

# EIB PAPERS

## **Innovative financing of infrastructure – the role of public-private partnerships:**

### ***Lessons from the early movers***

Is the PPP model applicable across sectors? <i>Armin Riess</i>	10
Value-for-money measurement in public-private partnerships <i>Paul A. Grout</i>	32
Lessons from the Private Finance Initiative in the United Kingdom <i>Patricia Leahy</i>	58
Public-private partnerships: some lessons from Portugal <i>Rui Sousa Monteiro</i>	72
Public-private partnerships in new EU member countries of Central and Eastern Europe <i>Andreas Brenck, Thorsten Beckers, Maria Heinrich, Christian von Hirschhausen</i>	82
Public-private partnerships: prerequisites for prime performance <i>Campbell Thomson</i>	112



## Editorial Policy

---

### Editor

Armin Riess

### Assistant Editor

Timo Vällä

### Production

Farrah Baut-Carlier  
EIB Graphic Shop

The EIB Papers are published each year by the Economic and Financial Studies Division of the European Investment Bank. The journal is divided into two issues and is aimed at encouraging high-quality economic research and debate on matters of European interest. As such the *Papers* are intended to be accessible to non-specialist readers and emphasise policy dimensions rather than technical issues. They present the results of research carried out by Bank staff together with contributions from external scholars and specialists.

Articles will only be accepted for publication on the condition that they have not already been published elsewhere. All articles in the EIB Papers may be freely reproduced and quoted; however, the Editor would appreciate acknowledgment and a copy of the publication in question. They can also be freely accessed and downloaded from our website: <http://www.eib.org/efs/>

The views expressed in the articles are those of the individual authors and do not necessarily reflect the position of the EIB.

# EIB PAPERS

**Innovative financing of infrastructure –  
the role of public-private partnerships:**

*Lessons from the early movers*



# Contents

Preface by Sauli Niinistö, Vice-President	5
Conference speakers	7
<b>Innovative financing of infrastructure – the role of public-private partnerships: <i>Lessons from the early movers</i></b>	
<i>Editors' comment</i>	9
Is the PPP model applicable across sectors? <i>Armin Riess</i>	10
Value-for-money measurement in public-private partnerships <i>Paul A. Grout</i>	32
Lessons from the Private Finance Initiative in the United Kingdom <i>Patricia Leahy</i>	58
Public-private partnerships: some lessons from Portugal <i>Rui Sousa Monteiro</i>	72
Public-private partnerships in new EU member countries of Central and Eastern Europe <i>Andreas Brenck, Thorsten Beckers, Maria Heinrich, Christian von Hirschhausen</i>	82
Public-private partnerships: prerequisites for prime performance <i>Campbell Thomson</i>	112



# Preface

Public-private partnerships (PPPs) have emerged as a means of financing public infrastructure in many countries – in the European Union but also elsewhere in the world. For a good part, fiscal constraints have spurred the move towards public-private partnerships, with governments seeing them as a way of providing infrastructure services without having to incur upfront the high cost of putting in place the underlying infrastructure asset. That said, hopes that public-private partnerships will lower the whole-life-cycle cost of infrastructure services have also motivated public-private partnerships. In fact, such whole-life-cycle cost saving constitute the economic rationale of embarking on the PPP route.



**Sauli Niinistö**  
**Vice-President**

The role of public-private partnerships in setting up public infrastructure, trends in public sector investment, the link between infrastructure and economic growth, and the economic pros and cons of public-private partnerships are key topics addressed in the companion edition (Volume 10, Number 1) to this edition of the *EIB Papers* (Volume 10, Number 2).

This edition broadens the perspective on public-private partnerships in two dimensions. For one thing, it considers additional conceptual questions such as whether the PPP model is applicable across different economic sectors (e.g., transport, health, and education) and how to assess the ‘value for money’ that public-private partnerships are expected to generate. For another, it zooms in on the experience with public-private partnerships. The task here is to identify factors – and their relative importance – that made public-private partnerships succeed, or fail.

At a decade and a half, public-private partnerships have been around long enough to allow their assessment from a practical perspective, drawing on the experience of the United Kingdom, Portugal, and a number of new EU members from Central and Eastern Europe. What is more, the European Investment Bank itself has been involved heavily in setting up and financing PPP projects in a variety of sectors and countries and, as a result, it is obvious to draw some lessons from the Bank’s experience.

To conclude, I am convinced that the insights, experience, and lessons compiled in this volume of the *EIB Papers* will contribute to a better understanding of public-private partnerships. This should be useful, in particular, in countries at an early stage of using public-private partnerships or where the experience with PPP projects has so far not been a happy one.

A handwritten signature in blue ink that reads "Sauli Niinistö". The signature is fluid and cursive, with a long horizontal stroke at the end.





# Innovative financing of infrastructure – the role of public-private partnerships:

## Lessons from the early movers

The *2005 EIB Conference on Economics and Finance* – held at EIB headquarters in Luxembourg on January 20 – examined the role of public-private partnerships in the provision of public infrastructure services. Presentations covered a variety of aspects, including the link between infrastructure and economic growth, the economics of public-private partnerships, and the experience of countries – and the European Investment Bank – with public-private partnerships.

Speakers include:

**Jakob DE HAAN,**  
of the University of Groningen,  
The Netherlands

**Mathias DEWATRIPONT  
and Patrick LEGROS,**  
of the Université Libre de Bruxelles,  
Belgium

**Paul GROUT,**  
of the University of Bristol, UK

**Patricia LEAHY,**  
of the National Audit Office, UK

**Rui Sousa MONTEIRO,**  
of Parpública SA, Portugal

**Armin RIESS,**  
of the EIB

**Campbell THOMSON,**  
of the EIB

**Timo VÄLILÄ,**  
of the EIB

**Christian VON HIRSCHHAUSEN,**  
of the Dresden University of Technology,  
Germany





# Editors' comment

The governments of many countries – in the European Union and elsewhere – are increasingly using public-private partnerships as a means of financing and providing public infrastructure services.

Both editions of this year's *EIB Papers* are devoted to public-private partnerships as innovative tools for financing and providing public infrastructure services. This edition (Volume 10, Number 2) looks at some practical aspects of assessing public-private partnerships and lessons from countries that have been first in carrying out their modern incarnation. The other edition (Volume 10, Number 1) takes a more conceptual view, investigating – among other things – trends in public investment, the link between public capital and economic growth, and the economics of public-private partnerships. The contributions to Volume 10, Number 1 comprise:

## **Roads on a downhill? Trends in EU infrastructure investment**

Timo Vällilä (EIB), Tomasz Kozluk & Aaron Mehrotra (European University Institute in Florence)

## **Public capital and economic growth: a critical survey**

Ward Romp & Jakob de Haan (University of Groningen)

## **Is there a lack of public capital in the European Union?**

Christophe Kamps (Kiel Institute for World Economics)

## **How expensive are cost savings? On the economics of public-private partnerships**

Timo Vällilä (EIB)

## **Public-private partnerships: contract design and risk transfer**

Mathias Dewatripont & Patrick Legros (Université Libre de Bruxelles)

*Armin Riess and Timo Vällilä*

## ABSTRACT

*Focussing on two key features of a PPP – the bundling of construction and operation of an infrastructure asset, for one, and private ownership for another – this paper argues that the PPP model is suitable for some public services but not for others. While the incentive-oriented mechanism of bundling and private ownership fosters cost savings in the provision of public services, such savings might come at the expense of public-interest objectives, which – after all – set public services apart from private goods and services. The challenge then is to find out whether the conditions for cost savings to outweigh departures from public-interest objectives are more likely to exist for some services than for others. This paper answers affirmatively, putting the ease (or difficulty) of contracting on public services – notably their public-interest objectives – at the heart of the argument.*

**Armin Riess** (a.riess@eib.org) is Deputy Head of the Economic and Financial Studies Division of the EIB. The views expressed are strictly personal.



# Is the PPP model applicable across sectors?

*Nothing is more sad than the death of an illusion*  
Arthur Koestler

## 1. Introduction

Public-private partnerships (PPPs) have been used as an alternative to traditional procurement in many countries, providing infrastructure services in sectors as diverse as transport (road, rail, bridges, tunnels), health (hospitals and specialised health services), education (schools, museums, libraries), water resources (filtration plants, irrigation, sewage treatment, pipelines, water supply), public administration (courts, police stations), and prisons. Given this long, but not complete list of sectors in which PPPs have made inroads, the question this paper addresses seems to be superfluous. However, one can safely claim that the drive towards PPPs over the last one and half decades has been fuelled not only by economic efficiency considerations but also by government budget constraints and – more generally – a sometimes uncritical, if not ideological presumption that private sector participation in the provision of public services can do no harm. But perhaps it can, and the fiscal motivation for PPPs might have pushed them into sectors where they do not add value.



**Armin Riess**

It is against this background that this paper concentrates on the economic rationale for PPPs in different sectors. Väililä (this volume) lucidly explains the factors that should guide decisions for or against PPPs. Ignoring some of the finer points for now, PPPs imply a trade-off between productive efficiency and allocative efficiency, and they are welfare enhancing compared to traditional procurement if possible gains in productive efficiency outweigh possible losses in allocative efficiency. Gains in productive efficiency might arise especially through on-time and on-budget construction of infrastructure assets and lower whole-life-cycle cost of using these assets for the delivery of public services. This being said, PPPs trigger cost that, considered alone, work against productive efficiency. Prominent examples are higher transaction cost and, partly as a result, less competition for PPPs than for traditionally procured projects and, thus, possibly excessive charges for the supply of public services. Obviously, when pondering about the trade-off between productive and allocative efficiency, it is assumed that PPPs generate net gains in productive efficiency. If not, there would be no productive efficiency gains to offset possible losses in allocative efficiency. But what is the nature of such losses?

In answering this question, it is crucial to recall that the public services considered have characteristics of public or merit goods – that is why we call them ‘public’, and if they did not have these characteristics, the government would have no reason to be involved in providing them – either through traditional public procurement or PPPs. A corollary of the public/merit-goods characteristic is that the social value of a public service deviates from its private value. An important loss in allocative efficiency could arise if providing public services through PPPs compromises the supply of services with public/merit-goods characteristics, thereby moving the economy away from its welfare optimum. For instance, PPPs might do worse than traditionally procured public projects in meeting health, environmental, safety, and consumer protection standards.<sup>1</sup>

To further investigate the trade-off arising in PPPs, it is useful to highlight two of their salient features (see Grimsey and Lewis 2004, for instance). For one thing, they are incentive oriented, rewarding

<sup>1</sup> PPP proponents often dismiss this argument by observing that appropriate contractual arrangements could ensure that PPPs meet the public interest as well as traditional ways of providing public services. The key rebuttal to this observation is that contracts cannot be complete (or can only be made complete at prohibitive cost). We will return to this issue in greater detail in Sections 3 and 4.

good and penalising bad performance. In essence, the productive efficiency gains expected to come with PPPs follow from this incentive-oriented mechanism. For another – closely related to the first feature – PPPs are performance based, with performance having many dimensions. One that is especially important for the trade-off between productive and allocative efficiency is how a PPP scores in meeting the policy objectives associated with the public/merit-goods characteristics of the service. In essence, monitoring and controlling how well PPPs meet public-interest objectives is a means of containing possible losses in allocative efficiency. As a first approximation, one could conjecture that the trade-off between productive and allocative efficiency is the more likely to come out in favour of PPPs, the stronger the incentive-oriented mechanism is and the easier it is to monitor the performance of PPPs.

**The key question is: does the incentive-oriented and performance-based mechanism of PPPs work for all sectors, or is it promising only for some?**

The question whether the PPP model is applicable across sectors can then be rephrased: can the incentive-oriented and performance-based mechanism of PPPs put to work in all sectors, or are there reasons to conclude that it is promising for some sectors but not for others? To motivate the question and glimpse at a crucial factor shaping the answer, let us look at two opposing views, one of them made with reference to the UK Private Finance Initiative (PFI):

“The operation of a toll road is not conceptually very different from operating a railway, a hospital or a prison, ...all must provide specified services to a guaranteed and measurable standard...” (Smith 1999)

“Sectors, and projects within sectors, will have different characteristics, and for some the PFI model will bring large efficiency gains and for others the approach ... may be positively harmful.” (Grout 1997)

Ironically, the first viewpoint – which would suggest that the PPP model is applicable across sectors – implicitly hints at circumstances that could make PPPs ‘positively harmful’ and, in fact, all the circumstances mentioned link to the question of how well the performance of a PPP can be monitored. To put it differently: the PPP model can be applied to all sectors if services can indeed be clearly specified, measured, and guaranteed – the trouble is that they cannot and, more important from the perspective of this paper, the extent to which they can differs across sectors.

A few more clarifications help before setting off. First, while we have posed the question whether the PPP model is applicable across sectors, the more pertinent question is whether it can be applied to different public services. The reason for distinguishing services rather than sectors will become clear in Section 2, which follows this introduction. Second, the main benefits that PPPs are expected to generate are on-time and on-budget delivery of infrastructure assets and cost savings over their whole life cycles. For reasons that will be given in Section 3, this paper will focus on life-cycle cost savings. Apart from risk-sharing, which is discussed by Dewatripont and Legros (this volume), the theoretical literature on PPPs (e.g., Hart *et al.* 1997, Bentz *et al.* 2001, Hart 2003, and Bennett and Iossa 2004) and practitioner’s guides (e.g., Grimsey and Lewis 2004, Ghobadian *et al.* 2004, and Paul 2003) see two main sources for such cost savings: one is the bundling of responsibility for building and operating infrastructure assets and the other is private in lieu of public ownership of assets. Reflecting this distinction, Section 3 sets out to analyse the trade-off between productive and allocative efficiency that can be traced to ‘bundling’ irrespective of who owns the asset, and it illustrates for which public services this trade-off supports a decision to bundle and for which it does not. Section 4 provides the mirror image: leaving the bundling issue aside, it analyses for which services private ownership promises a welfare-enhancing trade-off and for which it does not. At this stage of the paper, we will have a stylised idea about the public services that lend themselves to the PPP model. Section 5 summarises this idea, contrasts it with PPP statistics and, thus, examines whether we find PPPs where we expect to find them. Section 6 concludes.

## 2. Core and non-core public services

A simple point will be made in this section: each public sector service – whether in transport, education, health, or any other sector – comprises several services that can be broadly grouped into core and non-core services. To be clear, the grouping is a matter of judgement based on the degree of public interest in the service provided.

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. 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. Taking the degree of public interest in the service as a guide, it seems sensible to consider clinical services and clinical support services as ‘core’. Non-core services would then encompass all other services, notably maintaining and operating the hospital building, cleaning, catering, laundry, and similar activities. Reflecting a little more on the nature of non-core services, it is not far fetched to see them as 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 non-core 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 non-core, 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 correction, guarding, 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.

A distinction between core and non-core services may appear to be less obvious in sectors such as transport, water resources and supply, and waste management – to name but a few. Indeed, one could argue that these sectors mainly provide core services. Even in these sectors, however, the public is likely to have less interest in some aspects of the service provided than in others. Take toll roads, for instance, where one can presume less public interest in, say, the method of collecting tolls than in road safety, which depends on factors such as the quality of road construction and maintenance. A similar distinction is easy to make for rail transport and water supply.

To conclude, this section has introduced the distinction between core and non-core services. The distinction is not meant to be hard and fast. Rather, it helps in analysing whether the PPP model is applicable across different public services – the topic addressed in the next two sections. What is more, the distinction is useful for reading PPP statistics, which we do in Section 5.

## 3. To bundle or not to bundle?

### 3.1 Preliminaries

As Väilä (this volume) highlights, PPPs come in different types and forms, making it impossible to arrive at a universally accepted definition of a PPP. It is possible, however, to identify features common to most PPPs, setting them apart from other forms of delivering infrastructure services and the supply of private goods. Obviously, that PPPs serve a public interest makes them distinctly different from the provision of private goods by profit-maximising firms. But what distinguishes them from traditionally procured infrastructure assets used by the government, or the private sector on behalf of the government, to supply public services? This paper will focus on two fundamental PPP features: ‘bundling’ and private ownership.

*Taking the degree of public interest in a service as a guide, one can broadly distinguish between ‘core’ and ‘non core’ public services.*

Bundling means that only one party is in charge of building, maintaining, and operating the infrastructure asset and, thus, of supplying the public service. In the terminology of the economic models sketched below, this means the government writes a contract with a builder-operator on the provision of a public service. By contrast, under traditional public procurement, one party builds the infrastructure, another maintains it, and possibly yet another operates it. In these circumstances, the government needs to write at least two contracts: one with a builder on the construction of the infrastructure and another with an operator on the provision of the service.

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. We will define the meaning of ownership in Section 4, 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.

***To find out whether the PPP model is applicable across sectors, it is useful to focus on the issues of 'bundling' and 'ownership'.***

At first glance, the focus on bundling and ownership appears to be a 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 issue 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 take a measure that reduces operating cost but raises the probability of the service not being available. If the builder-operator takes such a measure, he does in the knowledge that lower operating cost might come at the expense of lower revenue.

Another justification for zooming in on bundling and ownership is that we do not want to be distracted by factors unlikely to differ across services. For instance, PPPs have been credited for delivering infrastructure assets on time and budget more often than traditionally procured projects (see, for instance, Leahy, Monteiro, and Thomson – all in this volume). To the extent that this is caused by PPPs, there is little reason to expect this effect to differ across sectors: for instance, if a PPP is better than traditional procurement to have a road built on time, one would expect a PPP to accomplish the same when used for building a school or a hospital.

Dewatripont and Legros as well as Väilä (both in this volume) stress that the theoretical literature on PPPs, which is still in its infancy, explores their economics in the context of either incomplete-contracting models or asymmetric-information models. We find the incomplete-contracting literature particularly informative for the question raised in this paper and we thus use it to analyse for which services bundling makes sense and for which services private ownership is useful. The main goal is to come up with a non-technical presentation of the theoretical arguments in favour of bundling and private ownership for different public services.

### **3.2 An investment at the building stage that lowers 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>2</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.

***Contractual incompleteness is a fact of life, affecting the actions of those providing public services and, as a result, service quality.***

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.<sup>3</sup> As a more serious illustration – moving beyond accommodation 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.

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. The model suggests the more general conclusion that in a world of contractual

---

2 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 – indeed, as concrete as the cement occasionally used to ensure they remain unverifiable for good.

3 The adverse welfare effect could be larger in office buildings where – without windowsills – people lose the extra space to keep important books, papers, and documents they always wanted but so far had not found the time to read.

**The decision for or against the bundling of building and operation depends on a variety of parameters, ...**

incompleteness bundling leads to too much investment in quality-reducing cost savings – that this, too much compared to the mix of cost efficiency and service quality that society would choose if complete contracts could be written. 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 closer to the ideal mix of cost efficiency and service quality that society would choose if complete contracts could be written? Bundling instead of separating is welfare enhancing if life-cycle cost savings outweigh the deviation from public-interest objectives. It follows that bundling is the more promising, the bigger the scope for cost savings and the less important the service quality. 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. To conclude, rather than looking at the trade-off between life-cycle cost savings and deviations from public-interest objectives, we will consider the trade-off between cost savings and the ease of contracting on the public service, essentially assuming that when it is easy to contract, the adverse impact of the investment on public-interest objectives is small – and *vice versa*.

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>4</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). More precisely, bundling is attractive if the welfare gains associated with type-2 investment are large enough to offset a possible welfare loss associated with type-1 investment.

