributed over four years, one can estimate that investment through PPPs in Portugal equalled 15—35 percent of total public investment during 1999-2003.<sup>7</sup>

6) Vålilä *et al.* (2005) assess in considerable detail the evolution and determinants of public infrastructure investment in EU countries – old and new – and the significance of infrastructure finance through PPPs. They find that while public investment has been on a downtrend in many pre-enlargement EU countries, public capital stocks have continued to grow in most of them, which suggests that, in absolute terms, infrastructure assets are not being eroded. What is more, estimating optimal public capital stocks for EU countries, Kamps (2005) finds that in most countries there is no lack of public capital. However, in Austria, Belgium, and the UK, a shortage of public capital might arise if current trends in public investment were to continue.

7) To the extent that PPP projects are recorded on the public sector's balance sheet in Portugal, the public investment figures already include investment through such PPPs. This being the case, the estimated ratios of investment through PPP to public investment would belittle the relative importance of PPPs.

**Figure 5. Public investment and PPPs as a share of GDP (%) in the UK**



Source: OECD and HM Treasury.

To summarise, the importance of PPPs in qualitative terms—in providing an innovative way to finance infrastructure—exceeds their importance in quantitative terms. Only in the UK are PPPs both significant in volume terms and sectorally diversified. In Portugal, PPPs have been important, but they are used almost exclusively to finance road projects. In all other EU countries PPPs remain small and concentrated in the road sector. More often than not, the maintenance and expansion of infrastructure has remained a public affair to a high degree. This does not necessarily mean that the use of PPPs in lieu of public investment is suboptimal. Ultimately, the public sector's choice between a PPP and a traditionally procured infrastructure asset should rest on the relative economic merits of these options. This takes us to the economic rationale for (or against) PPPs and the question whether they make sense for some public services but not for others.

### 3. The economic pros and cons of PPPs<sup>8</sup>

#### 3.1 Preliminaries

To recall from the introduction, PPPs serve public-interest objectives, making them distinctly different from the provision of private goods by profit-maximising firms. And then, ‘bundling’ and private ownership are two key features that usually distinguish a PPP from the traditional way of procuring infrastructure assets used by the government, or the private sector on behalf of the government, to supply public services.

In examining the economic pros and cons of PPPs, this section gives centre stage to the link between bundling and ownership, on the one hand, and social welfare on the other hand, with welfare being affected by the impact of PPPs on the cost and quality of delivering public services. To preview the reasoning of this section: the main rationale for bundling is that by putting one party in charge of all stages of the production chain, cost savings over the whole life cycle of the infrastructure can be made; this effect might be strengthened through private ownership, for instance because private owners have stronger incentives to look for cost savings than the managers of publicly-owned infrastructure assets; but how does all this affect the attainment of public-interest objectives?

At first glance, the focus on bundling and ownership appears to be rather narrow. When discussing the merits of PPPs, it is almost legendary to stress that one of their hallmarks is the sharing of risks between the private and the public sector under long-term contracts. Although this is true and a proper allocation of risks arguably key for PPPs to generate the benefits they are expected to bring, it is also true that risk sharing very much links to the issues of bundling and ownership. To illustrate, consider the case of bundling and assume that the builder-operator carries availability risk, that is, his revenues will suffer if he fails to make the service available. Suppose further the builder-operator can make an investment at the building stage that reduces operating cost while raising the probability of the service not being available. If the builder-operator takes such a measure, he does so in the knowledge that lower operating cost might come at the expense of lower revenue.

The theoretical literature on PPPs, which is still in its infancy, explores the economic pros and cons of bundling and private ownership in the context of either incomplete-contracting models or asymmetric-information models (e.g., Hart *et al.* 1997, Bentz *et al.* 2001, Besley and Ghatak 2001, King and Pitchford 2001, Hart 2003, Dewatripont and Legros 2005). We find the incomplete-contracting literature particularly useful and we thus use it to analyse under which circumstances bundling and private ownership are promising for the delivery of public services. The goal is to give a non-technical presentation of the key arguments.

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8) This section borrows from Riess (2005).

## 3.2 To bundle or not to bundle?

### 3.2.1 Investments at the building stage that lower operating cost

This section draws largely on Hart (2003), who presents a simple model to examine the pros and cons of bundling, specifically the trade-off between generating life-cycle cost savings and meeting public-interest objectives. There are two key features of the model. One is that two types of ‘non-contractible’ investment can be made at the building stage, both lowering the cost of operating and maintaining the infrastructure asset and changing the quality of the infrastructure service. A change in service quality implies that the fulfilment of public-interest objectives changes too, and from here on we will use the term service quality in this sense. ‘Non-contractible’ means that these investments are not foreseeable, or only at prohibitive cost, when building contracts are agreed on. One might think of innovative changes to the design of the infrastructure the builder discovers during construction.

The other feature is that the quality of the infrastructure service is not completely contractible, meaning that there might be changes to the agreed quality of the service that although observable by the contracting parties cannot be verified by outsiders – arbiters or courts, for example.<sup>9</sup> Another way of interpreting this impact on service quality is to say that although noticeable, it is still within the scope of the contract. We will make things more concrete as we go along – starting with a more detailed description of the two investments.

Type-1 investment lowers operating cost but flouts public interest as it leads to an observable but unverifiable deterioration in service quality. One could think of a specific material in road construction that lowers the cost of operating and maintaining the road while raising the risks of accidents (or wear and tear of cars and tyres). Another example, illustrating nicely that non-contractible investment aimed at cutting life-cycle cost need not be momentous, comes from Grimsey and Lewis (2004). They mention a UK hospital where the builder-facility manager chose 45-degree windowsills resulting in lower cleaning cost since cleaners do not lose time removing things people usually put on sills. The amenity foregone by not having the possibility to place flowers, gifts, and the like on windowsills is probably small. Still, there is an observable although unverifiable deterioration in service quality. As a more serious illustration – turning to the core services – one could imagine a non-contractible innovation in equipment used for treating patients that is as effective as the one applied hitherto but less comfortable for patients.

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9) At first glance, the distinction between observable and verifiable deviations from agreed contracts, which was introduced by Hart (1987), might appear arcane. But anyone who has gone through the fun and frustration of building a house recognises the distinction between, on the one hand, deviations from contractual agreements observable by both the prospective homeowner and construction companies and, on the other hand, deviations verified by courts as very concrete.

Arguably, examples can be misleading. But in the context of incomplete-contracting models they inevitably are. This is because once they have been mentioned, it is tempting to observe – as PPP practitioners usually do – that these investments could have been anticipated (like the 45-degree windowsills) and their adverse public-interest impact (like higher frequency of road accidents) could have been taken care of through proper contractual arrangements. Although such observations sound reasonable *ex post* for the examples mentioned, it is sensible to assume that there are always innovative investments, unforeseeable when contracts are written, and that the quality of the infrastructure service is not completely contractible, i.e., cannot be perfectly specified, measured, guaranteed, and enforced. In sum, to follow the logic laid out here, one has to be prepared to imagine the unimaginable.