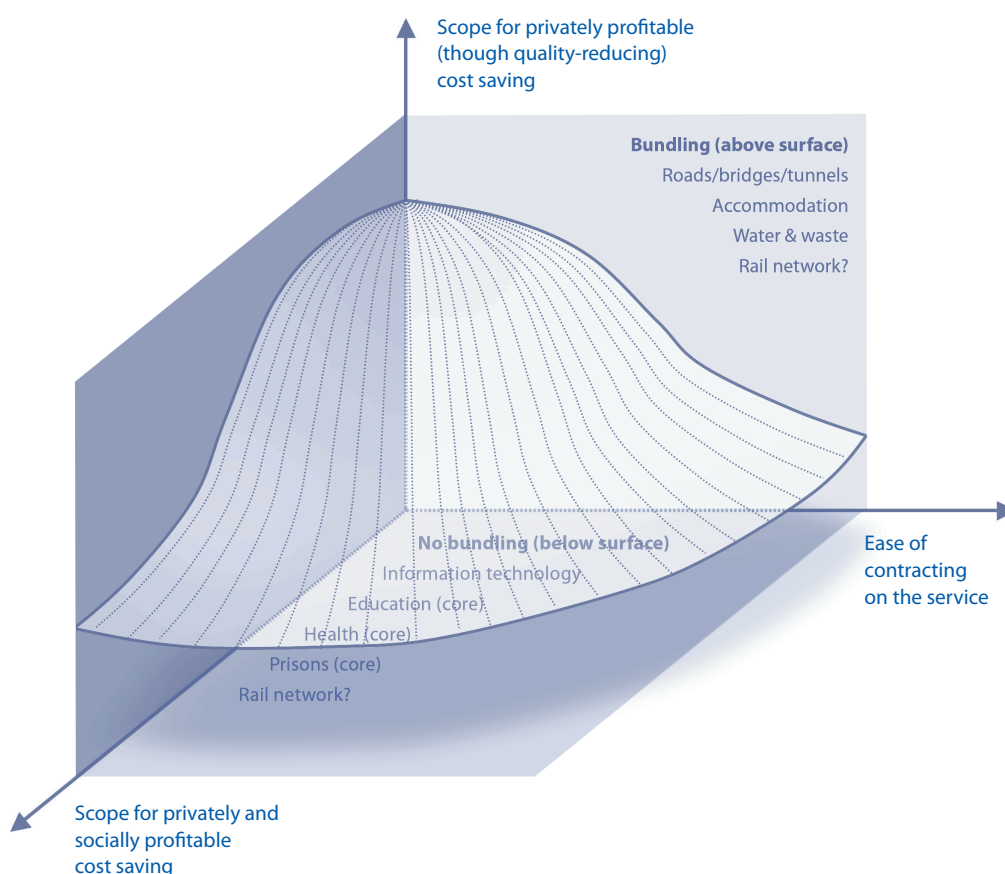
---

<sup>4</sup> 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 level of investment in a complete-contracting world.

Figure 1 illustrates the trade-offs just described and the circumstances in favour of bundling. The vertical and the horizontal axes capture the variables that shape the trade-off associated with type-1 investment: the case for bundling is the stronger, the greater the scope for privately profitable (though quality-reducing) life-cycle cost savings and the greater the ease of contracting on the service. The third axis indicates the scope for privately and socially profitable cost savings stemming from type-2 investment. All in all, the case for bundling is the stronger, the larger these variables are, i.e., the further away from the origin the combination of these variables is. Considering the trade-offs described, one can visualise a surface in this three-dimensional space that separates circumstances where bundling makes sense from those where it does not, with points above (below) this surface showing circumstances favourable (unfavourable) to bundling.

*... notably: the scope for life-cycle cost savings, the effect of bundling on public-interest objectives, and the ease of contracting on these objectives.*

**Figure 1. Trade-offs to consider when deciding whether to bundle or not**



Clearly, the purpose of the figure is to illustrate, not to assert that the underlying parameters, let alone the separating surface, could be precisely determined. The same applies to the positioning of various public services either above or below the separating surface, which – although not arbitrary – reflects judgement rather than scientific accuracy. With these caveats duly noted, 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.

It is probably safe to put roads, bridges, tunnels, water resources and supply, waste management, and – in particular – accommodation services (schools, hospitals, public buildings, prisons, etc.) in the bundling region above the surface. 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. This is likely to be far more challenging for core services in health, education, and the administration of criminal justice and in the case of information technology (IT).

**IT services and core services in health, education, and prisons are weak candidates for bundling.**

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, this volume), but continue to be considered ‘untouchable’ in the UK (Corry 2004). As the discussion in Monteiro (this volume) 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 tricky – 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.<sup>5</sup>

To conclude the discussion of core services in health, education, and the administration of criminal justice, it is useful to stress an implication of the trade-offs described above: if the bundling of construction and operation does not include core services, cost savings are likely to be lower compared to a situation where it does. There is evidence in support of this hypothesis. For instance, reporting about the UK experience, Allen (2003) observes that road and prison PPPs have achieved reasonable cost savings whereas school and hospital PPPs have shown only minimal gains. Allen attributes this mainly to the integration of core and non-core services in road and prison PPPs, enabling builder-operators to strive for life-cycle cost savings, and he compares this to health and education PPPs "where core services are still operated by the public sector" (Allen 2003, p.33).

### 3.3 An investment at the building stage that raises operating cost

As Figure 1 suggests, 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. 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 in greater detail when discussing private vs. public ownership in the next section. 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

*In the case of railway networks and air traffic control, bundling could result in large cost savings but also in a considerable departure from public-interest objectives.*

<sup>5</sup> One can take the same view about the administration of criminal justice – prisons for short – with *ex post* competition in this case meaning that judges send convicts preferably to prisons performing well in maintaining order in the prison, taking good care of prisoners, preparing them for reintegration into society, and reaching low reconviction rates (see Hart *et al.* 1997).

approach the government, explain that even after accounting for investment cost and additional operating cost there is a net gain to society, and request 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 lossa 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 separate contracts are the more likely to outperform bundling, the smaller the increase in operating cost and the greater the quality improvements. This would argue against bundling the building and operation of tracks – on the ground and in the sky – if there is scope for moderate non-contractible investments to lead to significant improvements in service quality without triggering excessive operating cost. Bennett and lossa also suggest that with a non-contractible investment of type-3, public ownership of the infrastructure may be better than private ownership. This takes us to the issue of private vs. public ownership in PPPs.

#### **4. Private vs. public ownership**

##### **4.1 The meaning of ownership**

*Private ownership is better than public ownership in providing private goods. With respect to public goods and services things are less clear and, indeed, public ownership might be better.*

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, we distinguish two types of ownership: in the case of ownership 1, the owner has residual control rights during the building and operating phase of the infrastructure; in the case of ownership 2, the owner can 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 ownership 1, 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 ownership 2 (here in addition to ownership 1).

The type of ownership affects the behaviour of owners. To start with residual control rights during construction and operation: owners can take cost-saving measures they might not take if they were not owners. Such measures help cut the cost of public services and enhance financial returns to owners. Thus, absent any other effects, private ownership by builders, operators, or builder-operators is welfare enhancing. There are other effects, however, because cost-saving measures might compromise public-interest objectives, thus creating a trade-off between private profits and low-cost public services, on the one hand, and public-interest objectives on the other. Section 4.2 discusses this trade-off in more detail.

Section 4.3 looks at the impact of ownership rights in the sense of claims on assets at the end of the operating phase. Infrastructure owners will take actions that increase the residual value of the asset, provided that the net present value of this increase exceeds the cost of taking these actions. This could be beneficial from society's viewpoint if these actions, as a by-product so to speak, further the attainment of public-interest objectives.

In examining the effects of ownership, the aim is again to find out whether there are differences across public services, i.e., whether private ownership promotes the general good when applied to some services but not when applied to others. We proceed as follows. 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.

#### 4.2 Ownership 1: residual control rights during the operating phase of a PPP

In discussing whether residual control rights should rest with the private or the public sector and whether the answer depends on the public service considered, 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 ( $e$ ) 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 of the previous section, the only difference being that the possibility of carrying out this investment arises at the operating stage and not during construction. The common feature is that this investment gives rise to a trade-off between gains in productive efficiency and losses in allocative efficiency. The second investment ( $i$ ), also known from the previous section, 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.

***In a world of incomplete contracts, the owner of an infrastructure asset has 'residual control rights' over that asset.***

To illustrate the insights from Hart *et al.*, a bit of notation will help. Let  $e^*$  and  $i^*$  denote the level of type-1 investment and type-2 investment, respectively, that would result in a first-best situation, i.e., when complete contracts could be written. Furthermore,  $e_G$  and  $i_G$  denotes the level of type-1 investment and type-2 investment, respectively, chosen in an incomplete-contracting world by a public manager of a publicly-owned infrastructure. Likewise,  $e_p$  and  $i_p$  stands for the profit-maximising level of type-1 and type-2 investment, respectively, if the private sector owns the infrastructure. The key finding of Hart *et al.* is that

$$(1) \quad e_G < e^* < e_p$$

$$(2) \quad i_G < i_p < i^*$$

Thus, compared to the first-best outcome ( $e^*$  and  $i^*$ ) there is too little of type-1 investment under public ownership ( $e_G$ ) and, conversely, too much under private ownership ( $e_p$ ). And then, under both

types of ownership there is too little of type-2 investment, with the public-ownership outcome ( $i_G$ ) being further away from the first-best than the private-ownership outcome ( $i_p$ ).

To start with an interpretation of inequality (1), note that  $e^*$  implies an ideal trade-off between cost savings and the goal of meeting public-interest objectives. Private ownership then implies more cost savings at the expense of public-interest objectives. This happens because private owners take into account only cost savings, which benefit them directly, but not adverse repercussions 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.

**While private owners invest too much in cost-saving, quality-reducing measures, public owners invest too little.**

Public owners behave differently. They are concerned about public-interest objectives, but put less emphasis on cost savings. More specifically, public owners do not over-invest in type-1 investment because they internalise the adverse effects of this investment on public-interest objectives. This explains why  $e_G$  is not larger than  $e^*$ , but why do they under-invest ( $e_G < e^*$ )? One reason is that the manager of a publicly-owned infrastructure cannot introduce cost-saving measures without the consent of the owner, i.e., the government. But once the government knows that cost savings can be made, it will extract part of the savings and, therefore, the manager can retain less of them compared to a complete-contracting world. As a result, the public manager lacks the incentive to take  $e$  to its socially optimal level. Another reason why the public manager has relatively weak incentives to put forward cost-saving proposals is that once the government learns about them, it could dismiss the manager and replace him with a new one. In other words, the manager of a publicly-owned infrastructure faces the risk of seeing his knowledge of cost-saving ideas expropriated, and this lowers his incentive to come up with such ideas in the first place.

We now turn to an interpretation of inequality (2). Private owners invest too little in the privately and socially profitable investment because they ignore the favourable public-interest impact of this investment. By contrast, public owners take into account both private and social benefits. There are two reasons why public owners nevertheless under-invest – both have been introduced above: first, public managers have to share the cost savings with the government and, second, they face the risk of knowledge expropriation. Without this risk, which is absent if the public manager who proposes the investment is indispensable for carrying it out, public ownership would result in as much type-2 investment as private ownership ( $i_G = i_p < i^*$ ). In these circumstances, the choice between private and public ownership only depends on whether it is better to have too much ( $e_p > e^*$ ) or too little ( $e_G < e^*$ ) type-1 investment.

We start discussing the issue of private vs. public ownership with this simple case (that is  $i_G = i_p < i^*$ ). 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, and service quality is easy to contract on. Conversely, public ownership has more to offer when the prospect for cost savings is small, concerns about quality are important, and quality of service is difficult to contract on. Assuming now that the knowledge of public managers can be expropriated, thereby considering that type-2 investment can make a difference (because  $i_G < i_p < i^*$ ), strengthens the case for private ownership – the more so, the easier it is to expropriate the knowledge of public managers because the easier this is, the smaller  $i_G$  is. 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.

Figure 2 illustrates how the variables discussed combine in favouring either private or public ownership and it indicates for which services public ownership seems more suitable than private ownership – and *vice versa*. There is obviously a similarity between Figure 2 and Figure 1.

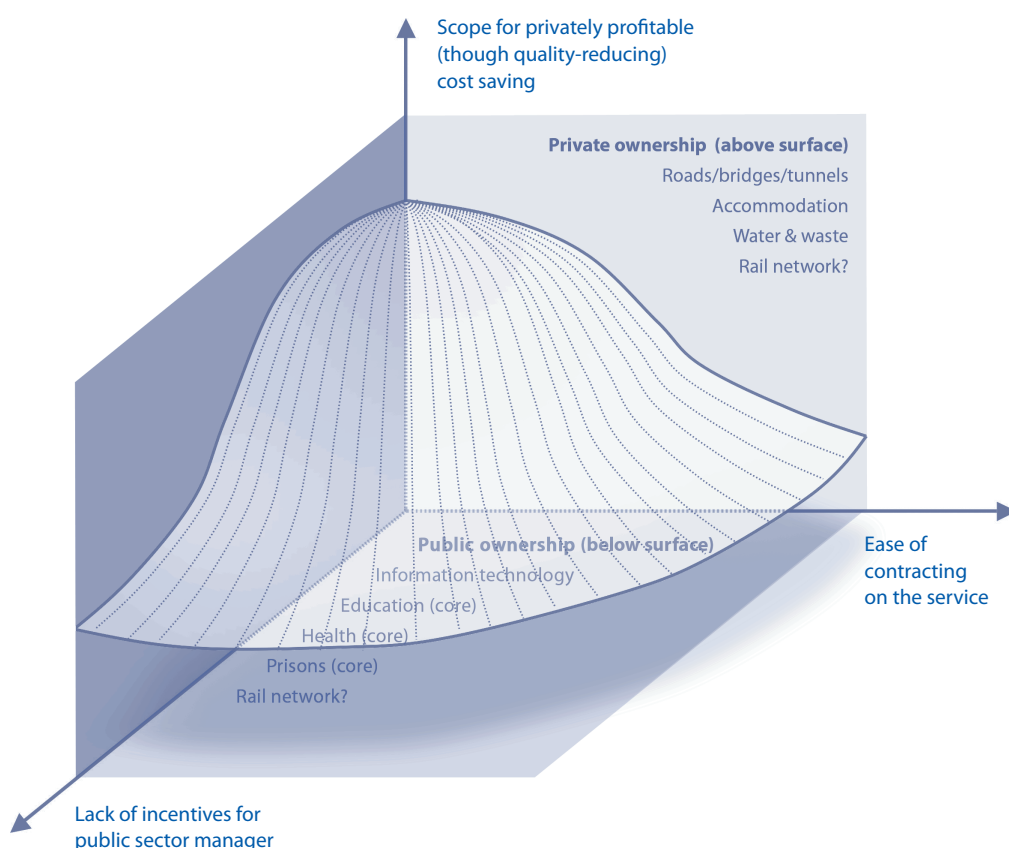


The vertical and the horizontal axes capture the variables that shape the trade-off associated with type-1 investment: the case for private ownership is the stronger, the greater the scope for privately profitable (though quality-reducing) life-cycle cost savings and the greater the ease of contracting on the service. The third axis indicates the degree to which public managers lack the incentives to discover and then carry out cost-saving investments: the more public managers lack these incentives (i.e., the weaker the incentives), the stronger the argument for private ownership – and *vice versa*.<sup>6</sup> On the whole, the larger these variables are, i.e., the further away from the origin the combination of these variables is, the stronger is the case for private ownership. Considering the trade-offs described, one can visualise a surface in this three-dimensional space that separates circumstances where private ownership makes sense from those where it does not, with points above (below) this surface showing circumstances favourable (unfavourable) for private ownership.

Given the similarity between Figure 2 and Figure 1, public services that are good candidates for bundling would also benefit from 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.

**Public ownership makes sense if the cost-saving potential is small, public-interest objectives are important, contracting is difficult, and public managers' incentives are not too weak.**

Figure 2. Trade-offs to consider when debating private vs. public ownership



6 Alternatively one could, as in Figure 1, put the scope for privately and socially profitable investment on this axis: taken the lack of incentives for public managers as given, the case for private ownership is the stronger, the greater the scope for privately and socially profitable investment is.

The reasons why core services in health, education, and prisons – for example – are not prime candidates for bundling (see above) also suggests why these services might be better placed in public rather than private hands. And then, it is questionable where to put railway networks, where the potential for cost savings is large, but where public-interest objectives (i.e., safety) are of considerable concern and contracts not easy and/or costly to write. However, it is more speculative, if not impossible, to identify public services where public managers lack incentives – more than in other services, that is – to embark on cost-saving investments. That said, it seems safe to presume that expropriating the knowledge of managers, which is one factor affecting public managers' incentives, is harder in technologically advanced services than in 'plain vanilla' services. But to go further and to claim that, say, railway networks are technologically more demanding than hospital accommodation is perhaps too speculative.

The bottom line then is that circumstances favourable for bundling are also supportive of private ownership. Some restrictions apply, however, as will become clear when including as an element of ownership the right to claim the value of assets at the end of the operating phase.

#### 4.3 Ownership 2: claims on the value of infrastructure assets

We start with a few *ad hoc* add-ons to the model of Hart *et al.* (1997) used in the previous sub-section. We then return to the framework of Bennett and Iossa (2004), which explicitly models the role of claims on the value of infrastructure assets.

**If owners have a claim on the value of infrastructure assets at the end of the contract period, they carry out more of the non-contractible investment.**

Suppose that in the set-up of Hart *et al.* (1997), both non-contractible investments raise the value of the infrastructure asset at the end of the operating phase, let us call this the end-of-contract value. This would spur investments under both private and public ownership. As for private ownership, this is bad and good at the same time. It is bad because type-1 investment ( $e_p$ ) will move further above the first-best outcome ( $e^*$ ), exacerbating the over-investment problem; it is good because type-2 investment ( $i_p$ ) will move closer to the first-best outcome ( $i^*$ ), attenuating the under-investment problem.<sup>7</sup> As for public ownership, both types of investment would get closer to their first-best level (with the caveat noted in previous footnote). But does this mean that ownership 2 strengthens the case for public ownership?

Not really, for a variety of reasons. First, one cannot compare the net effect of less under-investment as to  $i_p$  and more over-investment as to  $e_p$  with the total effect of attenuating the under-investment in the case of public ownership. Second, aggravating the over-investment under private ownership ( $e_p$ ) might not be a serious problem if the quality of the service is relatively easy to contract on. Third, while a claim on the end-of-contract asset value stimulates investment under both types of ownership, the incentive to invest more is weaker for the public manager than for a private owner because the former would have to share the gains of the extra investment with the government.

All told, while adding ownership-2 aspects to the Hart *et al.* framework suffice to illustrate that this aspect of ownership stimulates non-contractible investment, it does not show whether the stimulus varies across different public services. In this respect, new insights can be gained from Bennett and Iossa (2004), notably on services where safety is a special concern.

<sup>7</sup> For illustrative purposes, we ignore that  $e^*$  and  $i^*$  are likely to change, too, and assume that the under-investment problem with regard to  $i$  does not turn into an over-investment problem.

Bennett and lossa explicitly model the effect of end-of-contract asset value, so there is no need for *ad hoc* add-ons. That said, recall that they do not consider – as Hart *et al.* (1997) – a cost-saving, quality-reducing innovation (type-1, or *e*, investment). Instead, they envisage a quality-improving investment at the building stage that raises operating cost (this investment was introduced as type-3 investment in Section 3.3). This investment also increases the end-of-contract asset value. Overall, type-3 investment is desirable from society’s viewpoint if the benefits of a higher quality public service (e.g., a safer rail network) and the increase in the end-of-contract asset value exceed the sum of higher operating cost and investment cost. A crucial point is that private ownership (and bundling, as discussed in Section 3.3) weakens the incentive to carry out this investment due to its adverse impact on operating cost.

Bennett and lossa also allow for a non-contractible investment at the operating stage that cuts operating cost, furthers the attainment of public-interest objectives, and increases the end-of-contract value of the infrastructure. Let us call this type-4 investment. Without doubt, this investment is privately and socially profitable, irrespective of whether the owner of the infrastructure is the public or the private sector. However, private owners might carry out more of this investment than public owners.

The main insight arising from Bennett and lossa (2004) is: a PPP involving both private ownership and bundling is the more likely to be optimal, the lower the negative impact of type-3 investment on operating cost, the stronger the impact of both investments on end-of-contract asset value, and the smaller the positive impact of both investments on public-interest objectives. What is more, the authors show that chances for private ownership to be optimal rise with a fall in the lifespan of the infrastructure. All this suggests that public ownership combined with separate contracts for building and operating has a good chance to outdo a PPP when the infrastructure has a long lifespan and when public safety is a major concern, expensive to operate, and of little importance for the end-of-contract asset value – the latter because of limited asset marketability, for instance.<sup>8</sup> Tracks on the ground and in the sky are an obvious case in point. But as obvious as this and other conclusions appear, does reality match economic reasoning? We will find out next.

***PPPs might not be optimal when public safety is a major concern, expensive to operate, and of little importance for the end-of-contract asset value.***

## **5. Do we find PPPs where we expect them to be?**

In the previous sections, we have mentioned in passing a variety of public services for which PPPs have been used. This section takes a more systematic look, starting with the expectations one could have in light of what has been presented so far. We have seen that bundling is promising when the quality of public services is relatively easy to contract on and when there is good potential for life-cycle cost savings. Services linked to roads, bridges, tunnels, water resources and supply, waste management, and accommodation (schools, hospitals, public buildings, prisons, and so on) seem to fit this profile well. By contrast, IT services and core services in health, education, and the administration of criminal justice seem to be weak contenders for bundling. Infrastructure services where safety is of particular importance, for example railway networks and air traffic control, are perhaps most difficult to place: life-cycle cost savings are possibly large, but so are adverse service quality effects. Circumstances conducive to bundling are also favourable for private ownership, although there might be services where bundling matches better with public ownership. On the whole, expectations about where to find PPPs can be summarised as in Table 1.

<sup>8</sup> It is clear by now that we have deviated from our script of discussing ‘bundling’ only in Section 3 and of reserving Section 4 to ‘ownership’. This is because in the Bennett lossa model both issues are intertwined. For completeness, we note that this model also suggests the possibility of the following optimal outcomes: (i) bundling combined with public ownership and (ii) separating with private ownership.

**Table 1. Where to expect PPPs?**

No	Yes	Maybe
Core services in ...	Roads	Railway networks
education	Bridges	Air traffic control
health	Tunnels	
prisons	Accommodation	
Information technology	Water & waste	

To find out whether reality matches expectations, we start with a look at UK data given that in the United Kingdom, PPPs in their modern incarnation have been more important than in most other countries in terms of contract value and sectoral distribution; furthermore, they have been used for a longer period. Based on the classification used in the underlying database (HM Treasury and ProjectWare), the left-hand panel of Figure 3 shows how UK PPPs spread across sectors. The right-hand panel presents the same data, but more aggregated and – more important – rearranged in a way reflecting the distinction between core and non-core public services.

***The bulk of UK PPPs (by value) are in activities where economic reasoning makes it hard to argue for or against PPPs.***

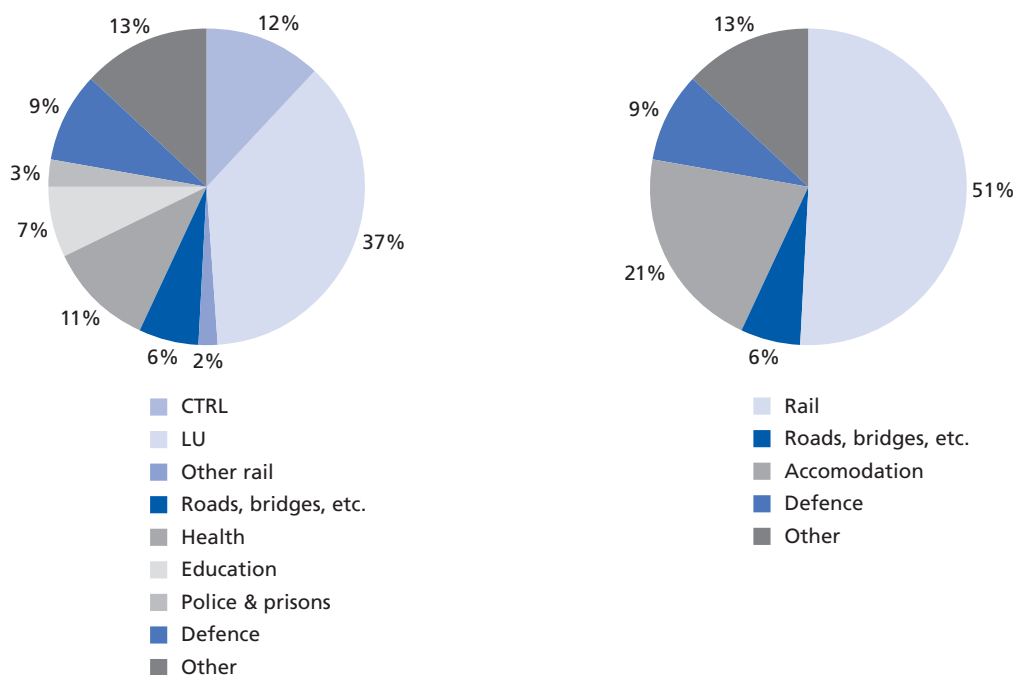
The aggregation relates to railway sector PPPs (accounting for 51 percent of the total value of PPP contracts), which are dominated by the three London Underground PPPs (37 percent) and the Channel Tunnel Rail Link (12 percent). We thus find most UK PPPs (by value) in activities where economic reasoning makes it hard to argue for or against PPPs. In this context, note that the UK government does not list CTRL any longer as a PPP (HM Treasury 2003), and as Grout (this volume) explains, the chequered history of this project suggests that it ‘left the station as a PPP, but arrived as a traditionally procured infrastructure investment’. Grout also notes that it remains uncertain whether the London Underground PPPs provide value for money. As the UK National Audit Office makes clear in its assessment of the London Underground PPPs (NAO 2004), the process of negotiating them was costly for all parties involved. Obviously, a variety of factors have contributed to high transactions cost. But if one accepts that safety is a key concern in transport services not easy to contract on, one may conjecture that attempts at limiting contractual incompleteness with regard to safety have contributed to high transaction cost.

The recent history of the rail network in the UK provides a telling tale about the link between ownership and public-interest objectives.<sup>9</sup> Privatised in 1996, the rail network company, Railtrack, at first experienced a considerable rise in its share price. Unease surfaced promptly, however, that this was largely because the company was more interested in boosting the value of its property portfolio while neglecting network investment and maintenance. Indeed, Bradshaw (1998) observed that Railtrack might have had perverse incentives because not developing the network meant that more land was available for maximising its property value. By mid-1997, Railtrack’s spending on investment and maintenance was around GBP 700 million short of what had been agreed on with the government – not to speak of non-contractible investments considered in this paper. A series of fatal crashes made the conflict of interest between the owners and the users of the rail network poignantly obvious. Railtrack was put under administration and, in October 2002, transformed into Network Rail, a ‘public interest company’. This company is fully debt-financed, guaranteed by the government, and governed by stakeholders, including industry members, ‘public interest’ members, and the government. Similar company structures have been chosen for other public services (such as air traffic control and water supply) in the UK and elsewhere. The common thrust of such

<sup>9</sup> This paragraph draws on Maltby (2003).

structures is to tame the strife for cost savings (and profit maximisation when there are shareholders) and, thereby, limit the danger of incomplete contracts leading to the neglect of important public-interest objectives.

**Figure 3. PPPs by sector in the UK, 1987-2004**



Note: The total value of signed PPP contracts over this period (through September 2004) amounts to around GBP 46 billion; CTRL=Channel Tunnel Rail Link; LU=London Underground.  
 Source: HM Treasury and ProjectWare.

Turning to how the raw data have been rearranged in the right-hand panel of Figure 3, the main point to note is that PPPs in health, education, and ‘police’ and prisons are shown as accommodation (21 percent). 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, Figure 3 does exaggerate the importance of accommodation services. On the contrary, PPPs in ‘defence’ and in ‘other’ very likely include accommodation services too, but this has not been taken into account in Figure 3.

To conclude, in the UK, accommodation services, roads, and the like – i.e., public services for which the PPP model has a lot to offer – appear to make up only 27-30 percent of all PPPs (by value). It is true that the actual share is probably higher because the categories ‘defence’ and ‘other’ most likely include PPPs providing services shown in the middle column of Table 1 – water supply and waste management, for instance. That said, PPPs in rail networks dominate – which is the public service for which the trade-off between productive and allocative efficiency comes out neither strongly for nor against PPPs.

Things are easier on the Continent. Statistics similar to those of Figure 3 for PPPs outside the UK show that PPPs for roads, bridges, and tunnels account for 83 percent of all PPPs (based on a total value of EUR 31½ billion over the period 1995-2003), with rail transport and airports making up 5 percent and 7 percent, respectively. Does this mean that governments outside the UK have deliberately chosen

**Less than one-third of UK PPPs (by value) concerns public services for which arguments in favour of the PPP model are strong.**

to use the PPP model only for public services where it is clearly advantageous? We inevitably had to apply a fair dose of judgement in this paper, but answering this question would indeed be one speculation too many.

## 6. Conclusions

In the introduction to this paper, we insinuated that the question whether the PPP model is applicable across sectors could be superfluous – given that it is being applied to many sectors. Coming to the conclusion, the question almost appears to have been a rhetorical one. Economic reasoning supports PPPs for roads, bridges, tunnels, water resources and supply, waste management, and accommodation services provided by schools, hospitals, prisons, city halls, and so on. By contrast, weighing the pros and cons of PPPs, they might do more harm than good in providing IT services and core services in education, health, and prisons. Also, the case for PPPs is doubtful when public safety is of considerable concern – railway networks and air traffic control being the most prominent examples.

In arriving at this conclusion, we focussed on two central PPP features – bundling and private ownership – and we discussed how these features relate to the benefits and costs of PPPs. There is no doubt that bundling and private ownership combine to form a powerful incentive mechanism for generating cost savings over the whole life cycle of infrastructure assets. Indeed, although there are circumstances where bundling works better with public ownership (or where separating building and operating contracts works better with private ownership), it is the blend of bundling and private ownership that spurs cost efficiency. But it is also true that in a world of incomplete contracts, cost savings might compromise the fulfilment of public-interest objectives (e.g., service quality). Specifically, cost-saving measures might undermine public-interest objectives, and/or measures furthering the attainment of such objectives are not taken because they are costly. Identifying public services suitable for the PPP model then boils down to identifying those services for which cost savings outdo departures from public-interest objectives. Conversely, finding out when the PPP model can be harmful calls for spotting those services for which too much of a departure from public-interest objectives has to be traded-off against too little cost savings.

***For PPPs to work for the general good, the incentive-oriented, performance-based mechanism warrants performance measures that inform well about the attainment of public-interest objectives.***

An aspect closely linked to this trade-off is the ease (or difficulty) of contracting on public-interest objectives – that is specifying, measuring, and guaranteeing them. If contracting is easy, the adverse impact of the strife for cost savings on public-interest objectives can be contained. By contrast, if contracting is difficult, cost savings might come at a high price, either because public-interest objectives do not get the attention they deserve or because attempts at better specifying, measuring, and guaranteeing them involve high transaction cost, wiping out the cost savings resulting from bundling and private ownership. All told, for PPPs to work for the general good, the incentive-oriented, performance-based mechanism – supposed to give them an edge over traditionally procured infrastructure – warrants performance measures that inform well about the attainment of public-interest objectives. When they do, PPPs can work wonders, but when they do not, PPPs might backfire precisely because of their incentive-oriented mechanism.

Besides concerns about public-interest objectives, there could be other reasons for not using the PPP model in some sectors. We will sketch three of them. Risk transfer is a first case in point, although one closely linked to bundling and private ownership. For PPPs to generate value for money, the risks must be transferred to the party best able to manage them. But this might be easier to organise for some public services than for others. Proper risk transfer is especially challenging when core and non-core activities, carried out by different parties to the PPP, combine in the provision of public services – as in the health sector, for instance. The challenge here is to smoothly combine these activities and yet to have a clear demarcation of risks and responsibilities between parties.

Second, lack of competition for PPPs is another factor possibly limiting the applicability of the PPP model. As Grout, Leahy, and Thomson (all in this volume) stress, competition for PPPs (i.e., at the bidding stage) is crucial for generating cost savings and, one may add, for ensuring that they are shared with infrastructure users.

Third, a problem many PPPs ran into is overbidding by PPP contractors. Whether this has been due to optimism bias or strategic behaviour, the latter aimed at winning contracts in the hope of bargaining for more favourable terms later on, it would be interesting to find out whether some public services are more prone to this problem than others.

To conclude, many reasons besides those discussed in this paper suggest that the PPP model does not fit all. Identifying them is no child's play, but it should become easier as experience with PPPs continues accumulating. And as we learn more, we will have to part with a few more illusions, but if this improves our understanding of where PPPs add value and where not, we should be pleased and not sad.

## References

- Allen, G. (2003). "The Private Finance Initiative (PFI)", House of Commons Research Paper 03/79, October 21, 2003, House of Commons Library, London, UK.
- Bennett, J. and Iossa, E. (2004). "Building and managing facilities for public services". Brunel University and CMPO (University of Bristol) Working Paper.
- Bentz, A., Grout, P. A., and Halonen, M. (2001). "What should the state buy?". CMPO Working Paper Series No. 01/40.
- Bradshaw, W. P. (1998). "The rail industry", in Helm, D. and Jenkinson, T. (eds.), *Competition in regulated industries*. Oxford University Press, Oxford, UK.
- Corry, D. (2004). "New Labour and PPPs", in Ghobadian, A., Gallear, D., O'Regan, N. and Viney, H. (eds.), *Public-private partnerships – policy and experience*. Palgrave-Macmillan, Chippenham and Eastbourne, UK.
- Ghobadian, A., Gallear, D., O'Regan, N. and Viney, H. (eds.) (2004). *Public-private partnerships – policy and experience*. Palgrave-Macmillan, Chippenham and Eastbourne, UK.
- Grimsey, D. and Lewis, M. K. (2004). *Public private partnerships – the worldwide revolution in infrastructure provision and project finance*. Edward Elgar, Cheltenham, UK and Northampton, MA, USA.
- Grout, P. (1997). "The economics of the Private Finance Initiative", *Oxford Review of Economic Policy*, (13:4), pp. 53-66.
- Hart, O. (1987). "Incomplete contracts", in Eatwell, J., Milgate, M. and Newman, P. (eds.), *The New Palgrave: a dictionary of economics*, (2), pp. 752-759. Palgrave-Macmillan, London, UK.
- Hart, O. (1995). *Firms, contracts, and financial structure*. Clarendon Press, Oxford, UK.
- Hart, O. (2003). "Incomplete contracts and public ownership: remarks, and application to public-private ownership", *Economic Journal*, (113:486), pp. C69-C76.
- Hart, O., Shleifer, A. and Vishny, R.W. (1997). "The proper scope of government: theory and an application to prisons", *Quarterly Journal of Economics*, 112(4), pp. 1126-61.
- HM Treasury (2003). *PFI – Meeting the investment challenge*, The Stationery Office, London, UK.
- Maltby, P. (2003). *In the public interest? Assessing the potential for Public Interest Companies*. Institute for Public Policy Research (IPPR), London, UK.
- National Audit Office. (2004). "London underground PPP: Were they good deals?". Report by the comptroller and Auditor General. HC 645, Session 2003-2004, 17 June 2004.
- Paul, L. (ed.) (2003). *Privatisation and public-private partnerships – Review 2003/2004*, A Euromoney Publication, Adrian Hornbrook, Colchester, UK.
- Smith, A. J. (1999). *Privatized infrastructure: the role of the government*. Thomas Telford, London, UK.





## ABSTRACT

*Public-private partnerships (PPPs) are long-term partnerships between the public and private sectors that usually involve the private sector undertaking investment projects that traditionally have been executed (or at least financed) and owned by the public sector. This paper considers alternative approaches to value-for-money tests and discusses some of the main conceptual problems associated with these tests. It explains why comparisons between private bids and a public sector comparator are difficult and prone to significant error. It is argued that tests centered on comparisons between private sector alternatives are well focussed, less prone to measurement error than other tests, and more likely to deliver the best candidate from the group it considers. The paper also considers the PPP evidence from the United Kingdom and summarises the experience of outsourcing in the private sector.*

**Paul A. Grout** (p.a.grout@bristol.ac.uk) is Professor of Political Economy and Director of the *Culture and Organisation Programme* at the Centre for Market and Public Organisation, University of Bristol. I would like to thank Aidan Wills for excellent research assistance and Mathias Dewatripont, Patrick Legros, Armin Riess and Timo Väilä for their helpful comments.



# Value-for-money measurement in public-private partnerships

## 1. Introduction

Public-private partnerships (PPPs) are long-term partnerships between the public and private sectors that usually involve the private sector undertaking investment projects that traditionally have been executed (or at least financed) and owned by the public sector. The ownership of the asset remains with the private sector, although this may be transferred at the end of a long contract.<sup>1</sup>

The central feature of a PPP is that the public sector purchases a flow of services rather than building or procuring the physical assets and employing the personnel. The archetypical PPP is a DBFO project, where a private sector company or consortium designs, builds, finances, and operates an infrastructure asset and sells the final service to the public sector or to the public under a government concession. PPPs almost always involve transfer of risk from the public to the private sector as the core incentive mechanism. PPPs being now a common mode of delivery, a government faces more choices than before. Where projects were traditionally delivered solely by the public sector the government's main decision was whether to undertake the project or not. Now the government also has to decide whether to choose the traditional mode of delivery or whether to opt for a PPP. In the latter case it also has to decide between alternative private sector suppliers.

In the most general sense it is reasonable to assume that the choice should be highly influenced and possibly dictated by which option provides the best value for money. In this regard, a value-for-money (VFM) test is a useful tool. The problem is that it is not altogether obvious what a VFM test is. Is it a new terminology for the traditional cost-benefit analysis that has been used by governments for decades to determine whether the public sector should or should not undertake a project? Is it a new streamlined test designed to deal with the peculiarities of PPPs? Is it an *ex ante* mechanism to inform project choice or is it an *ex post* monitoring mechanism to assess the quality of choice?

This paper considers potential VFM tests and discusses some of the main conceptual problems (Section 2). It summarises the approaches to value for money that have been adopted around the world before considering the evidence from the United Kingdom of past PPPs and also briefly summarising the experience of outsourcing in the private sector (Section 3). The paper closes with an assessment and suggestions for discriminating between VFM tests (Section 4).

## 2. Conceptual issues

### 2.1 Introduction

This section will first outline several candidate value-for-money tests (sub-section 2.2). It will then focus on three major conceptual questions surrounding these tests: when will the tests give roughly similar answers (sub-section 2.3), which discount rates should one use (sub-section 2.4), and should benefits be equally valued – in particular should one value cost savings resulting from changes in employees' pay conditions in the same way as other savings (sub-section 2.5)?



Paul A. Grout

<sup>1</sup> See Grout (1997, reprinted 2005) and Grout and Stevens (2003) for a discussion of private delivery of public services.

A project delivers a flow of benefits. We use the notation  $v_t(g)$  to denote the benefits in period  $t$  if the project is conducted in the public sector and  $v_{it}(p)$  to denote the benefits in period  $t$  if the project is delivered by consortium  $i$  in the private sector. A project also generates a flow of costs. We use  $c_t(g)$  and  $c_{it}(p)$  to denote the costs in period  $t$  associated with a public-sector project and a project delivered by consortium  $i$ . Therefore, the present value of the associated benefit and cost streams are:

$$(1) \quad \int_0^{\infty} v_t(g) e^{-r_v(g)t} dt = \text{present-value benefits of public project}$$

$$(2) \quad \int_0^{\infty} v_{it}(p) e^{-r_v(p)t} dt = \text{present-value benefits of private project}$$

$$(3) \quad \int_0^{\infty} c_t(g) e^{-r_c(g)t} dt = \text{present-value costs of public project}$$

$$(4) \quad \int_0^{\infty} c_{it}(p) e^{-r_c(p)t} dt = \text{present-value costs of private project,}$$

where  $r_v(k)$  and  $r_c(k)$  are the relevant discount rates for benefits and costs,  $k = p, g$ . For ease of presentation we will assume that  $r_v(p)$  and  $r_c(p)$  are the same for all contractors. Clearly, this may not be the case if there are differences in the risk profile of benefit and cost flows between the approaches adopted by different consortia.