It is easy to see the role of bundling in all this. If building and operating are bundled, that is, carried out by the same entity (builder-operator), the investment will be made – provided it is privately profitable, which is the case if the net present value of operating cost savings exceeds investment cost. While bundling constitutes an incentive-oriented mechanism for generating life-cycle cost savings, there are no incentives for the builder-operator to internalise the adverse effect on service quality. As a result, bundling leads to too much investment in quality-reducing cost savings. By contrast, if the government contracts separately with a builder (for building the infrastructure) and an operator (for operating the infrastructure and providing the service), the investment will not be carried out since it is not profitable for the builder. In these circumstances, society foregoes life-cycle cost savings but scores better in meeting its public-interest objectives. The more general conclusion is that separating contracts for building and operation results in too little of the cost-saving (though quality-reducing) investment.

With over-investment in the case of bundling and under-investment in the case of separating, which outcome is better from society's viewpoint? Bundling instead of separating is welfare enhancing if life-cycle cost savings outweigh the deviation from public-interest objectives. It follows that the bigger the scope for cost savings and the less important the service quality, the more promising bundling will be. Rather than looking at the importance of service quality, one can consider the ease of contracting on the public service. If it is easy to contract on the service (that is, if it is easy to specify, measure, and guarantee the service), adverse effects of bundling on the public interest can be curbed. Bundling might then be welfare enhancing even if life-cycle cost savings are not large. But it also follows that life-cycle cost savings need to be large to make bundling worthwhile if it is not easy to contract on the service. There is another implication: if contracting on the service is difficult, contracting is expensive, thus eating into the life-cycle cost savings that bundling might generate. Section 4 will present empirical findings on transactions cost in PPPs.

Type 2 investment adds another dimension to the trade-off, although if considered alone, this investment is unambiguously welfare enhancing. More specifically, this non-contractible investment, which can also be made at the building stage, lowers

operating cost and, provided lower operating cost more than offset investment cost, results in life-cycle cost savings. At the same time, it furthers the attainment of the public interest. This is the type of investment PPP practitioners, proponents in particular, have in mind when considering the advantages of PPPs. Bearing in mind the disclaimer about examples made above, one might think of a highly energy-efficient heating system for a building – a hospital, school, or city hall – that results in lower fuel consumption, benefiting not only the operator but society at large because of less environmental pollution.

If building and operating the infrastructure asset are bundled, the builder-operator – who will later enjoy lower operating cost – will carry out this welfare-enhancing investment.<sup>10</sup> By contrast, if the government contracts separately with a builder and an operator, the builder will not invest in life-cycle cost savings as none of the savings would accrue to him. As a result, society foregoes an investment that is privately and socially profitable. This unambiguously positive investment could then be an argument for bundling even if too much of type-1 investment is welfare reducing (relative to too little in the case of separating).

All in all, the trade-offs described so far suggest a strong (weak) case for bundling and, by extension, PPPs if the scope for life-cycle cost savings is large (small), the improvement in service quality resulting from type-2 investment is considerable (trivial), and the adverse effect of type-1 investment on service quality is negligible (significant) or easy (difficult) to avoid through contractual arrangements. Bearing in mind these determinants, here is what we consider – based on, though not identical with Hart (2003) and Hart *et al.* (1997) – reasonable conjectures about which public services are good candidates for bundling and which are not.

The economic case for bundling appears strong for roads, bridges, tunnels, water resources and supply, waste management, and – in particular – accommodation services (schools, hospitals, public buildings, prisons, etc.). For these services there is considerable potential for bundling to generate life-cycle cost savings. Perhaps more important, it does not seem to be too difficult to contract on the service and thus ensure that public-interest objectives are not compromised too much. By contrast, this is likely to be far more challenging for core services in health and education and in the case of information technology (IT), for instance.

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10) More precisely, the builder-operator will carry out some of the cost-saving, quality-improving investment. But since he does not internalise the positive impact of this investment on service quality (i.e., public-interest objectives), he is likely to under-invest compared to the welfare-maximising level of investment.

Let us recall from Section 2 that outside the UK, around 83 percent of PPPs (by value) have been for roads, bridges, and tunnels. We thus find non-UK PPPs in public services where the economic case for bundling is strong. Things are different in the UK. As was shown in Figure 2, road, bridges and tunnels and accommodation PPPs account for around 27 percent of PPPs (by value). PPPs in ‘defence’ are most likely to include some accommodation projects. Moreover, ‘other’ PPPs probably contain water resources and supply and waste management projects. Nevertheless, in the UK, the share of PPPs in public services where the economic rationale for bundling is strong, is much lower than in other European countries.

To elaborate on the services that are weak contenders for bundling, note first that IT projects are subject to swift technological changes, requiring frequent renewal of the underlying asset. Obviously, if the lifespan of an asset is short, the period for reaping synergies from bundling building and operation is short too, limiting such synergies in the first place. If IT services are nonetheless procured through PPPs, contracts have to provide for the renewal of assets and service specification. But given the rapid and unpredictable turns that information technology might take, the scope for contractual incompleteness is bound to be unusually large. Against this background, it is not surprising that the experience with information technology PPPs has not been a happy one, and reflecting this experience in the United Kingdom, the UK government has recently adopted a fairly cautious approach to PPPs for the procurement of IT services (HM Treasury 2003).

Turning to the health sector, bundling seems to be suitable for providing non-core services, accommodation in particular. This would imply, as it usually does in UK hospital PPPs for instance, that the builder of a hospital also becomes the facility manager once the hospital is up and running. However, the rationale for including core activities (e.g., clinical services) in the bundle seems to be weak. One reason is that – similar to the IT business – clinical services are subject to rapid advances in technology, making it difficult to write long-term contracts on such services. In fact, since the lifespan of assets for providing clinical services is much shorter than that of the hospital building, PPPs comprising both services might require different contracts – one covering long-term facility management and another governing the medium-term delivery of clinical services. PPPs that include the provision of clinical services are still rare, but they exist in Australia (Grimsey and Lewis 2004), have been launched in Portugal (Monteiro 2005) but continue to be considered ‘untouchable’ in the UK (Corry 2004). As the discussion in Monteiro (2005) suggests, they are far from easy to structure, as responsibilities, risks and payments need to be shared between two concessionaires, one providing hospital accommodation for a long period (typically 30 years) and another delivering clinical services (for a much shorter period).

In addition to the problem of integrating the supply of clinical and accommodation services, there is the perhaps more fundamental challenge of specifying and measuring verifiable performance indicators that can be used to reward and penalise the provider of clinical services. This is arguably more difficult – and costly – than

contracting on, say, the services expected from a highway operator. A question arising in this context is whether competition among hospitals could make good for the possibly substantial incompleteness of contracts on clinical services, the idea being that consumers, i.e., patients, will shun poorly performing hospitals. If they do, suppliers will pay for quality-reducing cost savings and, as a result, implement fewer of them. In discussing this issue, Hart *et al.* (1997) point out obstacles to effective *ex post* competition, including a lack of information and expertise on the part of consumers and supply constraints, implying that poor performance is not detected or, even if it is, does not have a perceptible impact on demand. The existence of private, profit-oriented clinics could be taken as evidence for effective competition in the health sector, but such clinics usually target well-informed consumers but do not aim at providing clinical services for society at large. One could quarrel with this view, but if one does, one implicitly assumes that ‘health’ is essentially a private good with few public interest objectives.