If a private company  $i$  is chosen to deliver the project, the government has to fund the present value of the service specified in the contract. That is, service quantity,  $q_t$ , is measured and the private sector is funded according to the agreed price,  $z_{it}$ , per unit. This gives rise to another present value, the financial cost to the government of the PPP, i.e.,

$$(5) \quad \int_0^{\infty} z_{it} q_t e^{-rt} dt = \text{present-value cost to government under PPP}$$

where  $r$  is the discount rate used by the government to discount  $z_{it} q_t$ , which reflects both private sector revenue and the financial cost to the government of procuring the service under a PPP.

With this notation, we turn to a discussion of alternative value-for-money tests.

## 2.2 Candidate value-for-money tests

**While there are many possible value-for-money tests, they can be grouped into four broad categories.**

While there is almost an infinite list of potential VFM schemes, they tend to fall into a limited set of general models. Here we focus on a small number of possible approaches that capture the fundamental principles.

### Test 1: performing a full cost-benefit analysis

This approach seeks to identify the net benefits of each possible option. The option with the highest net benefit is undertaken unless net benefits are anticipated to be negative regardless of how the project is undertaken in which case the project should not be undertaken. That is, traditional public sector procurement is chosen if, for all  $i$ ,

$$(6) \quad \int_0^{\infty} v_t(g)e^{-rv(g)t} dt - \int_0^{\infty} c_t(g)e^{-rc(g)t} dt > \int_0^{\infty} v_t(p)e^{-rv(p)t} dt - \int_0^{\infty} c_t(p)e^{-rc(p)t} dt .$$

Consortium  $j$  will be chosen if the net present value of the project delivered by consortium  $j$  is greater than the present value for any other private consortia and the public sector. The project is not undertaken at all if both sides of (6) are negative.<sup>2</sup> A full cost-benefit approach makes it necessary to identify prices for all project inputs and outputs, including externalities, with prices reflecting social rather than private costs and benefits.

## Test 2: assessing the cost of service delivery to the government

This approach to value for money is in many senses the polar opposite of a full cost-benefit study. Whereas a full cost-benefit study aims at assessing the benefits and costs of all possible impacts on the economy, this approach simply aims at minimising the cost of delivery for the relevant department or central treasury. More precisely, this test compares the cost to the government of traditional public sector procurement with the cost to the public sector of conducting the project as a PPP. Traditional procurement is less costly than a PPP if

**Two ‘polar’ value-for-money tests: full cost-benefit analysis vs. cost to the government.**

$$(7) \quad \int_0^{\infty} c_t(g)e^{-rc(g)t} dt < \int_0^{\infty} z_t q_t e^{-rt} dt .$$

In (7), the left-hand side (*lhs*), which is identical to expression (3), shows the financial costs to the government under traditional procurement whereas the right-hand side (*rhs*), which is identical to expression (5), is the cost stream the public sector has to fund if the project is carried out as a PPP. As (7) suggests, in a VFM test such as this, the comparison is between a public sector cost stream (*lhs*) and a private sector revenue stream (*rhs*), and this has a bearing on the choice of discount rate – an issue we will take up in greater detail in Section 2.4.

Expression (7) illustrates the broad framework of the cost comparison made under VFM tests of Type 2. A cost comparison of this type may take several forms. First, in the extreme version this cost may simply be the direct cost that the treasury has to meet. That is, value for money is present if the chosen mechanism of delivery (private sector or public sector delivery) creates the lowest direct financial burden that has to be met from government funding. Where the service is delivered without levying user charges (such as toll-free roads, schools in a state education system, and the like) this is simply the cost of building and maintaining the physical asset or the cost of delivering the service.

Second, in a more sophisticated version of the cost comparison, the cost of a specific project may include prices for differences in service quality relative to a benchmark specification. For example, if a benchmark specification includes positive externalities that are missing from the private project but are present in the public sector model, this could be entered as an additional cost of the private project relative to the public project.

And then, the cost comparison may take an aggregate or pooled form. For example, it is common to take a group of past schemes and to ask whether the private schemes have displayed better value for money than the equivalent public schemes.

<sup>2</sup> This is without accounting for real options possibly embedded in the project.

### Test 3: comparing private alternatives

In this case, value for money is present if the lowest cost option among potential private sector suppliers, corrected for differences in service quality, is identified and adopted. That is, consortium  $j$  is chosen if, for all  $i$ ,

$$(8) \quad \int_0^{\infty} z_{ii} q_t e^{-rt} dt > \int_0^{\infty} z_{ij} q_t e^{-rt} dt + z_i (q_{ii} - q_{ij}) .$$

The second term on the *rhs* of (8) is the present value of possible differences in output across consortia, with output differences priced at  $z_i$ , the social valuation of a unit of  $q_t$ .

This type of value-for-money assessment essentially focuses on the quality of the bidding process and the ability to correctly identify and value deviations in service quality between bidders.

### Test 4: confirming the viability of the chosen project

Potentially the narrowest VFM test is to focus on the viability of the specific project that has been chosen. In this case value for money exists if the project delivers a positive net present value. If the public sector option has been chosen, this is simply a test that

$$(9) \quad \int_0^{\infty} v_t(g) e^{-rv(g)t} dt - \int_0^{\infty} c_t(g) e^{-rc(g)t} dt > 0 .$$

If the private sector has been chosen, the test is

$$(10) \quad \int_0^{\infty} v_t(p) e^{-rv(p)t} dt - \int_0^{\infty} c_t(p) e^{-rc(p)t} dt > 0 .$$

To conclude, this brief review of possible value-for-money tests shows that there is a tension between thorough approaches such as full cost-benefit tests and simpler more focused tests such as simple comparisons of private alternatives. The former may prove difficult and expensive to conduct. The level of uncertainty may be quite large. The latter is very focused and accurate but assumes that part of the decision making process has already been made or is separate from the value-for-money decision. This implies that it may be inappropriate to try to identify a unique VFM test that should be used in all situations.

***There is not one value-for-money test that fits all situations.***

### 2.3 When will alternative value-for-money tests give roughly similar answers?

More specifically, we will now argue that the simple cost tests (Test 2) provide the same ranking of options as a full cost-benefit test (Test 1) if the following holds:

$$(i) \quad \int_0^{\infty} z_{ij} q_t e^{-rt} dt = \int_0^{\infty} c_{ij}(p) e^{-rc(p)t} dt$$

$$(ii) \quad v_t(g) = v_{ij}(p)$$

$$(iii) \quad r_l(g) = r_l(p) ; \quad l = v, c$$

It is easy to show that under these conditions the full cost-benefit test (6) simplifies to the cost comparison (7). This implies that a traditional public sector project involving lower cost to the government than the same project carried out as a PPP also generates a higher net benefit to the economy than the PPP. And *vice versa*: if the PPP route is less costly to the government than a traditionally procured project, it also provides the larger net benefit to the economy. But it is also true that while Test 1 and 2 give the same ranking of procurement options (provided the three conditions hold), only Test 1 (full cost-benefit approach) shows the net benefit of each option. Clearly, Test 1 informs about whether an investment is worth doing at all whereas Test 2 cannot address this issue.

Each of the three conditions has a natural interpretation. The first is an assumption about competition between potential private sector partners for the PPP. It only holds if competition is such that, *ex ante*, the winning consortium  $j$  makes no excess profits. The second condition shows a requirement on the benefits associated with the project, stating that the quantity and quality of benefits are the same in the public project and the PPP. Although this is unlikely to be the case in practice, it is possible to adjust the pure finance test (7) to incorporate differences in quality. The third condition states that the rate to discount benefits  $v$  (costs  $c$ ) should be the same whether the project is public or a PPP. As the discussion in the next sub-section will show, this does not seem to be an unrealistic requirement. This still leaves open the question of how to determine the relationship between  $r_c(g)$  and  $r$ . This will also be considered in the next sub-section.

Although cost-based VFM tests are reasonable substitutes for full cost-benefit analyses (Test 1), challenges arise when they are used to compare pooled public projects with pooled private ones (this is the third variant of Test 2 introduced above). In principle, there is no reason why pooling should make a difference if one compares pools of similar projects, which can be expected if projects are allocated randomly with regard to project type. This could be the case, for instance, if a government changes from one that chose to have everything provided by the public sector to one that chose private delivery regardless of the merits. In this case, the pool of public sector projects of an earlier period might look much like the pool of privately delivered projects in the later period. A comparison of costs adjusted for benefit differences could then be informative about the merits of public vs. private delivery.

When the choice between public and private project delivery is endogenous, however, comparing pools of projects can be misleading, largely because endogenous choice possibly biases the structure of the pools. To see why, recall that the economic framework used to understand the public/private choice emphasises information asymmetries and incompleteness of contracts (see, for instance, Väililä, this volume). Let us use the incomplete contract framework to illustrate how this may bias the structure of project pools. The incomplete contract framework focuses on the difficulty of writing contracts that fully enforce quality and on the residual rights that come with ownership (see Hart *et al.* 1997). For example, if a private consortium owns the asset then they do not need the government's permission to undertake a cost-reducing change in the use of the asset – provided any consequent deterioration in service quality remains within the contract specification. Therefore, the profit motive provides strong incentives for the private sector to cut cost at the expense of quality. In contrast, if the asset is owned by the government then the government's permission is needed to change the use of the asset and they will only give this if the cost saving is large enough to offset any quality fall. However, incentives for cost savings are lower in the public sector. This incomplete contract approach suggests that projects with scope for significant cost savings and limited quality damage are good for private involvement. By extension, public ownership is better where the scope for cost savings is limited or where such savings could substantially damage service quality. This sample selection effect makes it difficult to compare pools of projects. Public projects look expensive (without sufficient offsetting quality) relative to private ones. But public projects are good when

**Cost-based VFM tests are reasonable substitutes for full cost-benefit VFM tests.**

compared to the counterfactual of what would have happened if the projects had been placed in the private sector. That is, projects are in the private sector because they are (quality adjusted) cheap to deliver and are in the public sector because they are more challenging and costly to deliver. None of the cost-based VFM tests are equipped to deal with this problem, and all but the most sophisticated comparisons will be biased in favour of private delivery. It should be added that this problem is not unique to the incomplete contract approach; the model of Bentz *et al.* (2002) suggests a similar outcome – i.e., bias in favour of the private sector – in a model of asymmetric information but complete contracts.

## 2.4 Discount rates and risk transfer in value-for-money tests

### 2.4.1 Background

Of particular interest is the choice of discount rates in a cost-based VFM approach (Test 2) and how this choice relates to risk transfer – the latter being central for achieving value for money given that risk transfer is a primary incentive mechanism. More specifically, should the discount rate  $r_c(g)$  used for assessing the cost of traditional public procurement (*lhs* in (7)) be higher, lower, or the same as the rate  $r$  used for calculating the cost of procuring the service under a PPP (*rhs* in (7))? The main aim of this section is to elucidate arguments for using a higher rate to discount the costs to the government associated with the PPP option, i.e., for assuming  $r > r_c(g)$ . It is important to emphasise, however, that the reason for the divergence between private sector and public sector discount rates does not rest on the usual arguments given in the academic literature. Even in a world of complete capital markets and no distortionary taxation it may still be appropriate to use a higher discount rate for the PPP than the public sector equivalent. The reason stems from a point identified in the statement of Test 2, namely that while a private delivery mechanism is used as the ‘cost’ to the government in a cost-based VFM test, it is not a cost in the economic sense of the word.

**Whether public sector projects should be discounted at a lower rate than private sector projects is a highly contentious issue and one that has spawned an enormous literature.**

Whether public sector projects should be discounted at a lower rate than private sector projects is a highly contentious issue and one that has spawned an enormous literature. Writing in the 1980s on public sector discount rates and their relation to private sector discount rates, Lind (1982) pointed out that “the profession was no closer to agreement on the theory, on a procedure for computing the discount rate, or on the rate itself than it was in 1966”. Despite this lack of unanimity there is a tendency for economists to favour the use of similar discount rates in the idealised situation of complete markets. Similarly, there is tendency of governments to use the same discount rate for a project whether it is publicly provided or provided to the government by the private sector. For example, in the United Kingdom, a real rate of 6 percent was used for many years to discount and compare the cost of public provision with a PPP alternative. In 2003, the rate was cut to 3½ percent although some differences in risk are valued before discounting (HM Treasury 2003a).

As indicated, the view that the public sector should discount projects at the same rate as the private sector is not without controversy.<sup>3</sup> A large literature developed on this topic in the 1960s and 1970s and several contributors (see, for example, Arrow 1965, 1966; Arrow and Lind 1970; Samuelson 1964; Solow 1965 and Vickrey 1964) took the view that public sector rates should be lower because the public sector can pool risks. These views have been criticised, notably by Bailey and Jensen (1972), Diamond (1967) and Hirshleifer (1964), who have pointed out that the arguments that the private

<sup>3</sup> A common argument used is that the public sector can borrow at much lower rates. This, however, clearly relates to the default rate, not the nature of differences in risk between public sector and private sector projects and is obviously a false justification for any difference in discount rates.



sector cannot pool risks are not theoretically sound and that the nature of risks in the public sector are unlikely to satisfy the Arrow and Lind requirement that the outcomes of public projects are independent of each other and of private investments.<sup>4</sup> Putting to one side adjustments that may be necessary because of taxation (see Baumol 1968; Sandmo and Dreze 1971; and Harberger 1968), if there are complete markets then projects should be spanned by existing securities and so, at least theoretically, individuals should be able to divest themselves of their risks at market prices whether these arise in the public or private sector. This would appear to indicate that arguments for using higher discount rates for private projects must rest with imperfections in markets. This section argues that this is generally not the case.

It is common in finance to categorise the risk of an asset, project, or cashflow into two relatively distinct types of risk. This distinction is important for understanding how risk affects discount rates in PPPs. One is specific (sometimes called idiosyncratic) risk and the other systematic risk. These have to be dealt with separately since they impact on VFM tests in PPPs in very different ways.

#### 2.4.2 Specific risk

Specific risk is risk that is idiosyncratic and, thus, unique to the project.<sup>5</sup> Such risks can loosely be thought of as risks that can be diversified away if one has a large enough portfolio. The expected return of a project in a well-diversified portfolio may be affected by a change in the specific risk of the project, but the well-diversified investor will not be affected by a change in the variance around that expected return. It follows that specific risks should be dealt with by modelling their effect on the expected return of the project.

There tends to be almost a complete divide in the academic and practical literature between approaches focusing on specific project risk (driven by those involved in design and implementation – engineers, architects, etc.) and approaches focusing on systematic risk (a core concept in economics and finance). VFM tests are stronger on the former than the latter. The tests frequently identify and categorise many types of specific project risk. These categorisations are frequently borrowed directly from the engineering and management science literature. Categorisation of specific risks is a useful aid to the analysis and pricing of these risks and is used as a technique to ensure that all relevant risks are considered.

Some specific risks arise from production and demand uncertainties and others from strategic risk. The pricing of the former is far from simple but the latter is particularly hard to price and it is not obvious that VFM tests identify this well. Strategic risks arise from the strategic behaviour of the parties. For example, a contract may specify that a supplier is not paid unless there is delivery of service, but when problems emerge the supplier still has bargaining power. This is particularly true if the service is essential since the government will still have to incur the cost if the proposed supplier steps down. Of course, both parties know this problem in advance and this dilutes risk transfer and, thus, the incentives to keep costs down. The more standard the project and/or the easier it is to define service in a contract, the easier it is to minimise these costs. As we will see in Section 3, renegotiation of this type is very common in PPPs.

*In the quest for an appropriate discount rate there is a divide between approaches focussing on project risks and those focussing on systematic risk.*

<sup>4</sup> See Lind (1982) for a detailed discussion of discount rates in the private and public sectors and Brealey *et al.* (1997) for an excellent summary of the issues.

<sup>5</sup> Or to a group of activities that are a small sub-set of the total group of risky assets available for investment.

Indeed, whenever an asset is transferred from the private to the public sector at the end of a contract, the project may run into a renegotiation problem. As the transfer date approaches the consortium has an incentive to choose higher variance, less reliable equipment if this is cheaper than more reliable equipment. This is because the period when the consortium is exposed to the risk of failure decreases towards the end of the contract. Indeed, if it is only possible to identify the equipment's age and whether it is working or not, the consortium has an incentive to use replacement parts with infinite variability just before transfer. Both parties will realise this and there will be strong incentives to renegotiate before the contract ends. So the risk transfer will shift dramatically towards the end of the contract, how much depends on the uncertainty that the consortium has about the preferences of the government agency. As far as we are aware, the risk transfer and the consequent impact on delivery surrounding this termination issue is not considered in VFM tests.

***The interest rate on debt finance for a PPP project and the discount rate that should be applied to this PPP in a value-for-money test are interrelated but not equal.***

Before moving on from specific risk, it is worth distinguishing between the cost of debt that a private consortium may have to pay to borrow to deliver a project and the discount rate  $r$  that should be used in the value-for-money test. These are different, albeit interrelated, rates. A project may have a high chance of default, but all risks on the project may arise through specific risk, which can be diversified away by well-diversified investors. Therefore, the public sector should only be interested in the expected value of this project. The rate of interest on debt borrowed by the consortium will be high. But – other things held constant – high borrowing costs although reducing the expected return in each period should not affect the discount rate used in a VFM test. In this case, a rate similar to the risk-free rate – or equivalent, adjusted for market imperfections (such as transactions costs, tax differences, and the like) – should be used for the project, and the rate of 3½ percent used by the UK government would be a reasonable starting point. Where to go from this starting point depends on the systematic risk of a project, the issue to which we turn next.

### **2.4.3 Systematic risk<sup>6</sup>**

Systematic risk is the part of risk that is not specific. It is closely related to the correlation between the risk of the asset in question and the set of all assets. Systematic risk is important because it impacts directly onto the discount rate. The simplest approach to model this impact is the Capital Asset Pricing Model (CAPM). Box 1 gives a brief intuition to CAPM. A critical implication of the CAPM is that the discount rate is not determined by the total risk of the project, but only by its systematic risk, which affects the discount rate through the so-called beta ( $\beta$ ) of the project. We now apply this insight to the discount rate for PPPs.

Consider a public service project that can be conducted fully in the public sector or with a PPP. It is helpful to focus the discussion by using a specific example of a road that will have zero charges to the public at the point of use (i.e., a shadow toll road). With public provision, a public sector agency can either build the road itself directly or can engage a contractor to build the road for the agency. The government will then own the road and undertake its upkeep. Within a PPP, the private sector will build, own, and maintain the road, and the government's role is to enter into a contract to pay for the flow of services to the public. A standard model is where the government makes a payment to the private owner for each vehicle using the road.

<sup>6</sup> Systematic risk is a more elusive concept than specific risk. Here we provide an intuitive discussion. A more precise discussion can be found in standard finance texts.

### **Box 1. The Capital Asset Pricing Model, systematic risk, and discount rates**

Once a risk-averse investor holds the portfolio of all risky assets in an economy (the market portfolio), she cannot further diversify her investment. Holding less of the market and more risk-free assets can reduce the risk of an individual's portfolio, but this does not reduce the risk of the market itself. Associated with the market portfolio there will be a market rate of return, which is the rate of return that is just high enough to persuade an investor to hold the market portfolio. If the rate of return is too low relative to the risk, investors would try to sell and, as a result, prices would fall and returns would rise. If the return was too favourable given the market risk then investors would buy, bidding up prices and driving down the return.

It follows that an individual holding the market portfolio carries risk that cannot be diversified. Consider a new asset that is brought to the market. Suppose this asset has the feature that if the return on the market portfolio rises or falls by, say, 10 percent (save for specific risk changes), the return on this asset rises or falls by 10 percent too. Then, for an investor holding the market portfolio, adding a small quantity of this asset does not have a first order effect on the risk she bears because when the market rises, the new asset moves in exactly the same way. If the asset is cheaper than the market, i.e., has a higher rate of return, it would be worth buying it and if it is more expensive and thus has a lower rate of return, it is not. To persuade investors to hold this asset, it has to have exactly the same return as the market portfolio. Such an asset has a "beta" ( $\beta$ ) of one, reflecting the notion that the expected percentage change in its return is the same as the expected change in the return on the market. For the technically inclined reader we note that the beta of an asset is the (weighted) covariance of the return on an asset with the return on the market (or in a more general formulation) with the return on all assets, including human capital, in an economy.