Similar arguments apply to core services in primary and secondary education, although integrating core and non-core services, specifying and measuring performance standards, and letting *ex post* competition run its course is probably easier than in the health sector. Even so, the case for including core education services in the ‘bundle’ cannot be taken for granted.

### **3.2.2 Investments at the building stage that raise operating cost**

The reasoning presented so far leaves it open whether bundling should be applied to railway networks or air traffic control (that is, the ‘tracks’ in the sky), which account for about half of the value of UK PPPs (Figure 2). On the one hand, bundling the building and operation of rail networks promises considerable life-cycle cost savings. On the other hand, contracting on the service and ensuring that public-interest objectives are met is not easy. Ensuring a safe and reliable operation of rail networks, for instance, is an important public-interest objective. More generally, safety is of considerable concern in many public services, explaining in part why these services are supplied by the public sector.

An interesting perspective on the importance of safety comes from a paper by Bennett and Iossa (2004), which we preview here and return to when discussing private *vs* public ownership. The approach of Bennett and Iossa resembles the one of Hart (2003), but introduces features that broaden the view on bundling. More specifically, like Hart, they use an incomplete-contracting model to discuss how a privately and socially profitable type-2 investment, which can be made at the building stage, affects the choice among alternative procurement options. But Bennett and Iossa do not consider a privately profitable, but quality-reducing type-1 investment. In these circumstances, bundling is always better than separately contracting with a builder and an operator.

But the authors then consider a variant of type-2 investment, a non-contractible investment (let us call it type-3 investment) at the building stage that while being in the public interest, raises operating cost. From a life-cycle-cost perspective, there is thus a negative externality from the building stage on the operating stage. Prominent examples for type-3 investments are non-contractible safety features the builder or builder-operator discovers during construction. If these investments are made, the safety of the service improves, leading to a better attainment of public interest objectives. However, new safety features need maintenance, thus raising the cost of operating the infrastructure.

When building and operation are bundled under one contract, the builder-operator has no reason to implement the socially beneficial type-3 investment, because it would raise his operating cost – besides being costly to implement. Would such an investment be carried out when the government contracts separately with a builder and an operator? At first glance, the answer is no: the builder does not have an incentive either to carry out type-3 investment because its benefit does not accrue to him but to society at large. The story does not end here, however: the builder could approach the government, explain that even after accounting for investment cost and additional operating cost there is a net gain to society, and requests part of this gain for carrying out the investment. This still does not mean that type-3 investment is more likely to see the light of day with separate contracting, however, because with bundling, the builder-operator could also bargain for a share in the investment's net welfare gain. The key issue then is whether the reward a builder can extract for carrying out the investment is larger than the reward a builder-operator is able to extract. If this is so, separate contracts will result in a level of type-3 investment that is closer to the social optimum than the level following from bundling.

But under which circumstances will separate contracts lead to a level of type-3 investment that is closer to the social optimum than that resulting from bundling? In the model of Bennett and Iossa this depends – among other things – on the size of the increase in operating cost and the importance of the improvement in service quality resulting from type-3 investment. They show that, the smaller the increase in operating cost and the greater the quality improvements, the more separate contracts are likely to outperform bundling. This would argue against bundling the building and operation of tracks – on the ground and in the sky – when inexpensive non-contractible investments have the potential to result in significant improvements in service quality without triggering excessive operating cost. Bennett and Iossa also suggest that with type-3 investment, public ownership of the infrastructure may be better than private ownership. This takes us to the issue of private vs public ownership in PPPs.

### 3.3 Private vs public ownership

#### 3.3.1 The meaning of ownership

The presumption that ownership matters is probably not controversial. After all, one would expect builders, operators, and builder-operators to behave differently when they own the asset they are building and/or operating compared to a situation where the government owns, with builders and operators (or builder-operators) only building and operating on behalf of the government. As far as the supply of private goods and services is concerned, it is equally uncontroversial that private ownership produces better outcomes. As far as public goods and PPPs are concerned, things are less clear and, in fact, public ownership could have advantages. Drawing on incomplete-contracting models that have addressed the ownership question in PPPs, this section illustrates key factors that determine whether private ownership beats public ownership – or *vice versa*. A good way to start is to clarify the meaning of ownership.

The meaning and economic implications of ownership closely link to the fact that contracts cannot be complete. In a world of incomplete contracts, the owner of an infrastructure asset has residual control rights over that asset; that is, the owner has “the right to decide all usages of the asset in any way not inconsistent with the prior contract, custom, or law” (Hart 1995, p.30). For analytical purposes, it is useful to distinguish two types of ownership: one that gives the owner residual control rights during the building and operating phase of the infrastructure and another that also grants him the right to claim the value of the asset at the end of the operating phase. To illustrate the difference, consider a builder-facility manager of a hospital who has residual control rights during the building and operating phase of the hospital but must transfer the hospital to the government free of charge at the end of the operating phase. This is an example for the first type of ownership, which is typical for PPPs in the UK. If the builder-facility manager has the right to sell the hospital to the government, or a third party, we have the second type of ownership.

In what follows we focus on the first type of ownership and offer only a few remarks on the economic implication of the second type of ownership.<sup>11</sup> In examining the effects of ownership, the aim is to find out when private ownership of a PPP infrastructure asset promotes the general good – and when it does not. To distinguish clearly the effects of ownership from those of bundling, we will largely ignore the construction phase and consider only the operating phase. In this set-up, the infrastructure already exists and there is nothing to bundle. But there are still choices to make during the operating phase.

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11) For more details on this, see Section 4.3 in Riess (2005).

### 3.3.2 The economic effects of owning infrastructure assets

In discussing whether residual control rights during the operating phase of a PPP should rest with the private or the public sector, we follow Hart *et al.* (1997). They consider two non-contractible investments that can be made at the operating stage of an infrastructure asset. The first investment would lower operating cost and, thus, generate life-cycle cost savings. The drawback of this investment is that it lowers the quality of the public service. In essence, we have the type-1 investment discussed above, the only difference being that the possibility of carrying out this investment arises at the operating stage and not during construction. The second investment, also known from our earlier discussion, generates life-cycle cost savings and adds to the attainment of public interest objectives. The difference again being that this privately and socially profitable type-2 investment can be carried out at the operating stage rather than during construction. Which type of ownership is best in delivering the optimal level of investment?

To start with type-1 investment, it turns out that private owners invest too much and public owners too little relative to a first-best world where complete contracts could be written. Over-investment by private owners happens because they consider only the cost savings of type-1 investment, which benefit them directly, but not its adverse impact on service quality – at least so long as the quality deterioration does not constitute a verifiable breach of contract. From this we can infer that excessive investment in cost savings can be contained if it is relatively easy to contract on the service. In other words, ease of contracting helps contain the downside of private ownership of infrastructure assets.