Consider now a new asset with a beta of less than one, which means that its change in return is less than proportional to a change in the return on the market portfolio. Adding such an asset to the portfolio is useful as this reduces the risk of the portfolio. Consequently, investors will be willing to pay a premium for such an asset, i.e., they will be willing to hold the asset even when it pays a lower rate of return than the market as a whole. How low this rate of return can be depends on how correlated the return is with the market. If the percentage change in the asset is close to the market change (beta is below but close to one) then the rate of return will be close to the market rate of return. But if the percentage change in the asset is close to zero regardless of how the return on the market changes (beta is close to zero) then the expected return will be close to the risk-free interest rate. Overall, we conclude that the lower the beta of an asset the lower its expected return, or to put it another way, the lower the discount rate will be that should be applied to the cashflow associated with this asset.

A critical implication of the CAPM is that the discount rate is not determined by the total risk of the project. It is determined by its beta, which is associated with the systematic risk component. There is one note of caution. Finance textbooks will always draw this distinction and emphasise that specific risks should be modelled through their impact on the expected return in each period and that only systematic risk through beta should affect the discount rate. In practice, one will sometimes see discount rates rise to accommodate specific risks; therefore, the waters are muddied at times. However, the general point that one cannot determine the discount rate without considering beta still applies.

The discount rate used for public sector provision is applied to the cost cashflow  $c_t(g)$ , as shown on the *lhs* of (7). This is the cashflow that represents the cost of building the road if it is built in the public sector. In contrast, the discount rate used for the private sector provision is applied to  $z_t q_t$ , as shown on the *rhs* of (7). This is not the equivalent cost of building the road with a PPP. It is the cashflow associated with the flow of benefits valued at the price in the contract. There is no reason to suppose that the risk characteristics are equivalent for these two cashflows; indeed there is every reason to suppose that they are not.

It is instructive to look at a special, albeit realistic case to elucidate the point. More specifically, let us assume that aggregate demand for the project is independent of the distribution of income and the government uses a linear payment schedule. The attraction of the former restriction is that in this case even if the choice of public or private provision affects income distribution, there will be no effect on aggregate demand. In this case, the relationship between the  $\beta$  for the revenue cashflow,  $\beta_R$ , and the  $\beta$  for the cost cashflow,  $\beta_C$ , is:<sup>7</sup>

$$(11) \quad \frac{\beta_R}{\beta_C} = \frac{\text{price}}{\text{marginal cost}}$$

There are two reasons to expect the unit price in the PPP contract to be greater than the marginal cost. One is that fixed costs associated with PPP projects tend to be large. Again thinking of the road example, the marginal cost per vehicle is likely to be extremely small relative to the payment per vehicle to the partnership since the latter has to be sufficiently high to recoup the cost of building the road over the life of the contract. Hence the price–marginal cost ratio may be very large.

The second reason is that PPPs are usually specifically designed to transfer risk. Economic theory predicts that an optimal incentive scheme in the presence of hidden actions is almost certain to require the supplier to bear some of the risk of supply. The harder it is to contract over quality and the greater the relationship between usage and quality, the more high-powered the incentive scheme ought to be. High-powered incentive schemes are quite common in practice. It is unlikely that the exact payment schedule should be linear, but in certain circumstances there are justifications for linearity (see Hart and Holmström 1987 and Holmström and Milgrom 1987). The general point, however, does not depend on this precise specification; we should expect  $\beta_R$  to be greater than  $\beta_C$ ; therefore, for a PPP, we should expect the private sector discount rate used to calculate the present value of revenue to be higher than the rate used to calculate the present value of costs.

***In cost-based VFM tests, the discount rate applied to the public sector comparator should be lower than the discount rate applied to the PPP alternative.***

Coming back to the discount rates that should be used in a cost-based VFM like (7), it is important to note that on the *lhs* of (7) a public sector cost cashflow is discounted whereas on the *rhs* of (7) it is a private sector revenue cashflow. The relevant beta for the public sector cost cashflow should be  $\beta_C$  and the relevant beta for the PPP should be  $\beta_R$ . This implies that lower discount rates should be used for the public sector equivalent than for the PPP. Failure to do so will suggest that the provision of public services under a PPP is less efficient than traditional public procurement since the present value of PPP provision will be overestimated relative to traditional procurement.

In summary, this sub-section shows that the public-private comparison is not a comparison between two cost flows in an economic sense. A government assessing the cost of public delivery will look at the present value of the economic cost of building the facility. In contrast, when assessing the

<sup>7</sup> This is shown in Grout (2003, reprinted 2005).

'cost' of private delivery the government will look at the present value of the private sector revenue flows, which are based on the flow of services that the private sector delivers. There is no reason to suppose that the risk of these two cashflows will be the same. Consequently, when a government assesses delivery mechanisms, in general it is appropriate to attach different discount rates to private and public sector 'costs'.

## 2.5 Wages and labour conditions in value-for-money tests

This section deals with the sensitive issue of whether cost reductions brought about through changes in pay and conditions of employees should be treated differently from other savings. This is part of a generic question as to whether all benefits and costs should be valued equally, but the employee issue is a particular interesting example.

The issue has taken on particular significance in the United Kingdom where there is evidence of a two-tier job market, i.e., within a partnership employees may be paid different wages and have different conditions according to whether they work for the private company or the government. The problem appears to stem from the wage premium present in the public sector for certain workers. For instance, Disney and Gosling (1998) show that pay distribution in the public sector is more equal than in the private sector and that this manifests itself in a public sector wage premium (of various degrees) for all workers other than highly qualified men. Therefore, transferring work from the public sector to the private sector is likely to lead to a reduction in wages and conditions. Research by the public-services union UNISON (2001), as part of its campaign against contracting out, finds that the pay and conditions of 'new starters' in private firms carrying out local government contracts are worse in all dimensions than those of staff transferred from the public sector.

How should VFM tests treat a possible decline in the wage bill resulting from PPP provision of public services? Profits of a private supplier are treated as a cost in a value-for-money test. Similarly, a higher wage paid by supplier A relative to supplier B that is reflected in higher costs of supplier A are also treated as costs. For consistency, eliminating a wage premium under a PPP implies that the cost savings should simply be taken for what they are. Not doing this distorts the incentive process, damages the ability of the private sector to compete, and reduces the probability of a private bid winning against a public alternative.<sup>8</sup> The same is true for the cost savings resulting from a cut in people needed to deliver the service. Of course, if society were to attach a high value to the income of public sector employees or if a cut in staff under a PPP results in involuntary unemployment, financial cost savings would exaggerate the advantages of the PPP delivery mode.

This section began by outlining alternative VFM tests along with an analysis of the circumstances when different value-for-money tests will provide similar answers. The conceptual problems that arise in VFM tests have also been outlined. In particular the problem of discount rates and risk transfer has received considerable attention, and the problem of dealing with public sector wage premia has been discussed. The next section moves away from theoretical analysis to provide examples of VFM tests around the world.

## 3. Value-for-money tests in practice

We start this section with a brief review of countries' approaches to the value-for-money test; the focus will be on the United Kingdom, but we will also sketch the approach taken in other countries (Box 2). We will then move on and discuss the experience of several projects under the UK Private Finance Initiative (PFI).<sup>9</sup>

<sup>8</sup> Of course, from a political perspective that is probably exactly what the employees receiving the premium wish to see happening

*A sensitive issue is whether VFM tests should treat savings in labour cost just as any other cost savings.*

### 3.1 The UK approach to value-for-money tests

The UK government sees a VFM test as an assessment of procurement options where the choice of procurement is determined by comparing the costs and benefits of alternative options. In theory, the approach is a cost-benefit assessment utilising a public sector comparator (HM Treasury 2003b, 2004).

*In the United Kingdom, value-for-money tests comprise three stages, with the creation of a public sector comparator at the second stage.*

The approach has three stages. Stage 1 (investment programme test) consists of an assessment of the investment programme and of the right procurement option for those aspects of the programme where a PFI may offer the best value for money. The view is that a PFI should only be used when it is the best option and has a good prospect of offering value for money. A department will make an assessment of the best choice of procurement route and the appropriateness of PFI for the sector in question.

At stage 2 (project level test) a public sector comparator (PSC) is created. The PSC is a hypothetical risk-adjusted estimate of the cost of delivery if the public sector were the supplier, with the target output specification produced as part of a PFI procurement exercise. The PSC is expressed in net present value terms, is based on the recent public sector method of providing the specified output (including reasonably foreseeable efficiencies the public sector could make), and takes full account of the risks that traditional public sector procurement could encounter. Experience suggests that earlier PSCs focused on narrowly defined costs and benefits and they were often created at a time when it was not possible to sufficiently account for the wider factors that arise when pursuing the PFI route. Efforts are being made to avoid these problems.

Once the cost and risks of the PSC have been assessed, there is a final step in the PSC analysis where the public sector cost estimate is raised to take account of the “systematic tendency for appraisers to be over-optimistic about key project parameters”. This is referred to as optimism bias. The UK guidelines insist that optimism bias is treated explicitly in all appraisals, and suggest that the bias applies especially to capital costs, works duration, operating costs, and expected project benefits. The optimism bias is gauged by calculating the upward cost drift on similar public sector projects. These adjustments can be extremely large. For example, the Department of Health recently carried out analysis on cost drift in National Health Service projects. This analysis showed that for projects with a capital value between GBP 10 million and GBP 25 million the cost drift averaged about 40 percent; for projects with a capital value over GBP 25 million, the equivalent figure was 30 percent.

If at the end of stage 2 it turns out that the PFI option promises value for money, the appraisal moves to stage 3 (final procurement test), which focuses on the potential market capacity to deliver the project. At this stage, a variety of issues are assessed, including the quality of competition among private parties for the project, the success achieved in transferring risk, and the reasonableness and stability of costs emerging from the competition. It also needs to be ascertained that value for money will not come at the expense of employees. If a project does not pass these hurdles, it may be delayed or reconsidered for traditional procurement.

<sup>9</sup> So far, there was no need to distinguish different types of PPPs. In what follows, we will look specifically at the UK Private Finance Initiative (PFI), which the UK government considers one of three PPP categories. Under a PFI, “the public sector contracts to purchase quality services on a long-term basis so as to take advantage of private sector management skills incentivised by having private finance at risk” (HM Treasury 2003b).

## **Box 2. The approach to VFM tests in other countries – an eclectic view**

### **Partnerships Victoria, Australia**

Like in the United Kingdom, value for money is chiefly calculated through a PSC (Partnerships Victoria 2001, 2003). The PSC is expressed through the net present cost to the government, is based on the most efficient public sector method of providing the selected output, and takes full account of the costs and risks that public procurement is likely to encounter. The comparison takes specific account of the value of risks allocated to the private parties under a PPP and tries to ensure competitive neutrality by removing net advantages that accrue to a government business by virtue of its public ownership.

The PSC is used as a quantitative benchmark against which to assess bids. If the private sector bid incorporates innovations that will make it cheaper or more expensive for government to deliver core services, this is taken into account. There is also a strong qualitative element. For example, credit standing, the bidder's reputation, and the track record are all explicitly taken into account.

### **British Columbia, Canada**

The VFM tests used in British Columbia, which include quantitative and qualitative elements, comprise three stages (British Columbia Ministry of Finance 2002): (i) a qualitative assessment of the VFM expected under alternative procurement options, (ii) a PSC calculation, and (iii) a procurement test, with the possibility of refining the PSC at this stage. As in the United Kingdom, the PSC should ensure competitive neutrality and quantify and price the risk transferred to the private sector. In addition, it should also consider factors that are difficult to value in monetary terms such as indirect jobs created by the project, the potential for broader economic stimulus, and environmental benefits.

### **Ireland**

The Irish approach focuses early in the appraisal process on the capacity of the private sector to deliver value for money (Department of the Environment and Local Government 2000). It addresses two key questions: does the project have the potential to be procured as a PPP and which form of PPP is likely to offer the best value for money? In answering these questions, there is a strong emphasis on learning from previous experience with similar projects, notably with respect to the balance between asset provision and service delivery and the private sectors' expertise in providing the asset and delivering the service, the potential for cost-effective risk transfer, the scope for user charges, and the market interest in and competition for a PPP solution. If concerns remain about the potential for a PPP to deliver value for money, the Contracting Authority is called on to develop a shadow bid as part of the PPP assessment. At this point, there is a financial comparator assessment, i.e., a comparison of the cost of the preferred PPP tender with the cost of delivering the project through traditional procurement.

### **Netherlands**

The Dutch approach to the appraisal of PPPs comprises four crucial steps (Netherlands Ministry of Finance (2001): (i) an inception report – setting out various procurement options, i.e., traditional public procurement and PPP, (ii) a qualitative analysis – providing a first insight into the financial differences between procurement options, (iii) a quantitative analysis – quantifying the differences between various procurement options, and (iv) a final report – concluding whether or not a PPP provides value for money.

**Applied cost-based VFM tests do not correctly distinguish between the risk characteristics of a PPP and those of its public sector comparator.**

To summarise this brief review of VFM tests in the United Kingdom and other countries, a clear pattern emerges: some form of public sector comparator (PSC) usually lies at the heart of VFM tests. In terms of the models outlined above, we can think of the UK model as a sophisticated version of Test 2. Efforts are made to value differences in benefits (as well as costs) between different modes of delivery. In terms of risk, the process is good at dealing with specific risk. For example, as part of stage 2, the government identifies a wide range of risks that have to be assessed, including differences in risks between the private and hypothetical public delivery mechanism and costs stemming from such differences. Risks include design and construction risks, procurement risk, availability risk, demand risk, environmental risk, technology risk, funding risk, and residual value risk; giving an almost exhaustive list of risks. However, the problem identified in the previous section (i.e., that the risk characteristics of the cost cashflow under traditional public procurement differs from those of the PPP 'cost' cashflow), is not reflected in different discount rates. Indeed, the UK approach essentially adopts the view that there is no risk premium. In this case, differences in beta do not lead to differences in discount rates since the beta is multiplied by a zero risk premium. It is this approach that leads to the rate of 3½ percent that is now used in VFM tests.

Turning to the problem of pay differentials, it is fair to say that, in the United Kingdom, VFM tests enormously overvalue possible losses arising from changing working conditions and pay. More precisely, they give no value to cost savings arising from changing conditions and pay. For example, the Code of Practice on Workforce Matters in Local Authority Service Contracts (a code imposed by the central government on all local authorities) states that "service providers who intend to cut costs by driving down the terms and conditions for staff, whether transferees or for new joiners taken on to work beside them, will not provide best value and will not be selected to provide services for the council." Furthermore, service providers must offer new staff "employment on fair and reasonable terms and conditions which are, overall, no less favourable than those of transferred employees". These arrangements are to be monitored by the local authorities and the Audit Commission. Local authorities have a duty "to certify that individual contracts comply with best value requirements", suggesting that they are liable if they take cost savings arising from lower pay or a change in working conditions into account. This Code is an explicit example of what is frequently considered to be a problem, i.e., that the political agenda influences value-for-money tests.

### **3.2 The experience of PFIs in the United Kingdom**

This section summarises the experience of several PFI projects in the United Kingdom. It gives particular attention to Libra (one of the worst PFI deals ever assessed) and the construction projects under PFI. It then provides details of a few other UK cases. To provide a benchmark the section closes with a brief summary of outsourcing in the private sector.

#### **3.2.1 The Libra project – a complete failure**

The purpose of this project was to install a new computer system in the UK's magistrate's courts to replace a fragmented system operated in the courts. The existing arrangements made national database coordination problematic. Developing a standardised national court IT system already had a troubled history, with previous contracts to develop the system having been terminated in 1992 and 1996 due to inadequate quality and poor management by the contractors involved. Following these problems a decision was taken to pursue a PFI deal.

There was only one bidder: ICL. The original 1998 contract was intended to last 10½ years at a cost of GBP 185 million. In 1999, ICL sought renegotiation of the contract after its cashflow forecasts implied deficits. The original contract was renegotiated and a new contract was signed that was expected to last 14½ years at a new cost of GBP 319 million. In 2001, ICL did not meet the delivery targets



and was in breach of contract. The government started to consider alternative options and ICL told the government that it would repudiate unless the government renegotiated to cover the loss. An agreement could not be reached with ICL for the fulfilment of the whole contract and, therefore, a revised and more limited contract was signed with ICL for 8½ years. This was to deliver only the infrastructure part of the project at a cost of GBP 232 million. To date, the courts still do not have a successful IT system to manage their workload.

The main reason for the failure of this project appears to be poor competition, although this did not manifest itself in too much profit but poor quality assessment of the project. There was only one bidder. This lack of competitive tension was the result of the failure by the government to conduct a market survey to find out the level of interest in the project. In essence, the government did not carry out an analysis along the lines of stage 3 (final procurement test) of the approach outlined above. ICL's bid was essentially chosen as the 'lowest-risk' alternative: although the government did not have great confidence in the bid, its acceptance was seen as a lower risk strategy than restarting the procurement process. Surprisingly, ICL was chosen although it was known to have problems with another government IT project. This clearly shows that a consideration of a bidder's track record is imperative.

*The Libra project suffered from a lack of competition, resulting in poor project assessment and a weak position of the government in the contract renegotiation.*

The ICL renegotiation was based on the grounds that it had miscalculated the costs and revenues of the projects and that an increased timescale had driven up the costs. Even before the contract was signed, ICL informed the government that it could not keep the initial price as it had not included all the costs needed to complete the Libra requirements and had made inappropriate cost and revenue assumptions. It appears that ICL did not really understand the government's requirements, taking on excessive risk and under-pricing its bid.

The government should have verified the financial model on which the tender was based but did not do so until too late. Independent assessors later suggested that ICL's financial ability to fulfil the project was highly doubtful, forecasting a GBP 47 million deficit. The government's public sector comparator showed ICL's bid to be cheaper but the PSC did not factor-in the same elements as ICL's bid. With only one bidder, the PSC became excessively important in the decision making although the PSC itself was weak because the government had no IT department that could deliver a public sector solution.

That there was only one bidder may have benefited the contractor, resulting in weak legal penalties. ICL sought renegotiation because its cashflow forecasts predicted a GBP 39 million deficit over the life of the project. They could credibly threaten to walk away from the contract if new terms were not negotiated because withdrawal would have meant they were only liable for GBP 10 million – far less than the predicted deficit. From the perspective of the government, it could not afford to let ICL withdraw as the liability payment would not have covered the cost of restarting the process. In addition, the government was not prepared to terminate the contract with ICL – despite having clear grounds to do so – because it was concerned about possible legal challenges.

The government has also been criticised for seeking to redevelop its computing systems before questioning the existing business process. A re-evaluation of current working practices may well have helped. The project could have been more successful had the government sought to redesign business processes alongside implementing a new IT system. The lack of standardised practices and management processes made a coherent view on the new systems difficult to reach.

### **3.2.2 PFI in construction – delivering on time and at low cost**

The PFI has been used to procure many projects involving construction of assets needed to deliver public services (this includes 25 hospitals, 7 prisons, and 9 roads). The National Audit Office

(NAO) carried out a census of 38 central government PFI projects where the construction phase was due to have been completed by mid-2002. The report (NOA 2003) focussed on the post-contract construction experience in PFI projects but did not try to assess whether PFI was the best procurement route for these projects.

***PFI in construction seem to have scored well, delivering projects on time and within budget.***

The general view of the report is that PFI in construction have been successful. Most PFI construction projects were delivered on time, which is an improvement over traditional public sector construction projects. NAO figures show that before 1999, 70 percent of construction projects delivered to the public sector were late. By contrast, under the PFI only 24 percent were late and of these only 8 percent were late by more than two months. Furthermore, the construction industry had found that, on average, PFI produced cost improvements of 5 percent to 10 percent, both on construction and subsequent operations or facilities management.

An important reason for the better implementation of PFI construction projects is that specifications are calculated in greater detail and cost and time targets are set later in the procurement process than under traditional procurement. Another reason is that the contracts have been made to stick. This may be a consequence of the previous point. Evidence suggests that construction price increases have been common, yet the costs have usually been borne by the contractors, on some occasions to the considerable detriment of their financial health. Out of 37 projects surveyed, 29 reported no additional price increases after contract award. Whenever increases occurred, they were almost always the result of significant changes to the project. Furthermore, when buildings were delivered late, the government was able to make the deferring of payments stick.

As far as could be seen, a satisfactory quality was achieved in terms of design and construction as well as the performance of the building. The view is that the whole-of-life-cycle costing was important to encourage good quality design and construction (because the PFI consortium has to manage and maintain the buildings which it has constructed for the life of the contract). However, around one in five of the projects examined had already been expanded within a few years of awarding the contract. These additional works are likely to be a significant feature of PFI contracts in the long term. As the contracting authority is tied to its PFI contractor for a long period, the contractor may make some extra profits, and since there this an advantage in giving work to the incumbent supplier, there is a risk that as the projects develop the value for money will not be as good as expected on the bases of the initial competition.

### **3.2.3 London Underground – value for money uncertain**

In February 2002, approval was given for London Regional Transport to enter into three PPPs for the infrastructure of the London Underground system (the Tube). The operation of trains would remain a public sector responsibility of London Underground Limited (LUL). Two infrastructure companies won the contracts: Tube Lines will be involved in one PPP and Metronet in two. These are 30-year deals that were preferred over traditional procurement as they promise to provide greater stability of funding.

A strong feature of the PPP bidding process was the carefully prepared PSC, albeit with limitations that London Regional Transport felt it was aware of. A problem is the considerable uncertainty about the eventual price as pricing could only be forecasted for the first 7½ years of the deals. This difficulty arose because of limited information available about the condition of the Tube assets. This uncertainty made it particularly challenging to model the costs for a PSC, and it calls for a periodic review (every 7½ years) of the requirements and prices under the PPP.

*London Underground PPPs: thoroughly analysed, involving large transaction costs, and value for money uncertain.*

Another feature of the London Underground PPP is its large transaction cost. It is estimated that negotiating and formulating the deals cost GBP 455 million, equivalent to 1½ percent of the 30-year deal price (NAO 2004). It is suggested that government borrowing of similar funds would have cost GBP 450 million less. The Department of Transport considers this a reasonable cost to pay for the risk sharing settled on and the scrutiny of the deal and the performance of contractors by lenders.

Overall, the value for money of the London Underground PPP is uncertain. There is only limited assurance that the price of the deal is reasonable, and the periodic review leaves some uncertainty about what the public will get at what price.

#### **3.2.4 Fixed Defence Telecom System – are PPPs suitable when technology changes rapidly?**

In 1997, the Ministry of Defence awarded a contract for a new fixed telecommunication system to British Telecom (BT). It was to be a 10-year PFI contract, costing GBP 782 million. The new system aims at rationalising and improving the efficiency of the fixed telecommunication system. Annual savings are predicted to amount to GBP 30 million.

There was competition in the bidding process, and BT's bid was GBP 121 million lower than the other final bid. However, there is concern that the project may not yield value for money because communication technology is rapidly changing and limiting the project to the fixed system may obstruct future options for pursuing savings on other communication services. More generally, it is suggested that long-term contracts in telecommunication and information technologies may not represent good value for money because technology is rapidly changing and modifying the nature of services within the contract period is not subject to competition. However, the Ministry took account of this problem in the contract, which allows the Ministry to compare BT's prices to those of other suppliers and negotiate changes if BT's prices no longer promise value for money.

Still, it is felt that the Ministry could have obtained more favourable contract terms had it made better use of external legal advice. The public interests could have been better protected had the Ministry brought its legal team together from the outset of the bidding process and not after BT had been awarded the contract. Significantly, external legal advice at an earlier stage could have provided better risk transfer at little or no extra cost. The quality of the project will depend on how the contract deals with rapid technological change – a question that is far from easy to answer at this stage.

#### **3.2.5 Channel Tunnel Rail Link – leaving the station as a PPP but arriving as a traditional public procurement project**

The contract to build the Channel Tunnel Rail Link and run the UK arm of Eurostar was awarded to London and Continental Railways Ltd. (LCR) in 1996. It was envisaged that LCR would finance, build, and operate the link, drawing on revenue from Eurostar and the use of the link by domestic services. The Department of the Environment, Transport, and the Regions (DETR), agreed to provide LCR with grants totalling GBP 1,730 million for constructing the link and its use by domestic services. Construction was expected to start in 1998 and the link to open in 2003. In 1998, the deal had to be restructured as LCR was unable to raise the money, mainly because Eurostar was carrying fewer passengers than predicted. Although the government did not provide more grants, they agreed to guarantee a substantial part of the LCR's borrowing.

The appraisal was problematic from the outset; it was based on too optimistic passenger traffic and time saving forecasts. There were unsubstantiated benefits claimed from environmental gains, economic regeneration expected to result from the link, and road decongestion calculations.

Furthermore, the VFM justification for public sector support would collapse if Eurostar did not achieve expected demand levels (as happened). It is also worth noting that while the initial deal envisaged LCR to design, build, finance, and operate the link, the 1998 restructuring of the concession changed this into an agreement whereby LCR designs, builds, and finances the project but then sells it to Network Rail, the public interest company operating the UK rail network.

### 3.2.6 Common themes

**Competition in the bidding process is key for getting value for money.**

The evidence suggests that competition in the bidding process is instrumental in getting value for money. This is not only in terms of obtaining a good price but also in generating a sound understanding of the requirements of the project. The questioning of project requirements and costs that are all part of a competitive bidding process is beneficial, and the lack of this was seen to be a major problem in the Libra case. This suggests that the PSC plays a secondary role. This view is further enhanced given the frequent criticism of the PSC in the reports. Lack of critical data (London Underground), weak and optimistic assumptions (Channel Tunnel), and lack of public sector expertise all play a part. The PSC is more important, however, where there are few bidders or only one bidder. That said, the lack of bidders is likely to be positively correlated with the difficulty of producing a reliable PSC.

Contractual issues are a potential problem. Renegotiation is common although for different reasons in different contexts.<sup>10</sup> Renegotiation due to unforeseen costs was not a problem in basic construction projects but is a genuine challenge where the project is less conventional, for example the Libra and Channel Tunnel projects. Renegotiations arising from changing demands in the public sector appear to be far more common. This was the primary source of higher costs in the construction cases and is particularly a concern in the Fixed Defence Telecommunications System because of the dynamic nature of the industry. VFM tests do not capture this and it is only after many years that the true scale and cost of this problem can be gauged.

Better legal advice may help resolve or avoid some of the problems. But increasing legal fees adds to the bidding costs and bidding costs have been raised as an issue by many PPP companies. The London Underground PPP illustrates this clearly.

### 3.2.7 Lesson from outsourcing in the private sector

In concluding our analysis of the experience with PPPs, we take a brief look at outsourcing in the private sector. There is obviously a similarity between PPPs and outsourcing in the private sector. Under a PPP, the public sector enters into a long-term contract with the private sector to build and operate an asset and to deliver a public service. Outsourcing is defined as the use of external agents to perform one or more organisational activities. Although there are wildly differing estimates, it is clear that outsourcing in the private sector is enormous. To illustrate, Standard and Poor estimate worldwide outsourcing in 2003 at USD 170 billion. Yet, Corbett (2002) suggests that worldwide outsourcing was estimated to reach around USD 5 trillion by the end of 2003.

Why do firms outsource so much in the private sector? It is frequently cited that outsourcing is beneficial because outside suppliers benefit from economies of scale, centralisation of expertise, and risk sharing. However, outsourcing, particularly global outsourcing, is often driven by wage

<sup>10</sup> Note that the regulatory structure applied to UK privatised companies suffered from similar renegotiation problems due to unforeseen valuation problems (see Grout *et al.* 2004).

differentials. Heshmati (2001) suggests that global outsourcing should be seen as a firm's response to import competition from low-wage countries by moving non-skilled labour intensive activities abroad. The role of wages is interesting in the light of the two-tier market debate surrounding PPPs.

Do problems arise? When a number of services are outsourced there may be problems of integration within the company and an additional task of integrating systems is created. Case studies conducted by Dritna (1994) and Lacity *et al.* (1996) suggest that decision makers often overestimate the production advantages of outsourcing and underestimate the transaction costs.

Where is outsourcing common? The Japanese car industry has a long history of outsourcing, a process it has used far more than its American counterparts. For instance, in the late 1980s, Toyota outsourced the production of almost all its components; this is a trend that has become more significant in the United States where in 1998 estimates suggested that only 37 percent of an 'American' car was produced domestically. Car manufacturers usually purchase necessary but 'non-strategic' inputs from external suppliers, with 'non-strategic' inputs being those components that do not differentiate the company from its competitors.

In research and development (R&D), key elements that shape outsourcing contracts are: increased flexibility in the R&D function, increased standardisation and automation, technological change in R&D, and new players in the contract research and technology market. According to Howells (1999) there has been a significant growth in the external sourcing of R&D and this has led to the evolution of new research and technical markets.

***There are similarities between PPPs and outsourcing in the private sector.***

In computer manufacturing, outsourcing is particularly prevalent through the purchase of components from outside the company, an example of this is the purchase of chipsets from Intel. An idea of the extent of outsourcing in computer manufacturing comes from Sun Microsystems, a company that purchases around 80 percent of its components from other companies.

Outsourcing has also become important in the information technology (IT) sector, notably with the expansion of electronic data storage systems. According to Domberger (1999), half of European companies outsourced all or a substantial part of their IT functions.

This brief summary of outsourcing in the private sector is important when thinking about *ex post* (after the fact) considerations of value for money. The bulk of this paper is about *ex ante* (before the fact) assessments usually concerned with the choice between delivery modes and suppliers. *Ex post* assessments face a counterfactual problem in that the alternative mode of delivery did not happen. There is a tendency, both in formal government assessment and popular opinion, to focus on the *ex post* problems somewhat in a vacuum as if assessing a case against a non-existent perfect delivery mode. It follows that it is easy to come to the view that private delivery of public services (in the broadest sense) is a bad thing and there is plenty of examples, including academic papers, which push this view.

While it is useful to look at errors and learn from them, one should not treat every mistake in a PPP as a sign of poor value for money; the next best alternative may have been worse. A big difference between public and private sectors is that in the private sector the competitive mechanism enables firms that make better delivery choices to succeed relative to firms that do not, and it is thus useful to look at the scale of outsourcing. There are several points of interest. The main one is that outsourcing is prevalent and growing in the private sector and hence is robust to profit-driven incentives.

Second, the reasons why outsourcing is adopted in the private sector are very similar to those given for PPPs. Third, there is a received wisdom that IT projects do not make for successful PPPs. This view is based on a focus on the relative failures of IT projects compared to other PPPs (such as basic construction projects). IT outsourcing faces similar problems in the private sector. In many cases, IT outsourcing projects have failed and a study has shown a satisfaction rate with IT outsourcing projects of 33 percent in comparison to 70-80 percent for non-IT projects. Yet, IT is one of the fastest growing areas of outsourcing in the private sector suggesting that competitive pressures are still pushing firms in this direction despite the clear problems with IT outsourcing.

#### **4. Assessment**

Type 1 tests (i.e., full cost-benefit) are not particularly helpful for assessing value for money. In the days of traditional procurement, when the activities we are considering in this paper were undertaken by the public sector, the primary question was whether the project should be undertaken or not. In this case, the cost-benefit approach was fundamental since it is the only one of the four test types that addresses this question. However, by definition, a full cost-benefit test must try to identify and price every cost and benefit. This introduces enormous variability. Indeed, it may be almost impossible to associate a price to some benefits and costs. Furthermore, a full cost-benefit based test is ill-focussed for the problem at hand. It can, for example, consume enormous resources identifying and valuing benefits and costs that are common to all modes of delivery. If the primary focus has shifted to getting the mode of delivery correct, and this appears to be the case in most countries, then this can be achieved far more efficiently by choosing one of the other tests.

This may suggest that the most obvious candidates are Type 2 tests. We have seen that under certain conditions they deliver the same ranking of service delivery modes as cost-benefit tests. But these tests come with major problems. These arise due to the strange and complex comparison that is being made. The tests compare public sector costs with private sector revenue flows and adjust these for differences in benefits and costs where these differences should be valued at their social value. This allows huge scope for error. Moreover, the interest rates that ought to be applied for discounting cashflows may differ enormously between the PSC cashflow and the PPP cashflow. Indeed, the discount rates should depend on the benchmark project that is taken. Another problem is that bidding losses are a significant problem for PPP consortia because they will lose money through failed bids that have to be recouped through successful bids. And then, renegotiations raise the cost of PPP contracts, but then *ex post* distortions by self-interested agencies create significant hidden costs for traditionally procured public projects.

Section 3 provides examples of VFM tests around the world. They all have some form of public sector comparator and in this respect are probably closest to Type 2 tests. However, it is suggested above that there are significant problems that make comparisons between private bids and the PSC very tough. These problems have various practical consequences and have to be resolved or sidestepped. For example, the PFI and PPP programme in the UK has been criticised for failing to deliver innovative solutions, and bids have tended to 'track' the PSC. One reason for this is that innovative ideas are hard to value and, as a result, have probably not received their true value in the exercise. So 'tracking' the PSC may be a safer option. On the other hand, the risk problems we identify have been resolved in the case of specific risks by going into considerable and ever growing detail of the potential risks. However, the problems arising from systematic risk are sidestepped through the adoption of a zero risk premium. One consequence of this is the use of a 3½ percent discount rate in PPPs in the UK. In contrast, the problem of how to assess differences in wages and conditions has been explicitly

dealt with (within the Code of Practice) in a manner that conflicts with the treatment of wage and profitability differentials between different private suppliers.

Most of the problems identified above with Type 2 tests disappear when using Type 3 tests (the comparison of private bids). Renegotiation problems, discount rate differences, bidding losses, etc. do not disappear, but they are likely to become second-order differences. We only need to consider how these differ across specific private sector bids rather than between private sector bids and public sector comparators. It is reasonable to assume that the difference between private sector bidders for each of these problems is likely to be small relative to the differences across sectors.

As the case studies in Section 3 show, competition in the bidding process is key to achieving value for money. It plays a major role in tying the ranking of projects using Type 2 tests to the full cost-benefit ranking. More significantly, it implies that Type 3 tests are likely to be very useful. A good bidding procedure can generate realistic low prices while ensuring that the project is well understood. Furthermore, the more diverse bidders there are, the more likely the private sector will throw up a consortium that is better than the public sector mode of delivery. Test 3 is well focussed and less prone to measurement error than Type 1 or Type 2 tests. It is more likely to deliver the best candidate from the group it considers.

***Alternative VFM tests all have strengths and weaknesses, but tests focusing on a comparison of private sector alternatives have clear advantages when there is sufficient competition for PPPs.***

Finally, the political dimension cannot be ignored. For example, the UK Code of Practice with regard to working conditions shows how prevalent and explicit political pressures can be. In addition, PPPs are also attractive if they enable major 'public service' investments to be made without appearing on the public sector borrowing requirement. Indeed, Kirk and Wall (2002) argue that the desire to keep PPPs off the public sector balance sheet result in inefficient risk sharing. If there is a strong political bias in favour of the private sector then Type 3 tests will not be useful since they will not reveal the bias. In these circumstances, Type 2 tests, for all their failings, will help reveal bias.

In summary, the paper provides arguments why comparisons between private bids and the PSC are very hard and prone to significant error. It is argued that tests that focus on comparisons between private sector alternatives are well focused, less prone to measurement error than other tests, and more likely to deliver the best candidate from the group it considers.

## References

- Arrow, K. (1965). "Criteria for social investment". *Water Resources Research*, (1), pp. 1-8.
- Arrow, K. (1966). "Discounting and public investment criteria", in Kneese, A.V. and Smith, S.C. (eds.), *Water Research*. Johns Hopkins University Press, Baltimore, USA.
- Arrow, K. and Lind, R.C. (1970). "Uncertainty and the evaluation of public investment decisions". *American Economic Review*, (60), pp. 364-378.
- Bailey, M. J. and Jensen, M. C. (1972). "Risk and the discount rate for public investment", in Jensen, M.C. (ed.), *Studies in the theory of capital markets*. Frederick A Praeger, New York, USA.
- Baumol, W. J. (1968). "On the social rate of discount". *American Economic Review*, (58), pp. 788-802.
- Bentz, A., Grout, P.A. and Halonen, M. (2002). "What should the State buy?". Centre for Market and Public Organisation Working Paper No. 01/040.
- British Columbia Ministry of Finance. (2002). *Capital asset management framework: Guidelines*, British Columbia Ministry of Finance, Victoria, UK.
- Brealey, R.A., Cooper, I.A. and Habib, M.A. (1997). "Investment appraisal in the public sector". *Oxford Review of Economic Policy*, (13), pp. 12-28.
- Corbett, M. (2002). "Outsourcing's next wave", *Fortune*, (June).
- Department of the Environment and Local Government. (2000). *Public-private partnership assessment guidance note four*, Department of the Environment and Local Government, Dublin, Ireland.
- Diamond, P.A. (1967). "The role of stock market in a general equilibrium model with technological uncertainty". *American Economic Review*, (57), pp. 759-776.
- Disney, R. and Gosling, A. (1998). "Does it pay to work in the private sector?". *Fiscal Studies*, (19), pp.347-374.
- Domberger (1999) *The contracting organisation: A strategic guide to outsourcing*, Oxford University Press.
- Dritna, R.E. (1994). "The outsourcing decision". *Management accounting*, (March), pp. 56-62.
- Grout, P.A. (1997). "The economics of the private finance initiative". *Oxford Review of Economic Policy*, (13:4), pp. 53-66. [Reprinted in *The International Library of Critical Writings in Economics: The economics of public private partnerships*, Grimsey and Lewis (eds.)]
- Grout, P.A. (2003). "Public and private sector discount rates in public-private partnerships". *Economic Journal*, (113:486), pp. C62.
- Grout, P.A. and Stevens, M. (2003). "Financing and managing public services – an assessment". *Oxford Review of Economic Policy*, (19:2), pp. 215-234.



- Grout, P.A., Jenkins, A. and Zalewska, A. (2004). "Privatisation of utilities and the asset value problem". *European Economic Review*, (48:4), pp. 927-941.
- Harberger, A.C. (1968). "On measuring the social opportunity cost of public funds", in *Proceedings of the Committee on water resources and economic development of the West; the discount rate in public investment evaluation*. Western Agricultural Economics Research Council, Denver, USA.
- Hart, O. and Holström, B. (1987). "The theory of contracts", in Bewley, T.F. (ed.), *Advances in Economic Theory*, Cambridge University Press, UK.
- Hart, O., Shleifer, A. and Vishny, R.W. (1997). "The proper scope of government: theory and an application to prisons". *Quarterly Journal of Economics*, (112), pp. 1126-61.
- Heshmati, A. (2003). "Productivity growth, efficiency and outsourcing in manufacturing and service industries". *Journal of Economic Surveys*, (17:1), pp. 79-112.
- Hirshleifer, J. (1964). "Efficient allocation of capital in an uncertain world". *American Economic Review*, (54), pp. 77-85.
- HM Treasury (2003a). *The green book – Appraisal and evaluation in central government*, The Stationery Office, London, UK.
- HM Treasury (2003b). *PFI; Meeting the investment challenge*, The Stationery Office, London. UK.
- HM Treasury (2004). *Draft value for money appraisal guide*, The Stationery Office, London. UK.
- Holström, B. and Milgrom, P. (1987). "Aggregation and linearity in the provision of intertemporal incentives". *Econometrica*, (55), pp. 303-328.
- Howells, J. (1999). "Research and technology outsourcing". *Technology Analysis and Strategic Management*, (11), pp. 17-29.
- Kirk, R. and Wall, A. (2002). "The private finance initiative: Has the accounting standards board reduced the scheme's value for money?" *Public Management Review* (4), pp. 529-547.
- Lacity, M., Willcocks, L., and Feeny, D. (1996). "The value of selective IT outsourcing: a cross section analysis", *Sloan Management*, (Spring), pp. 13-21.
- Lind, R.C. (1982). *Discounting for time and risk in energy policy*. Johns Hopkins Press, Baltimore, USA.
- National Audit Office. (2003). "PFI: Construction performance". Report by the comptroller and Auditor General. HMSO London.
- National Audit Office. (2004). "London underground PPP: Were they good deals?". Report by the comptroller and Auditor General. HC 645 Session 2003-2004, 17 June 2004.
- Netherlands Ministry of Finance. (2001). *PPP and public procurement*, PPP Knowledge Centre, The Hague, The Netherlands.
- Partnerships Victoria. (2001). *Guidance material: Practitioners' guide*, Department of Treasury and Finance, Melbourne, Australia.