Public owners – more precisely: managers of publicly-owned infrastructure assets – behave differently. Being public-sector employees, they are concerned about public-interest objectives, but put less emphasis on cost savings. More specifically, public managers internalise the adverse effects of type-1 investment on public-interest objectives and, thus, do not over-invest. But why is there less emphasis on cost savings and thus too little type-1 investment? The main point here is that any manager expects to be rewarded for cost savings achieved, but the reward to a public manager will surely not be as high as the cost saving itself (as in the case of private ownership) because the government would like to see some of the saving passed on to society at large. What is more, from the perspective of public managers, the size of the reward they hope to get for cost savings is uncertain. This is because once public managers have informed the government about cost-saving ideas, such ideas become public knowledge and the government might be able to implement them without granting an extra reward to managers who proposed them. The less managers are important for implementing these ideas, the higher this uncertainty is. In sum, managers of a publicly owned infrastructure have weaker incentives to carry out cost-saving investments than their private sector counterparts.

With public ownership producing too little and private ownership too much of type-1 investment, the question arises which type of ownership is better? Private ownership has a lot going for it if the scope for life-cycle cost savings is large, adverse impact on public-interest objectives is small, service quality is easy to contract on, and public managers have relatively weak incentives to discover and implement cost-saving investments. Conversely, public ownership has more to offer when the prospect for cost savings is small, concerns about quality are important, quality of service is difficult to contract on, and public managers are well incentivised.

Bringing type-2 investment into the picture tends to strengthen the case for private ownership. A key result of Hart *et al.* (1997) is that both public and private owners spend too little on this privately and socially profitable investment – but public owners undershoot the optimal level of investment by more than private owners. This also implies that private ownership may beat public ownership even if the trade-off associated with type-1 investment works in favour of public ownership.

Overall, it transpires that circumstances favourable for bundling (Section 3.2) also favour private ownership – in the sense of residual control rights over assets in the building and operating phase. This reflects, of course, the likeness of the underlying theoretical models (Hart *et al.* 1997 and Hart 2003), especially that large cost savings and ease of contracting could compensate for the lack of internalising adverse public-interest effects under both bundling and private ownership. Hence, the economic case for private ownership appears strong for roads, bridges, tunnels, water resources and supply, waste management, and accommodation services (schools, hospitals, public buildings, etc.). By contrast, core services in health and education are not prime candidates for private ownership. As to railway networks, things are ambiguous. While the potential for cost savings is large, public-interest objectives (i.e., safety) are of considerable concern and contracts not easy and costly to write.

But we can learn more about the pros and cons of private ownership of railway networks by briefly looking at the second type of ownership, that is, the right to claim the end-of-contract value of the infrastructure asset. Suffice to note here that owners holding such a claim might take actions that increase the residual value of the asset, which could be beneficial from society's viewpoint if these actions, as a by-product so to speak, further the attainment of public-interest objectives. Bennett and Iossa (2004) pursue these issues in great detail and considerable rigour. A key insight arising from their paper is that public ownership (as opposed to private ownership) has a lot going for it when the infrastructure has a long lifespan, public safety is a major concern, and when the safety features of the infrastructure are costly to operate and of little importance for the end-of-contract asset value. Tracks on the ground and in the sky are an obvious case in point.

### 3.4 Some conclusions

The main message of this section is that the case for or against a PPP ought to rest on examining the trade-off between, on the one hand, life-cycle cost savings that a PPP is expected to generate and possible sacrifices in meeting public-interest objectives on the other hand. It would certainly be naïve to think that PPPs only result in productive efficiency gains without involving any costs to society.

This being said, there is good reason for society to accept these costs so long as the benefits of a PPP more than offset them. In this context, an analogy is useful. Countries around the world have moved from tightly regulated, often government-owned, electricity supply industries to liberalized, competitive, privately-owned power sectors. The economic motivation for this is to produce electricity at lower cost even if this possibly results in a lower degree of supply security compared to a situation with goldplated, government-owned power monopolies. The point is that the balance of the trade-off needs to be positive.

It is also important to recognise that the trade-off between the pros and cons of PPPs is not the same for all public services. Indeed, while PPPs are potentially very beneficial for the supply of some services, they might be positively harmful for others. We have also argued that the case for bundling the construction and operation of an infrastructure asset does not necessarily coincide with an argument for private ownership. In fact, in assessing the economics of PPPs on a case-by-case basis, one might find that a society benefits from bundling while maintaining public ownership of the infrastructure.

Obviously, before one starts looking at the trade-off considered in this section, one must be reasonably confident that a PPP generates life-cycle cost savings in the first place. One reason why such savings might not be significant is that launching and implementing a PPP is more demanding than procuring public infrastructure assets in the traditional way. Against this background, we now turn to transaction costs in PPPs.

## 4. Transaction costs in PPPs

This section – drawing on Dudkin and Väilä (2006) – presents the results of an analysis of transaction costs in PPPs. While other economic aspects of PPPs have received increasing attention as experience with them has accumulated, the analysis of transaction costs remains *ad hoc* in character, with hardly any studies assessing them systematically and comparatively. The absence of such studies is partly explained by

the scarcity of data and the difficulty of obtaining them. Before explaining the data that we have used and what they tell us, it is fair to emphasise what this section does not do. It does not compare transaction costs in PPPs with those arising in traditional public procurement. By extension, it does not compare a possible rise in transaction costs resulting from PPPs in lieu of traditional procurement with the life-cycle-cost savings that PPPs might offer. With these caveats duly noted, we proceed in setting out what is a crucial step in analysing the role of transaction costs in PPPs.

Let us start with a few remarks on the nature of transaction costs and the data used to assess them. Transaction costs refer to the costs of establishing and maintaining a partnership, thus encompassing the whole life cycle of a project. The bulk of these costs reflect payments for advisory services related to the legal, financial, and technical aspects of the project. From the public sector's perspective, transaction costs include the cost of setting up the bidding process, evaluating its results and selecting the winning bidder, negotiating a contract with the winning bidder, monitoring his performance in the construction and operational phases of the project, and also the cost of possibly renegotiating the contract during the lifespan of the project. From the private sector's perspective, transaction costs include the cost of participating in the bidding process – for both the winning bidder and his failed competitors. In addition, for the winning bidder, the cost of negotiating and renegotiating the contract needs to be included.

The data accessible for the purpose of this analysis included data on bidding and contract negotiation costs for the public sector in the UK (sources National Audit Office and Public Accounts Committee) and, for the private sector, data on the winning bidder's bidding and contract negotiation costs in PPPs in the UK, Ireland, the Netherlands, and Portugal (source EIB internal documents). Overall, the data on public sector transaction costs cover 55 UK projects in 6 sectors, and the data on private sector transaction costs cover 32 projects in 3 sectors. The sample includes projects signed during the period 1992-2004.