Partnerships Victoria. (2003). *Guidance material: Public sector comparator, supplementary technical note*, Department of Treasury and Finance, Melbourne, Australia.

Samuelson, P.A. (1964). "Principals of efficiency: Discussion". *American Economic Review*, (81), pp. 191-209.

Sandmo, A. and Drèze, J.H. (1971). "Discount rates for public investment in closed and open economies". *Economica*, (38), pp. 395-412.

Solow, R.M. (1965). *Capital theory and the rate of return*, Rand McNally. Chicago, USA.

UNISON (2001) "Best value and the two-tier workforce in local government". UNISON Best Value Intelligence Unit, London.

Vickrey, W. (1964). "Principals of efficiency: Discussion". *American Economic Review*, (54), pp. 88-92.



## ABSTRACT

*This paper examines the UK experience of PPP/PFI from a value for money perspective. It argues that a rounded view of overall performance has to consider the procurement process, the construction of the asset procured, and the operational performance that follows. Important changes have been made in the UK to the appraisal stage of the procurement process, raising the likelihood of PFI being chosen when it is most likely to deliver value for money. While PFI has evidently performed well in the construction phase, the UK experience suggests a number of prerequisites for achieving value for money in the operational phase. Good contract management is needed to ensure that the risk transfer paid for actually sticks. Provisions to manage changes to contracts in a way that preserves value for money are important. An ability to benchmark the cost and quality of services provided over the long term is also likely to enhance the value for money achieved.*

**Patricia Leahy** (Patricia.Leahy@nao.gsi.gov.uk) is Director of PPPs in the UK National Audit Office. She has been directing reports on the value for money of PPPs at the UK National Audit Office for nearly 10 years. Before that she worked in investment banking and at H M Treasury.

# Lessons from the Private Finance Initiative in the United Kingdom

## 1. Introduction

The United Kingdom launched the Private Finance Initiative (PFI) in 1992 when it abolished rules that restricted the use of private capital to fund public assets. Under PFI the public sector contracts with private sector firms for the long term provision of a public service, on the basis of an output specification and a performance management regime. In other words, PFI transforms public sector bodies from being owners and operators of assets into purchasers of services from the private sector.

The private sector, in turn, takes on greater responsibilities and greater risk than under conventional procurement. The framework is intended to provide the private sector with a commercial incentive to build in whole-life costing, flexibility, and efficiency from the initial design and build stages right through to operation. Private firms become long term providers of services rather than simply upfront asset builders, combining the responsibilities of designing, building, financing, and operating the assets in order to deliver services.

By end-2004, 677 PFI contracts had been let in the UK, with a total capital value of some GBP 42.7 billion. Between 1998-99 and 2003-04, investment through PFI represented 10 to 13.5 percent of total public investment, and this percentage is not expected to change significantly over the next few years. Some 250 of these PFI contracts are in the health and education sectors and are almost entirely for the provision and management of assets rather than clinical or educational services. There are, however, no rules to prevent the use of PFI for frontline services. PFI prison contracts, for example, are for the operation of the prisons as well as construction and facilities management services. Some recent health deals include clinical services.

In February 2005, the UK National Audit Office (NAO) published its 50<sup>th</sup> report on PFI/PPPs. These 50 reports encompass deals, thematic studies – such as refinancing and managing the relationship in a PFI deal – and operational performance. The NAO is in the process of completing more studies of operational performance now that enough deals have been in operation for long enough to be assessed.

This paper aims to give a rounded view of the performance of PFI in the UK to help indicate under what circumstances and to what extent PFI is likely to deliver benefits. This is a complex issue with no easy answers – not least because of the shortage of information on operational performance. Moreover, lessons have been learned in the UK, and deals currently being negotiated are likely to be better value for money than earlier deals.

Assessing performance in the round requires analysis of the procurement process, the construction phase, and the operational performance achieved. Section 2 focuses on the procurement stage, outlining a number of issues that are relevant from the value for money perspective. The performance of PFI projects at the construction phase is reviewed in Section 3. Section 4 shifts the focus to the operation phase, identifying factors with a bearing on value for money.



*Patricia Leahy*

## 2. The PFI procurement process

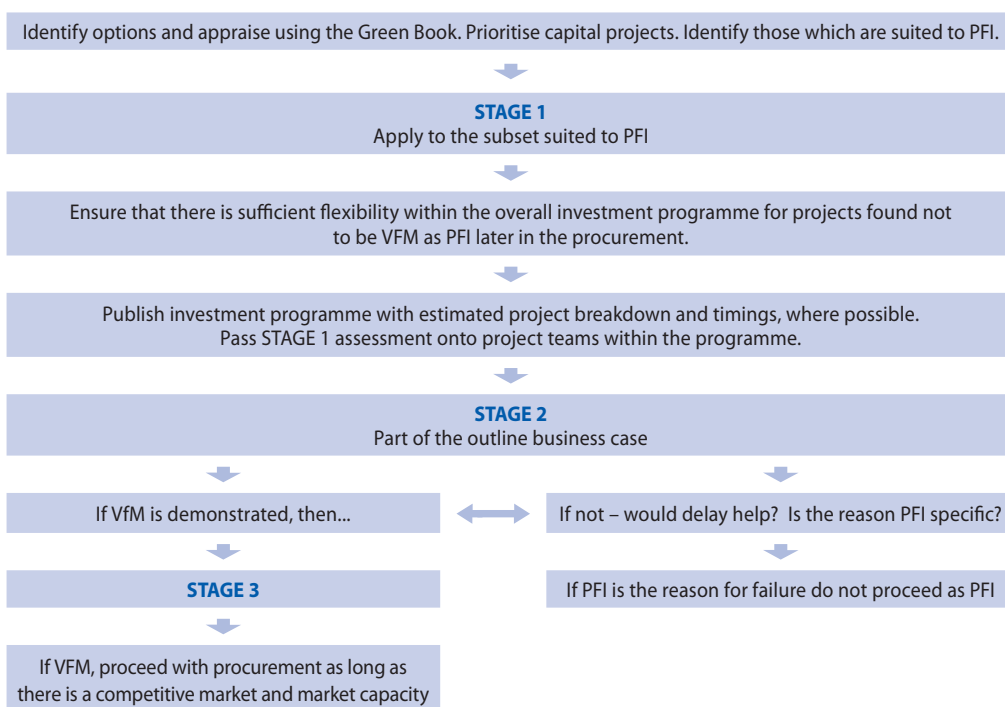
The NAO is unambiguous about the need for the decision to procure assets/services under PFI to be made on the basis of value for money, or VFM for short. This is also central government policy, and all PFI deals are assessed for value for money. To highlight the importance of the procurement process in achieving VFM, this section focuses on a range of issues at the procurement stage that have a bearing on the costs and benefits associated with the PFI option.

### 2.1 VFM appraisal framework

*Comparisons with conventional procurement are most relevant at the outset when a strategic view on the method of procurement is important.*

The framework for appraising value for money through PFI has been revised by the UK Treasury, as illustrated below. The new approach reflects the view, advocated by the NAO, that comparisons with conventional procurement are most relevant at the outset when a strategic view on the method of procurement is important. This new approach expects decision makers to determine at programme level for which sectors PFI would be an appropriate procurement route. When preparing the outline business case for a particular project, the project is appraised comprehensively, including an assessment as to whether the original choice of procurement route remains the most appropriate. If PFI is confirmed as the most appropriate procurement route, market capacity to deliver the project and the likely level of competition that can be achieved is assessed.

Figure 1. New UK PFI appraisal process



Source: H M Treasury

This new appraisal framework reduces the emphasis on the Public Sector Comparator (PSC), which can by its nature only deal with costs and suffers from a number of other shortcomings. Costs over 25-30 years are likely to be very uncertain, the results of the PSC analysis are prone to error, and the findings are easy to manipulate. In addition, important qualitative factors cannot be

taken into account in the PSC. They include the prospects for more certain delivery under the PFI and the advantages and disadvantages of being in a long term contract. Qualitative factors may indicate that the lowest priced bid is not the best, for example, if a higher priced deal offers a high quality solution that delivers the public sector's objectives better. There may also be doubts about a contractor being able to deliver the project for a low bid price. And the public sector is likely to retain responsibility for making a service available if a contractor falls into difficulties.

## 2.2 Risk allocation and management

The risks in a PFI deal include the risk of construction overruns, higher than expected costs of maintenance, increases or decreases in demand for the services provided in the facility, and changes in legislation or the regulatory regime affecting how the building or the services it houses are delivered. For each project, some risks are more relevant than others. In a road project, the key risks will be demand, design/asset construction, and maintenance, whereas in a prison project, the key risks relate to availability, performance, and operating cost alongside design/asset construction and maintenance.

The record of conventional public sector procurement in assessing these risks is not good. The full costs of projects have often not been calculated accurately beforehand, risk management procedures have often been weak, and there have been insufficient incentives to ensure that projects are driven forward successfully. Notable examples in the UK include the London Underground Jubilee Line extension, which was delivered two years late and cost GBP 1.4 billion more than originally estimated, as well as the top 25 equipment projects in the Ministry of Defence, which experienced cost overruns of GBP 2.8 billion and average delays of three and a half years.

A key element of the evaluation of the value for money of individual PFI deals is the success with which risk is genuinely transferred from the public to the private sector and risk optimally shared between the two sectors. Where risk is transferred and the private sector is better able to manage it, value for money is likely to increase. Transferring risk from the public sector should incentivise the private sector to supply cost effective and higher quality services on time. Risk and reward go hand in hand in PFI deals - PFI suppliers usually only start to receive their service payments when a flow of services actually starts, and continued payment depends on meeting performance criteria.

The principle that governs risk transfer is that the risk should be allocated to whoever in the public or private sector is able to manage it at least cost. An optimal sharing of risk between the private and public sector should recognise that certain risks are best managed by the government, and to seek to transfer these risks would either not be available or not offer value for money for the public sector. The government pays for inappropriately transferred risks through higher service charges. The optimum allocation of risk, rather than maximising risk transfer, should be the objective, and vital to ensure value for money is not diminished.

Some contractors may be too willing to accept inappropriate risk. Sometimes the public sector may be tempted to transfer as much risk as possible to the private sector. But if contractors accept inappropriate risk to win the competition, the subsequent realisation of those risks within a competitively priced contract may lead to problems for the contractor and, therefore, the public sector.

The due diligence carried out by contractors' banks may sometimes stop contractors taking on too much or inappropriate risk, but this work is done on behalf of the bankers themselves and may not give full reassurance about project risks to other parties. For example, the lenders may require

*A key element of the evaluation of the value for money of individual PFI deals is the success with which risk is genuinely transferred from the public to the private sector and risk optimally shared between the two sectors.*

additional standby or contingency funding to be added to the total finance committed during preferred bidder negotiations. This could be to cover risks that the public sector is in a position to retain. If the additional funding is agreed it will increase the unitary charge paid. The difficult issue for the public sector is how to determine the optimum balance for the particular deal.

Some public sector bodies may transfer risk back to themselves. The essence of the PFI is that contractors are given an output specification of the services required. Contractors then have the responsibility and risk for deciding how they will provide those services. If public sector bodies tell contractors how the services are to be provided, they are transferring the risk back to themselves.

Irrespective of the robustness of the agreed transfer of risks, there are, however, three broad categories of risk that will tend to remain with the public sector. They include the risk associated with the performance of statutory duties; the risk of political fallout when key public services are adversely affected if the PFI contractor fails to meet performance levels (real or perceived); and the residual risk from a failing contract. The public sector needs to keep these residual risks in mind throughout the procurement. It is sensible to plan mitigation measures and, if necessary, build appropriate provisions into the contract. Where more than one public sector organisation is involved, suitable risk-sharing provisions between the different bodies will need to be considered.

Standardised contracts have now been developed in the UK. A key benefit of this is the crystallisation, in contractual terms, of the distribution for many generic risks. The risks that remain to be allocated are project specific. During negotiations with the preferred bidder, the public sector tries to ensure that a common understanding about the distribution of these risks emerges. This understanding needs to be clearly documented and subsequently included in the contract.

Clarity about the distribution of risks is not sufficient by itself to achieve successful risk transfer. The procedures for managing risks are also important. These need to be unambiguous, particularly if the public sector is to control and mitigate the consequences of retained risks. To aid the public sector, the contract needs to be clear about the contractor's reporting requirements and contingency planning. It is good if the contract has been developed on the basis of openness. Such an approach should be beneficial in the event that a risk materialises and should facilitate a joint approach to problem solving. This would be assisted by a contractual payment regime that encourages the contractor to provide information in a way that helps monitoring his performance.

### **2.3 Competitive bidding**

***Competitive bidding is the best means of securing value for money in a PFI procurement.***

Competitive bidding is the best means of securing value for money in a PFI procurement. There is some evidence of there being on average four bidders in PFI competitions in the UK although obviously this varies from deal to deal. The last stage of the new, three-part procedure for assessing whether PFI is the appropriate procurement route requires the public sector to assess formally both the quality of the market's competitive interest in a proposed project and the constraints that might restrict the market's capacity to deliver the project. This procedure should improve the way that market enthusiasm is tested for proposed schemes.

Experience in the UK suggests a few prerequisites to sustain bidder interest. Such prerequisites, discussed in detail below, include commitment to the project; efforts to keep bidding costs low; production of clear bidding requirements and a reasonable timetable for bidding; framing the contract around standard terms; and ensuring that at each stage of the procurement, the number of bidders remaining in the competition is not too large.



The private sector has often complained that high bidding costs and lengthy procurement processes lead to reduced interest. Often each shortlisted bidder has to prepare an outline design that meets the performance specification and to calculate a unitary charge priced from estimates of the whole-life costs (including construction, operational and financial costs). The selected preferred bidder will expend considerable sums as it negotiates the contract, prepares detailed designs, and engages experts to undertake due diligence for its financial backers. The volume of this work and the expertise required demand far greater expenditure from the bidder than it would have incurred in tendering for a similar sized conventionally funded project.

The high cost of bidding, when combined with other factors such as uncertainty about commitment to a project, may reduce competition for PFI projects. There is a benefit, therefore, from the public sector trying to keep bid costs low, for example, by assembling complete data packages, including terms of existing contracts, and, where appropriate, arranging for bidders to pool resources, for example to survey existing assets jointly. Using standard contract terms could also lead bidders to spend less on legal advice.

In planning each stage of the competition, consideration needs to be given to how many bidders are needed. Taking too many forward may result in some bidders withdrawing because they no longer view the expense of continuing to bid as worth the risk. Too few may lead to a premature reduction in competition. Giving bidders sufficient early information about the evaluation process at the end of each stage allows them not only to tailor their submissions, but also to estimate the cost of their commitment to the process.

In some cases in the UK, bidding costs have been reimbursed to attract and sustain private sector interest. This was agreed in the case of the London Underground PPPs when market interest started to fade and the bidding process proved very expensive. Naturally, the NAO expects any decision to reimburse costs to be taken in the light of a full assessment of the benefits compared to costs.

In the vast majority of procurements in the UK, competitive tension ceases after a preferred bidder is selected. After this there is a risk of 'deal creep', i.e., erosion of value for money, when negotiations continue. There are a number of steps that can be taken to control 'deal creep'. It is important to have a negotiating strategy built around a realistic timetable. Written confirmation can be sought that offered prices will remain firm for a specified time period, providing the specification remains unchanged. Where the preferred bidder has grounds to increase its prices, benchmarking can help give assurance that increases are reasonable.

#### **2.4 Preserving value for money when the contract is changed**

PFI contracts are long term – for up to 35 years. Changes to the originally specified services, therefore, are almost inevitable. NAO (2001) and (2003) show that in the UK, within two or three years of contract letting, 55 percent of PFI contracts had been changed and 22 percent of central government PFI building projects had commissioned additional building work.

*In the UK, within two or three years of contract letting, 55 percent of PFI contracts had been changed.*

Clearly, provisions to manage future changes efficiently and economically need to be built into PFI contracts. This suggests that the public sector could usefully identify a range of reasonable triggers for change, including foreseeable legislative changes, and assess how these would impact on bidders' proposals. For changes that are considered reasonably probable in the short to medium-term, it would be possible to invite bidders to price the identified flexibility. This information could then be used to assess whether the inclusion of this flexibility would be value for money.

Value for money over the long term is likely to be enhanced if there are robust provisions that entitle the public sector to benchmark the cost and quality of the services provided over the life of the contract. The efficacy of these terms is likely to depend on the existence of appropriate dispute resolution terms.

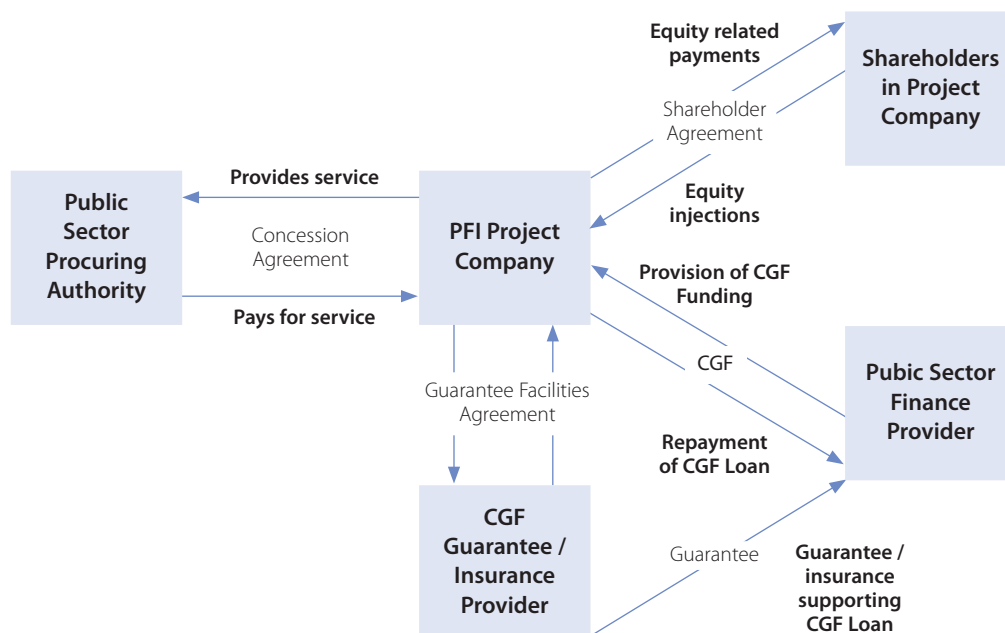
## 2.5 Cost of financing

The terms of the financing are of course crucial to the value for money of the deal. The financing of most PFI projects is obtained specifically for that project by a project company formed solely to fulfil the contractual obligations of the particular project – a special purpose vehicle (SPV). This SPV is formed by shareholders. In the UK, the initial investors, putting risk capital into the SPV, are most likely to be either equity funds or PFI contractors such as builders, or other service providers.

***Credit guarantee financing is being piloted in the UK to reduce overall financing costs to the public sector.***

A novel form of financing is currently being piloted in the UK by the Treasury to reduce overall financing costs to the public sector, while retaining the benefits of private sector companies taking risk on PFI deals. This is called credit guarantee finance (CGF), illustrated in Figure 2. Under the pilot schemes, a public loan is made available to the SPV provided that a private sector financial institution guarantees that the public loan will be repaid if the project company does not have the financial resources to do so. The guarantee is provided by a financial institution such as a bank or a monoline insurer. This has allowed the public sector to avoid paying the funding premium that lenders usually obtain when lending to PFI deals. The risk premium is still paid to the guarantor. At present, it is not considered sensible or desirable for this to be a standard approach to financing all PFI projects.