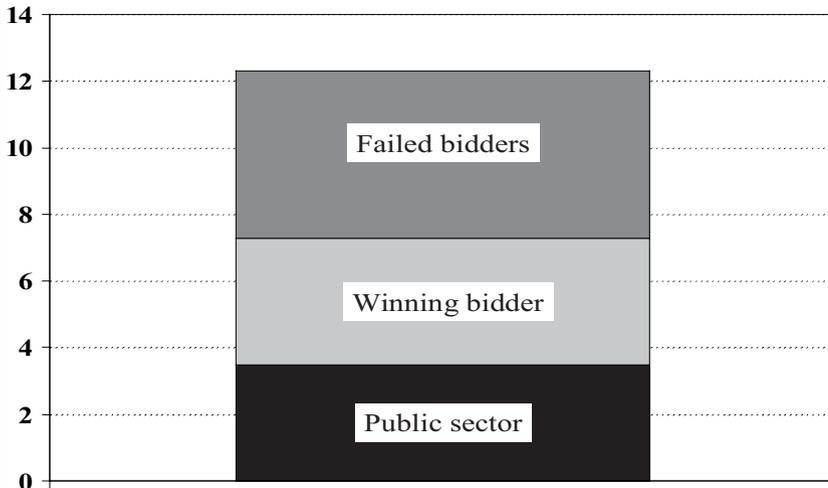
Obviously, the data are far from perfect. The transaction costs considered only refer to the procurement phase of the project, thus excluding the possibly significant monitoring and renegotiation costs during the operating phase, which in PPPs stretch over decades. In addition, as actual data on the failed bidders' costs were not available, they had to be estimated based on average bidding costs for the winning bidder and the average number of bidders in the sample. And then, the sample is obviously not as comprehensive as one would like it to be. Having said this, estimated transaction costs offer the first systematic assessment of the order of magnitude of transaction costs in PPPs. Some of the findings are fairly mundane; others are rather surprising.

To start with the ordinary, we note, first, that PPP transaction costs are indeed non-negligible. More specifically, measured in relation to the capital value of each project considered, procurement phase transaction costs average well over 10 percent in the sample. Although substantial, we do not know how big they are relative to procurement phase transaction costs to the public sector, the winning bidder, and failed bidders in the case of traditional public procurement. Bearing this caveat in mind, Figure 6 shows the breakdown of procurement phase transaction costs in PPPs between the public sector, winning bidder, and failed bidders. It turns out that the public sector's bidding and contract negotiation costs average 3½ percent, varying roughly between 1 and 7 percent of the capital value of the project across sectors.

The winning bidder's costs vary between 3 and almost 6 percent across sectors, averaging close to 4 percent. In the 8 projects where a breakdown of the winning bidder's costs into bidding and contract negotiation costs was available, the split was even, with bidding costs amounting to nearly 2 percent and contract negotiation costs to 2 percent of the project's capital value.

As for the failed bidders, costs were estimated based on information about the winning bidder's bidding costs and the average number of bidders for the projects in the sample. Each failed bidder can be reasonably assumed to spend neither more nor much less than the winning bidder on the bidding process. As the winning bidder spends on average some 2 percent of the project's capital value on bidding, and as the average number of bidders in our sample is 4, the costs incurred by the 3 failed bidders amount to some 5 percent of the project's capital value.

**Figure 6. Procurement phase transaction costs in PPPs**



Sources: NAO, PAC, EIB internal documents, and own estimates.

Another result being pretty much in line with expectations is that transaction costs vary across countries. To illustrate, in the UK, the winning bidder's transaction cost in road sector PPPs amount to almost 5 percent of the capital value, which compares to a little over 2 percent in Portugal and around 3 percent in Ireland and the Netherlands. That the UK has higher costs would appear obvious because of its common law legal system, which involves high legal advisory costs. However, if that were the only factor at play, the costs in Ireland should be high, too. But obviously other factors also play a role, notably project size and the time it takes to get PPPs up and running.

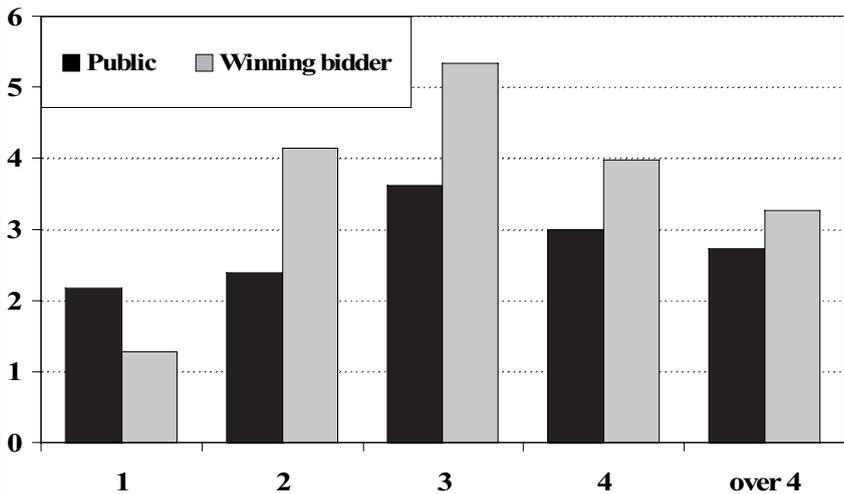
Small projects are associated with higher transaction costs (relative to the size of the project) for both public and private sectors. For the public sector, projects with a capital value below £25 million have significantly higher transaction costs than bigger projects. For the private sector, projects with a capital value below £100 million are significantly more expensive to bid for and negotiate than especially very big projects. These findings lend some support to the notion that the high transaction costs in PPPs necessitate a minimum project size for a partnership to be a financially and economically viable option. In the UK, a project size in excess of £20 is now considered necessary for the PPP option to be considered in the first place (HM Treasury 2003).

Projects with long procurement time, reflecting in part the complexity of projects, are associated with significantly higher transaction costs, at least for the public sector. More specifically, there seems to be a statistically significant structural break in transaction costs when procurement time exceeds 50 months: projects taking longer than that to procure have significantly higher transaction costs than projects with procurement time below 50 months.

The findings presented so far are reasonably in line with expectations: transaction costs are not negligible, vary across countries (and possibly across sectors), fall relative to capital value with project size, and increase with the time it takes to launch projects. We now turn to two findings that are probably more surprising.

One relates to the link between competition and transactions cost. One would expect the public-sector cost of bidding to increase with the number of bidders—i.e., with the intensity of competition at the bidding stage. Interestingly, that hypothesis is not validated by our sample. Data on the number of bidders was available for 23 projects, with the number of bidders varying between 1 and 8. As Figure 7 shows, transaction costs for the public sector and the winning bidder appear to peak when there are three bidders; otherwise the differences are statistically insignificant.

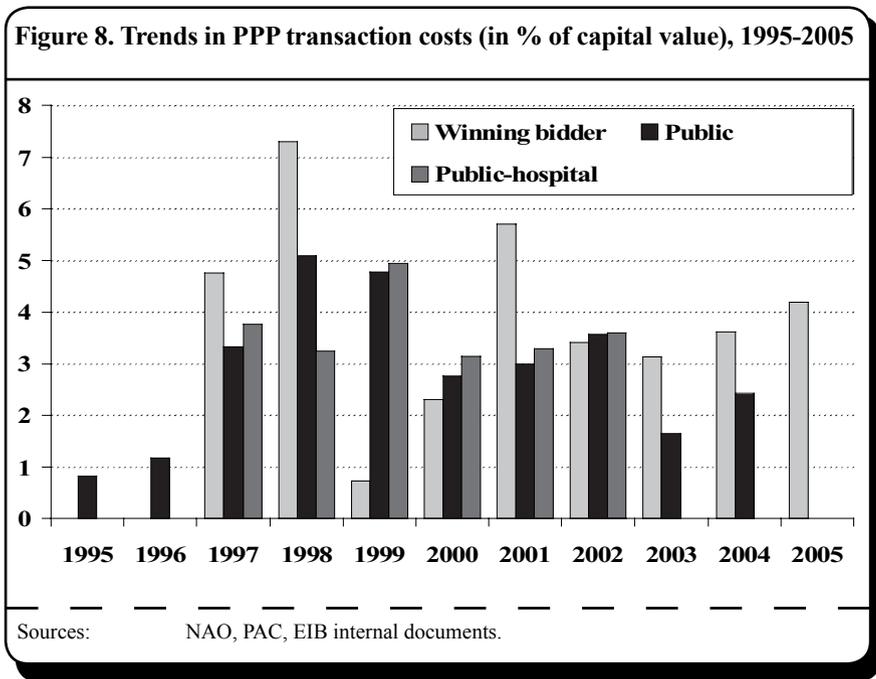
**Figure 7. PPP transaction costs by number of bidders (in % of capital value)**



Sources: NAO, PAC, EIB internal documents.

While there is no obvious economic reason why transaction costs would peak with exactly three bidders, it is conceivable that the explanation lies in the way that the presence of three bidders combines the intensity of competition and the likelihood for a bid to succeed. From the perspective of an individual bidder, the presence of two other bidders renders the bidding process at the same time competitive and reasonably likely to result in success. Therefore, any bidder has the incentives to spend quite a lot to win the contract. Such incentives are weaker if either the number of bidders is smaller (which curtails competition and increases the likelihood of winning even if little is spent) or larger (which reduces the likelihood of winning).<sup>12</sup> This being said, Figure 7 only shows the transaction costs to the public sector and the winning bidder, but it abstracts from transaction cost to failed bidders. Including the latter suggests that total procurement phase transaction costs level off at 12-14 percent of capital value for three and more bidders.

The other surprising and possibly disappointing finding is that transaction costs do not seem to decline systematically over time, at least based on the projects in our sample. Figure 8 shows such costs for the public sector and winning bidders during the sample period, and it also shows separately the public sector's transaction costs in hospital projects, as they constitute the single largest sector in the sample.



12) While the absence of competition would therefore seem to be associated with relatively low costs of bidding and contract negotiation, it is likely that it increases costs down the road as the lack of competition is likely to result in higher overall costs of the project to the public sector and in a higher probability of contract renegotiation during its life cycle.

There is no statistically significant trend in private sector transaction costs. Notably, the extreme values for the private sector (1998 and 1999) only represent one single observation each and should therefore be taken with a grain of salt. Similarly, there is no significant trend in the public sector transaction costs overall, or in hospital projects. In sum, there is no indication that transaction costs decline over time as experience of the process accumulates in both public and private sectors.

To summarise, this attempt at quantifying the transaction costs in PPPs suggests the following conclusions. First, even if only the transaction costs related to the procurement phase are considered—thus ignoring the possibly high costs of monitoring and renegotiating the contract over its life cycle—they amount on average to well over 10 percent of the capital value of the project. The public sector and the winning bidder's costs reach some 7 percent. In addition, costs incurred by failed bidders can be estimated at some 5 percent of the project's capital value.

Second, transaction costs to the public sector and the winning bidder vary between countries (legal systems), and they are significantly higher in small projects (below £25 million for the public sector) and in projects that take long (over 50 months) to procure. In contrast, neither experience in setting up partnerships nor the number of bidders significantly affects the costs to the public sector and the winning bidder.

These results offer some first insights into the issue, but it is important to repeat what they do not do. They do not tell us anything about the difference in transaction cost between traditional public procurement and PPPs – though the prior remains that PPPs are more expensive to set up. Also, these results do not tell us to what extent transaction costs eat up cost savings otherwise achieved by a PPP structure. But questions remain for future research.

## **5. The EIB and PPPs**

Over its almost five decades of operation the European Investment Bank (EIB) has gained considerable expertise in financing infrastructure projects. What is more, for more than a decade, it has been supporting PPPs across a variety of countries and sectors. But what exactly has been the role of the EIB in PPPs?<sup>13</sup>

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13) For a more on this question, see EIB (2004) “The EIB’s role in public-private partnerships (PPPs)”

Obviously, as a bank, it is a provider of funds, ranging from the traditional long-term bank loan to risk capital operations supported by the European Commission in the context of trans-European network projects. The EIB's role in PPP projects is not confined to providing finance, however. Since it has been closely involved over the years at all stages in the preparation of a large number of PPPs, it has acquired considerable experience in various sectors and countries. As a result, the EIB can credibly advise public promoters in the structuring of projects and even, in some countries, in the preparation of the legislation with regard to PPPs. Moreover, the EIB's experience has reinforced its catalytic effect in PPP projects, thereby attracting other sources of finance.

Cognisant of the wider role of the EIB, let us now zero in on the size of its financial support. Over the past 15 years the EIB has been one of the most important providers of funds for PPPs in Europe. The total amount of loans granted in favour of PPP projects in the various EU countries is around €18 billion. As all these projects are by nature long term projects, the finance provided extends over long periods, with maturities of 20 to 30 years.

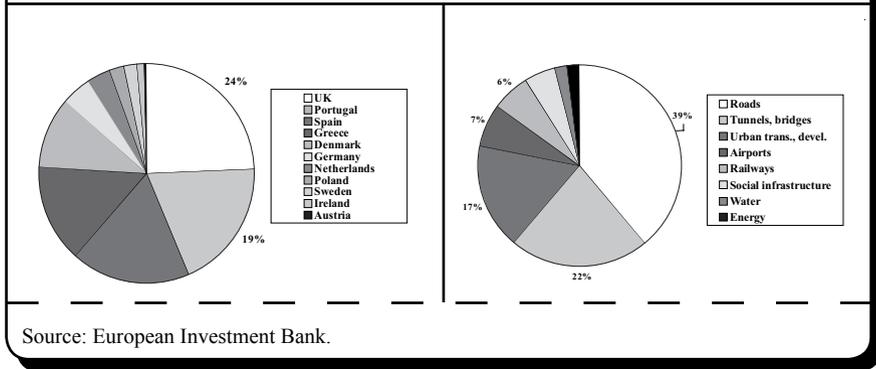
As the left-hand panel of Figure 9 illustrates, geographically, the UK is the main beneficiary of EIB funding for PPPs. This is hardly surprising given the UK's lead in using PPPs for providing infrastructure services. The right-hand panel of Figure 9 shows the sectoral breakdown of loans granted by the EIB for PPPs. Here again, the breakdown of EIB loans for PPPs reflects the extent to which various sectors have made use of the PPP model. But it also transpires that around two-thirds of the PPPs supported by the EIB are in sectors where *a priori* reasoning speaks in favour of using this procurement route.<sup>14</sup>

That said, the EIB has no particular preference in principle for PPPs. Ultimately, it is for the public authorities to choose the most appropriate form of finance for capital projects, and whether or not a project is structured as a PPP does not affect its eligibility for EIB finance. Of course, a project carried out through a PPP must be intrinsically sound.

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14) The sectors that can safely be counted for this purpose are roads (39 percent), tunnels, bridges, etc. (22 percent), water (2 percent), and social infrastructure (5 percent), with social infrastructure essentially comprising school and hospital buildings.

**Figure 9. The EIB PPP portfolio by country and sector**



Having outlined what the EIB is doing in the field of PPPs, let us move on to the practical lessons learned to-date. But there is reason for modesty: as no PPP has reached the end of its lifespan, the lessons learned are inevitably based on the procurement, construction, and early operating phase of PPPs. In what follows, we draw on the EIB's own experience and investigations carried by scholars and PPP practitioners.<sup>15</sup>

## 6. Lessons learned from the PPP experience

The first lesson worth noting is that in general PPP projects have achieved good results in terms of completion of the construction phase on time and within budget. In this respect the results have been far better than for capital projects financed in the traditional manner (see NAO 2003 and Thompson 2005, for instance).

While on-time and on-budget delivery arguably is a welcome outcome, a few qualifications are warranted. For a start, a key reason for on-time and on-budget delivery is the use of fixed-price, fixed-term construction sub-contracts. These are common in PPP structures, but could also have been applied to traditional public procurement.

<sup>15</sup> Specifically, the EIB has recently undertaken an ex post evaluation of its PPP portfolio (EIB 2005 and Thompson 2005). In addition, it has initiated research on the practical experience with PPPs in the UK, Portugal, and new member states of the European Union (Grout 2005, Leahy 2005, Monteiro 2005, and Brenck et al. 2005)

Furthermore, one must not confuse the effectiveness of PPPs in successfully getting projects on stream with the ultimate goal of enhancing the efficiency of using and allocating scarce resources. More concretely, Monteiro (2005) observes that PPPs in Portugal were very successful in rapidly developing infrastructure and in improving the quality of public services, but that in terms of economic efficiency they might not have scored as high as they could have.

A more fundamental qualification has been made by Dewatripont and Legros (2005). They argue that the perceived strength of PPPs in delivering infrastructure projects on budget more often than traditional public procurement could be illusory. This is because there are costs associated with trying to avoid cost overruns. There is then a trade-off between these costs and the benefits of minimising cost overruns. An intriguing implication of this insight is that cost overruns, as they often occur in traditional procurement, could reflect an equilibrium phenomenon rather than a too costly procurement of infrastructure assets. To quote from Dewatripont and Legros (2005): “What matters is the *ex post* quality and costs of projects. A project of a given quality costing 200 without cost overruns is less desirable than a project with the same quality planned to cost initially 100 and experiencing a 50-percent cost overrun.”

But let us rework this simple illustration to bring out an undisputed strength of PPPs. Suppose when considering the choice between a PPP and a traditionally procured project it is found that *ex ante* the full life-cycle cost of a PPP is estimated at 150 and the cost of a traditionally procured project at 100. Traditional procurement then seems to be preferable. However, one reason why the costs of a PPP are higher *ex ante* is that more resources are spent to assess the underlying projects, notably the risks involved. In fact, this extra effort of assessing the project contributes to the PPP transaction costs discussed above. But better scrutiny at the appraisal stage also results in a more comprehensive assessment of the project and its costs. An important element here is that project risks assumed by the private partner are priced whereas they may be overlooked – or ignored – in a traditional public procurement. In sum, the PPP might only appear more expensive *ex ante* because the traditionally procurement alternative fails to account for all costs and does not correctly price the risks involved.

The second lesson is that the underlying project must be intrinsically sound and that a bad project has no chance of being transformed into a good PPP. To be sure, the PPP approach is not the philosopher’s stone of infrastructure investment. Furthermore, it must also be recognised that excellent public investment projects might not form a sound basis for a PPP. This could be, for instance, because the risks are difficult to allocate efficiently or the technical environment is unstable and therefore the risk of renegotiation is very high. A case in point is a PPP in the IT sector, where indeed the experience with PPPs seems to have been disappointing (see HM Treasury 2003 and Grout 2005, for instance).

More generally, although risk sharing between the private and the public partner is a hallmark of PPPs, it could yield poor results for two reasons. One is that a partner might undertake to manage risks over which it has no influence. And then, the risks that the private partner is supposed to manage may not be perceived as real risks as the public sector is expected to bail out the private partner if that partner finds itself in difficulty. In fact, as Leahy (2005) observes with reference to the UK experience, counting on a bail out when things turn sour, private partners might be too willing to accept inappropriate risks. All told, when risk sharing is far from optimal, the use of PPPs has no impact on the management of the risks attached to the project, and one of the main reasons of improving the cost-effectiveness is lost.

The third lesson is that competition for a PPP enhances the chances for the PPP to deliver value for money, that is, to achieve cost savings over the full life cycle of providing infrastructure services. What is more, competition affects the effort needed to find out *ex ante* whether a PPP can be expected to deliver value for money. The first point is fairly intuitive: with sufficient competition, companies bidding for a PPP are under pressure to search for cost savings and, at the same time, to partly pass them on to society at large in the form of cost-effective infrastructure services. The second point – being of considerable practical relevance – requires a few elaborations, involving a brief discussion of so-called value-for-money tests used in the appraisal of PPPs.

To illustrate the practical relevance as clearly as possible, it is convenient to distinguish three broad types of tests (see Grout 2005, for instance): (i) a full cost-benefit analysis of alternative procurement options, (ii) an assessment of the cost to the government budget of alternative procurement options (which rests on a comparison of private PPP bids with a so-called public sector comparator), and (iii) – much simpler – a comparison of private PPP bids. It can be shown that under reasonable assumptions the second test, i.e., the one based on a public sector comparator, yields the same ranking of procurement alternatives as the first one, putting the second test ahead of the first as it is less costly to carry out. That said, public-sector-comparator tests are also time-consuming to perform and far from immune to errors and ambiguities. This leaves the simple tests of comparing private PPP bids. Obviously, the scope for error does not fully disappear, but one can argue – as Grout (2005) does – that with sufficient competition, a comparison of private sector alternatives is a good substitute for the time-consuming exercise of establishing what might in any case be an erroneous public sector comparator.

Given the possibly limited value of public-sector-comparator tests, it is interesting to briefly review to what extent they are used in practice. To begin with the projects evaluated by the EIB, Thomson (2005) notes that a public sector comparator was carried out on only a minority of the projects evaluated, the apparent reason being that traditional procurement in lieu of PPP was merely a hypothetical but not a practical option.

This being said, Grout (2005) – reviewing the experience in the UK, Ireland, the Netherlands, Canada, and Australia – observes that some form of public sector comparator usually lies at the heart of value-for-money tests. Although this is true, Leahy (2005) notes that the UK appraisal framework has been changed in recent years, resulting in a reduced emphasis on the public sector comparator.

This seems to contrast with the lessons drawn in Portugal. Reflecting the view that PPPs in this country could have scored higher in terms of economic efficiency, Monteiro (2005) emphasises recent changes to Portugal’s institutional framework for PPPs, which now calls for a public sector comparator to guide the decision for or against PPPs. In this sense, Portugal – as well as other countries – appears to be swimming against the UK tide and the recommendations that transpire from Grout (2005). All this suggests that a consensus on how to appraise the pros and cons of PPPs in practice has not yet emerged.

The fourth lesson – one directly deriving from the experience of the EIB – is that the task of supporting PPPs is far more complex and challenging than support for traditionally procured infrastructure. In traditional financing of public infrastructure, the provision of the infrastructure and the financing are two quite distinct operations, which can be carried out independently, even by two different administrations. In a PPP this distinction no longer applies. The lenders are key players in a PPP and have a crucial role in distributing the risks and setting up the PPP. This goes far beyond merely juxtaposing private and public finance. The challenge is to organise the financing of PPPs on a close-knit basis, where each type of instrument plays the role for which it is best suited. In this connection, the judicious use of instruments of public support (subsidies, EU budget funds, EIB finance) cleverly complement private finance and make in some cases the PPP approach viable. Another challenge for institutions like the EIB is that they essentially have two clients on PPP projects (Thompson 2005). At the beginning, i.e., when the PPP structure and financing plan are being developed, it is the public promoter of a PPP. Later on when funds are made available, it is the winning bidder who becomes the client of the EIB. All told, providers of finance assume more responsibility in a PPP compared to the financing of traditionally procured public infrastructure assets, and carrying out multiple tasks in the right manner is key for the success of a PPP.

The fifth lesson stems from the recognition that PPPs are an area which is at the maturing stage, but which is at the same time constantly evolving. There is no point in seeking to reinvent the wheel. It is more effective to draw on the expertise acquired in those countries with longer experience of PPPs and to adapt it to the circumstances in the country concerned. The same applies within countries when PPPs are used in different sectors or by different public authorities. Against this background, the establishment of national or regional centres of PPP expertise is certainly useful for increasing awareness and improving coordination among private and public operators in the setting up of PPPs.

With the sixth lesson, namely the need to properly account for the long-term budgetary implications of PPPs, we look at the wider impact of PPPs and, at the same time, another key element in finding out whether PPPs make economic sense. Portugal's PPP experience provides a telling tale in this respect (Monteiro 2005). To illustrate, in recent years, the government budget for the road sector has amounted to some €700 million (around 0.5 percent of GDP). Expenditures financed from this budget included the maintenance of existing roads and bridges, the construction of new ones, and shadow toll payments to PPP concessionaires. From 2007 on, projected annual shadow toll payments alone, to be made over a period of almost 20 years, will reach €700 million. This will clearly stretch the road budget and, in fact, to mitigate the situation, the government of Portugal is considering replacing shadow tolls by real tolls in highway PPP concessions.

The Portuguese experience vividly shows that the short-term budgetary relief of PPP programmes can be very deceptive. To avoid such problems in future, it is now a requirement that the long-term budgetary implications be spelled out prior to launching PPPs. This will allow a better assessment of whether or not PPPs are affordable. Equally important, a comprehensive and transparent assessment of the long-term fiscal burden of PPPs should make it more difficult to use PPPs as a politically expedient way to disguise government expenditure and to transfer infrastructure costs from current to future generations. Indeed, from the perspective of the government budget, PPPs substitute future payments for current investment costs, which the government would have incurred had it procured the infrastructure asset in the traditional way. If not properly dealt with, this substitution may make the government budget look healthier than it actually is, thereby undervaluing the cost of PPP-financed infrastructure and biasing decisions in favour of PPPs.

The last lesson worth highlighting is that PPP need an appropriate institutional framework to deliver on their promises. For a start, the skills required in the public sector to define, launch, and monitor PPPs are very different from those needed in connection with traditional procurement. In many countries, it has been a challenge for the public sector to rapidly build up the capacity and knowledge to devise and implement PPPs and, still more important, to manage the PPP contractual relationships over the long run. In fact, in his analysis of Portugal's PPP experience, Monteiro (2005) observes that the public sector's progress on this front has not kept pace with that of private sector partners. What is more, the very development of PPPs enticed public sector employees to join the private sector.

Shortcomings in the institutional framework also top the list of explanations for the limited role that PPPs have played to-date in efficiently expanding and modernising the public infrastructure in new EU member states (see Brenck *et al.* 2005). Although Brenck *et al.* focus on the highway sectors in selected countries, their findings more generally explain why PPPs have not lived up to their potential in new EU members and, by extension, what needs to be done so that they will in future. Specifically, the authors stress the need for a systematic assessment of procurement

options, a more transparent and clearly defined contract awarding process, a credible commitment by the government not to interfere and/or backtrack on agreements, and a rational framework for renegotiating contracts. Improvements in these areas should lead to better-prepared PPP tenders, more competition for PPPs, fewer delays in project implementation, and lower transactions costs. Overall, the complex structure of PPPs has been a formidable challenge for new member states and, in fact, might have exceeded their institutional capabilities. That said, Brenck *et al.* note substantial progress towards a more stable, focused, and transparent institutional framework. This bodes well for the future, promising that PPP projects will be more successful, result in higher efficiency, and be chosen because they offer value for money and not because governments perceive them as a means to circumvent budget constraints.

To wrap up, the experience with PPPs suggests a number of important lessons. In essence, each of them encapsulates a key conclusion of this paper. Three additional concluding remarks are worth making nonetheless.

## 7. Concluding remarks

First, there is no doubt that PPPs have potential to help deliver infrastructure services more efficiently than the alternative of procuring infrastructure assets in the traditional way. However, there is reason to conclude that the PPP model makes sense for the supply of some services but not for others. More specifically, it is likely to make sense when the scope for life-cycle cost savings is high and when the quality of the service delivered by the private partner is not too difficult to define, measure, and guarantee. Recognising the limitations of the PPP model also suggests that it would be misleading to argue that with the PPP experience gained in providing services such as roads, bridges, tunnels, and accommodation, the model could now simply be transposed and applied to other services, such as core services in health and education.

Second, while solid economic arguments in favour of a PPP are necessary, they are not sufficient to ensure its success. Equally important are, for instance, a transparent and competitive bidding process, contractual relationships that get the risk transfer right (*ex ante* and *ex post*), and control over the costs of setting up and following through a PPP. In sum, there are a variety of prerequisites that have to be in place. Get these prerequisites right, and a PPP is an attractive route to follow. Get them wrong, and the public sector might be in for an expensive ride.

Finally, fiscal considerations should play no role when deciding for or against PPPs. The notion that PPPs have made possible the supply of public services that governments could not afford to supply is erroneous, essentially revealing that the true cost to the budget or the public at large of providing such services have not been

made as transparent as they should have. Choosing PPPs as a politically expedient way of providing public services in an era of fiscal constraints is bad for at least two reasons. For one thing, it boils down to a misallocation of resources and, thus, counteracts efforts to turn Europe into an economically more dynamic and productive region. For another, it undermines the credibility of the PPP model, thereby defeating its very purpose, that is, to create value for money.

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