Figure 2. Illustrative CGF financing framework



Source: H M Treasury

There have been two pilot projects – the Leeds Teaching Hospital deal completed in October 2004 and the Portsmouth Hospital project, expected to be completed in summer 2005. The Leeds deal had a capital value of some GBP 200 million. Analysis by the UK Treasury suggests that this resulted in a significant saving on the cost of the debt as well as reductions in some of the usual fees and costs. This approach does increase the risk to the public sector slightly, and there are some additional administrative costs. The Treasury will be seeking to demonstrate that it leads to overall benefits at the end of the pilot stage.

## 2.6 Sharing of refinancing gains

The refinancing of PFI projects is most likely to occur in circumstances where the risks inherent in the deal to the providers of finance fall relative to the risks at the time when the deal was initially financed. The maturing of the PFI market has brought more providers of finance and more competition in the provision of finance such that better financing terms can now be obtained than when the early deals were entered into. Refinancing can also be beneficial for projects where the construction phase has been successfully completed. As there are risks attached to completing the construction of a building successfully, it may be possible to refinance the project on more favourable terms once construction has been completed. Finally, the providers of finance may be prepared to provide additional finance, or to relax certain terms of the finance, to allow the SPV to improve its financial situation by continuing to operate in a distress situation.

A refinancing can be effected in a number of ways. The period over which the finance has to be repaid can be extended; however, in this case, the public sector needs to be clear if asked to extend the PFI contract period that there is a value-for-money argument for doing so. In addition, the finance can be provided on better interest terms, or the amount of debt finance can be increased. Furthermore, the initial equity finance or subordinated debt can be repaid out of additional cheaper bank or bond finance. Or other terms can be improved, such as lowering cover ratio requirements. Furthermore, although not falling within the Treasury definition of a refinancing, the initial equity investors may sell their investment to another investor.

Following agreement with the private sector, UK Treasury guidance now requires the sharing of refinancing gains as follows. First, on PFI deals entered into before autumn 2002, where there is no provision for the sharing of refinancing gains in the contract, the public sector will receive 30 percent of most refinancing gains under a Voluntary Code accepted by the private sector. Second, on all new deals after autumn 2002, the public sector will receive 50 percent of any refinancing gains.

*UK Treasury guidance now requires the sharing of refinancing gains.*

A 2005 NAO report covering a refinancing indicates what this can mean in terms of a real deal (NAO, 2005a). This report on the Darent Valley hospital, which in 1997 had been the first hospital to be procured under the PFI, explained that the Hospital Trust had received a GBP 12 million gain (in present value terms) through sharing in a total GBP 33 million refinancing gain generated by the contractor. This was achieved by increasing the level of borrowing and obtaining better financing terms as the PFI market had matured and the new hospital had been delivered.

Although benefiting from the refinancing, the Trust also faced new risks. It agreed to extend the minimum contract period by seven years and to accept the possibility of increased liabilities in the event of the contract being terminated early. The Trust concluded that these arrangements were value for money considering that the new minimum contract period of 35 years was in line with PFI hospital contracts at the time and that early termination of the contract was unlikely. But the NAO cautioned that, in future, authorities should undertake further analysis before agreeing to a refinancing that involved increased levels of private sector debt and higher public sector termination liabilities.

## 3. The construction phase

Turning now to the construction phase and focussing on the question of how well PFI has performed, there is a great deal of evidence that construction of an asset under PFI is usually to time and budget – unlike experience under conventional procurement. But under PFI the budget will, of course, be bigger to start with as risks are addressed and provided for explicitly upfront.

***PFI projects continue to outperform conventionally procured construction projects in terms of delivering on time and within budget.***

In 2003 the NAO reviewed completed PFI construction contracts across central government in England (NAO, 2003). The report found that PFI projects were delivering price certainty to departments, with 29 out of the 37 projects (78 percent) surveyed reporting no construction-related price increase after contract award. Where there had been a price increase, it had been due to changes led not by the contractor but by the department or other parties. The report also found that 28 out of the 37 PFI projects surveyed were delivered on time or earlier than specified in the contract. Where PFI buildings were delivered late, departments were able to defer payments, make payment deductions or seek damages.

A 2005 NAO report found considerable improvements in the delivery of all central government projects compared to the NAO's last investigation in 2001, which had only covered conventionally procured projects (NAO, 2005b). Nevertheless, the evidence shown in Table 1 suggests that PFI projects continue to outperform conventionally procured construction projects in terms of delivering on time and within budget.

**Table 1. Delivery of construction on time and budget (in % of projects)**

	PFI (2003)	Conventional (2001)	All central government (2005)
Exceeds price agreed in contract	22	73	45
Late to public sector	24	70	37
Over 2 months late	8	n/a	n/a

Source: NAO (2005b)

These findings are supported by research carried out by the UK Treasury in 2004 which reported 88 percent of completed PFI projects coming in on time or early, and with no cost overruns on construction borne by the public. A report commissioned by the Treasury also found that outturn costs of conventional procurement construction projects were 2 to 24 percent higher than the estimate in the business case.

#### **4. Operational performance**

While there has, so far, been limited experience of operational performance of PFI contracts, the NAO has attempted to identify and report initial trends. A key finding is that PFI projects are generally delivering the required services, but there has been variation in operational experience. For example, in our investigation into the operational performance of PFI prisons, we found that the best PFI prisons were outperforming most public prisons in our study group, but the lowest performing PFI prison was amongst the worst in the prison estate.

The early stages of a PFI project may especially involve risks while the service is being introduced and while the authority contractor relationship is being established. If serious problems arise, and the parties cannot, or do not want to, terminate the contract, some form of renegotiation may be necessary that may adversely affect operational performance. This has been a particular feature of complex IT projects – which are not normally now undertaken under the new appraisal guidelines. But this problem has also affected other types of projects. For example, the Royal Armouries museum contract was renegotiated when the contractor experienced financial difficulties because of lower-than expected revenue from visitors.

Finally, it is fair to observe that the public sector is at an early stage in understanding the skills that are needed to develop successful contractual relationships, how to deal with changes, and how to maintain value for money in the long term.

But going beyond what has happened, we need to ask which factors affect the management of the operational phase of PFI projects. The picture that transpires here can be summarised under the following headings:

**Contract management.** The public sector, from the start, needs to be an intelligent client. This necessitates developing and implementing a coherent strategy and engaging a suitable contract manager. In the UK, there is recognition that career structures in the public sector must place greater value on contract managers' skill sets than has hitherto been the case.

*The public sector needs to be an intelligent client.*

In some cases, there has been too little knowledge transfer between the procurement team and the contract management team. While the skill sets are different, the contract management team needs a direct understanding of how the contract was negotiated and what the public sector's rights and obligations are. Rather than completely dissolving the procurement team immediately after awarding the contract, it is sensible, at least in the short term, for some key members to advise the contract manager about the structure of the contract. The contract manager and other key contract management team members will be more effective if appointed sufficiently in advance of the contract award so that they have the opportunity to become familiar with the agreement from its start. This approach would also allow the contract manager to advise the procurement team about the practicalities of proposed management structures included in the contract and to help decide the level of resources required to manage the contract adequately.

While the efficient and effective management of a contract requires a properly resourced contract team, headed by a well-informed and motivated contract manager, the relationship the team has with the contractor is just as important. Key personnel in both the contractor's and the public sector's teams need to work effectively together if a successful relationship is to be built and sustained. The better the relationship, the more likely it is that the parties will work together to achieve a mutually beneficial outcome.

**Contract evaluation.** If authorities do not have procedures in place to evaluate their PFI projects comprehensively they may experience difficulties in determining the extent to which they are meeting expectations, for example whether they are delivering services of the required quality or realising any non-financial benefits which justified the projects. Central evaluation of operational performance is also useful.

The NAO has found that authorities do not always comply with best practice in terms of testing user satisfaction following the commencement of service delivery. The NAO has recommended that user surveys should be part of the post-contract evaluation process. Where there are a number of different stakeholders intended to benefit from the services, the public sector could usefully collect qualitative data from them all, for example through focus groups and questionnaires.

The actual return that the contractor earns compared to the risks it bears is also important. In the UK, comprehensive information on this is not available centrally.

**Performance monitoring and sanctioning.** The NAO has emphasised the need for the public sector to have in place, from the start of the contract, appropriate means of measuring performance that is directly linked to the payment regime. In contracts where services had been piloted, often IT projects, authorities have come under pressure to accept delivery of services and certify satisfaction with the pilot projects without the contractors demonstrating full contractual compliance. Although this should be avoided, there may be circumstances when it will be in the public sector's interest to accept provisionally a pilot, albeit with some aspects of service provision yet to be proved. In such circumstances, the public sector must ensure that it retains the right to terminate the contract, if, after a specified date, the contractor fails to deliver fully compliant services.

Before the project is operational, the contract management team needs to be properly resourced to monitor performance and to understand the contractual pricing mechanism. The design of the performance and payment deduction provisions will have to aim at encouraging the contractor to remedy poor performance quickly and so the provisions should generally be enforced. If they are not, there is a risk that the overall balance of incentives and penalties will be disturbed to the detriment of the overall deal. In the UK deals we have monitored, there has generally been a low level of payment deductions. This may in part be a reflection of good service delivery. But we have noted that payment mechanisms often do not result in high levels of deductions. There is inevitably some subjectivity in measuring performance, but as far as possible this should be minimised to avoid disputes and to help achieve payment deductions that are commensurate with the impact of poor performance.

While the performance and payment regimes apply to the PFI contractor, the public sector also needs to maintain a close interest in the performance of key subcontractors. This is particularly important if problems within the supply chain might delay or reduce the quality of the services. It is reasonable to expect public sector monitoring to be capable of identifying emerging problems early, including the potential insolvency of a key subcontractor.

***Critical to the long-term success of the project will be the public sector's ability to master the management of change during the operational phase.***

**Contractual changes.** Critical to the long-term success of the project will be the public sector's ability to master the management of change during the operational phase. When a change to services is required, a successful outcome will have to rest on proper and early preparation. Developing a business case to support major changes is sensible. Apart from justifying the change, this could set out a robust negotiating strategy for the public sector that includes a realistic fallback position. Before ordering a change, the public sector client will want to be satisfied that the proposed terms provide value for money. Knowledge of market prices for the delivered services and comprehension of what inputs are required to implement the change would inform decisions on whether to challenge the contractor's price structure. As the change process involves negotiation, the public sector client will need skilled negotiators.

The public sector would also benefit from regular reviews of whether the performance measurement regime in its PFI contract continues to meet its business goals. Where there was a mismatch, the public sector would need to determine what changes were required to the contract.

**Refinancing issues.** As discussed in Section 2.6, refinancing is an extremely complex issue and in 2002, the Treasury and the Office of Government Commerce introduced new guidance. The public sector needs to be very alert and well advised in dealing with refinancing proposals. It must also deal with the perception that value for money has been eroded by the increased rate of return that the contractor may earn following the refinancing even when the gain is shared. This highlights the need for a good understanding of refinancing issues and for contractors to be required to notify the public sector client of all refinancings. When a refinancing is proposed, the public sector is likely to need specialist help – available in the UK from Partnerships UK as well as from other advisers.

**Contingency planning.** The public sector needs to understand how interruptions to service delivery, or unsatisfactory service delivery, would impact on the execution of its statutory duties and key business activities. To mitigate such potential risks, contingency plans are needed; in fact, they should be available from the start of the contract and kept up to date.

Throughout the contract period, the contract management team should continue to monitor risks that could adversely affect the delivery of services. This information should provide early indications of potential service interruptions or deficiencies and so provide an opportunity to refine and implement contingency plans in a timely manner.

There may be situations where the contractor loses money on the project, and the public sector client, having established a valuable working relationship with the contractor, wants to avoid the contract collapsing. There would be a danger in increasing payments to the contractor because to do so would potentially signal to the PFI industry that the public sector is prepared to rescue contractors that get into difficulties. A better strategy is for the public sector to review what other actions it and the contractor can take to improve the latter's position. A good general principle is that any reallocation of risk should aim to preserve the original deal benefits.

Problems have emerged in a number of UK deals where the contractor generated some, or all, of its revenue directly from the paying public. We have found that the most optimistic bidder usually won the competition. In some cases, the winning bidder's forecasts proved to be over-optimistic and it subsequently got into difficulties. What is needed to temper bidders' optimism is effective due diligence. This process is a positive feature of most PFI deals but will be most effective where the contractor's equity is substantial and genuinely at risk, and a reasonable proportion of the debt is exposed to project risks.

**Contract termination threat.** Poor performance by a contractor may put the contract at risk of termination. In the UK, there have been very few examples of contract termination. This is partly because action has been taken in some cases to renegotiate projects that have experienced difficulties. Moreover, effecting a termination is not an easy option – there could be grounds for dispute and the public sector would have to pay termination liabilities and find a new contractor. Nevertheless, there have been some examples – a contract for the National Physical Laboratory was terminated following negotiation and Jarvis, one of the biggest PFI contractors, was replaced as the main contractor on various school projects.

*In the UK, there have been very few examples of contract termination.*

If termination is to act as a viable remedy, the public sector client needs to be aware of when it would be entitled to terminate the contract and must be prepared to use the powers. It could be sensible, as part of its contract management procedures, for the public sector to draw up and maintain contingency plans for contractor default, even when this is perceived unlikely. In producing a plan, the legal position on terminating the contract should be clearly spelt out, including rights to take possession of assets and compensating the contractor. It needs to be recognised that when a public sector client is entitled to terminate a contract, it could be hindered from exercising that right because it could not afford the short-term costs of such an action unless overseeing bodies gave it assistance.

## 5. Conclusions

This paper has considered the PFI experience in the UK from a value-for-money perspective. To offer a rounded assessment, the procurement, construction, and operational phases have been considered separately.

As regards the procurement phase, a number of factors affecting value for money were analysed. To start with, changes made to the VFM appraisal framework, including reduced emphasis on the Public Sector Comparator, were argued to have increased the likelihood that PFI procurement will be chosen when it is the option most likely to deliver value for money. In terms of risk allocation and management, the UK experience underlines the need to avoid excessive risk transfer for its own sake, as this will be expensive and is likely to lead to problems for the public sector down the road. Furthermore, competitive bidding is key to achieving value for money, and the UK experience suggests a number of prerequisites for it. Finally, financing arrangements can also affect the creation of value for money, and some lessons about the choice of financing structures and the sharing of refinancing gains could be drawn from the UK's PFI experience.

***There is a need for effective monitoring and sanctioning of the performance of the private sector partner.***

While it was documented that PFI has scored well in the construction phase compared to traditional public procurement, experience of operational performance remains limited to date. Nevertheless, work carried out by the NAO allows the identification of a number of factors that affect the performance of PFI projects. Such factors relate, most notably, to the management of the contract, with any changes requiring in-depth analysis of the costs and benefits. In addition, there is a need for effective monitoring and sanctioning of the performance of the private sector partner. In particular, contract termination has to constitute a credible threat.

Finally, it has to be acknowledged that the long-term nature of PFI projects and their dynamic impact on the economy raises a host of other issues that are equally important when assessing the successes and failures of PFI. Such issues include corporate governance in PFI structures; the accounting treatment of PFI projects; and the regenerative impact that PFI may have at the local level. A detailed discussion of these issues goes, however, beyond the scope of this paper.



## References

NAO (2001). "Managing the relationship to secure a successful partnership in PFI projects". *National Audit Office*, HC 375 2001-2002.

NAO (2003). "PFI construction performance". *National Audit Office*, HC 371 2002-2003.

NAO (2005a). "Darent Valley hospital: The PFI contract in action". *National Audit Office*, HC 209 2004-2005.

NAO (2005b). "Improving public services through better construction". *National Audit Office*. HC 364 2004-2005

## ABSTRACT

*The Portuguese PPP experience demonstrates the effectiveness of PPPs in rapidly developing infrastructure and in improving the quality of public services. But the ultimate goal is economic efficiency, not just effectiveness. On this count, Portugal's PPPs may not have scored as high as they could have. To some extent, this has been inevitable, given that no well-tested blueprint to follow was available when Portugal embarked on the PPP route a decade ago. That said, recent changes to Portugal's institutional framework for PPPs – especially a more rigorous appraisal of PPPs, their long-term budgetary implications, and of the contractual arrangements supporting them – aim at ensuring efficiency in the provision of infrastructure services and, thus, value for money.*

**Rui Sousa Monteiro** ([rui.monteiro@parpublica.pt](mailto:rui.monteiro@parpublica.pt)) is Senior Economist in the PPP Unit of *Parública SA*, the state firm acting as PPP knowledge centre and PPP advisor to the Finance Minister of Portugal. The views and opinions presented are solely those of the author and do not represent those of the Portuguese government.

# Public-private partnerships: some lessons from Portugal

## 1. Introduction

Portugal has gained considerable experience with public-private partnerships (PPPs). These partnerships, which began to emerge about a decade ago, typically rest on long-term contracts – often for a period of 30 years – between a public body and a private consortium. They require the private partner to provide a public service – using an existing public infrastructure asset – or to design, construct, maintain, and operate a new infrastructure asset. Finance for PPPs has come from private or public funds. In the beginning, PPPs concentrated in the transport sector – highways in particular – but the model has begun to spread to other sectors too, notably the health sector.



**Rui Sousa Monteiro**

Portugal is obviously not the only EU country that has travelled some way along the PPP route. However, 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. Related to this is that compared to countries with a higher per capita income – such as the United Kingdom – PPPs in Portugal often imply a major extension of infrastructure assets rather than small additions to the existing infrastructure. This feature, which applies in particular to the road network, should be kept in mind when reviewing Portugal's PPPs experience.

The remainder of the paper proceeds as follows. The next section looks at achievements and challenges of PPPs in Portugal. Section 3 draws lessons from the Portuguese experience – the challenges in particular – and Section 4 discusses changes to the institutional framework for PPPs that have been introduced recently in light of Portugal's experience. Section 5 offers some concluding remarks.

## 2. Public-private partnerships in Portugal: achievement and challenges

Initially, PPPs were implemented mainly in the transport sector (highways, railways, and tramways). Reflecting their effectiveness in rapidly developing infrastructure assets and in improving the quality of services, they were welcomed by users and the public in general. A noteworthy example is the Vasco da Gama bridge, which was realised under tight schedule in time for the 1998 World Exhibition. More generally, the PPP road programme, although suffering from delays in receiving environmental approvals, marked a departure from the previously slow development of road projects. But success was not limited to road sector PPPs: the Fertagus rail service, for instance, can be considered exemplary in terms of service reliability and quality. Table 1 lists major PPP projects initiated or implemented in recent years.

Probably due to their success in providing public infrastructure services in an effective way, there is a consensus across political parties about the merits of PPPs. In fact, PPPs have been carried out under a series of governments formed by different political parties, albeit with different aims and emphasis, depending on the political positioning of each party. There is also broad agreement that PPPs should be further developed, both in the transport sector, where they have clustered so far, but also in other sectors.

As far as the transport sector is concerned, two new large highway concessions are currently being tendered, others are being prepared; several tram and train concessions are being negotiated or prepared; some large public sector projects, such as the EUR 3 billion-Porto tramway system, may be transformed into PPP schemes; the high-speed rail system will probably have a PPP component; and the possibility of converting public sector rail services into PPP concessions is being considered.

**Table 1. Selected PPP projects in Portugal**

	Project phase	Initial investment (in EUR million)	Cost to public sector (in EUR million)
Lusoponte (Vasco da Gama bridge)	completed	1 027	503
AENOR (real toll highways)	under construction	846	372
AEA (real toll highways)	completed	1 554	86
Shadow toll programme (7 concess.)	under construction (2 compl.)	3 428	7 616
Litoral Centro (real toll highways)	under construction	156	-45
Grande Lisboa (real toll highways)	tender phase, bids presented	...	...
Douro Litoral (real toll highways)	tender phase, bids presented	...	...
Fertagus suburban rail service	completed, renegotiation	39	...
Metro Sul do Tejo tram system	under construction	269	269
Metro Ligeiro do Mondego	tender being prepared	...	...
High speed railways	preliminary studies	...	...
Hospital programme (10 hospitals)	two in tender phase	...	...

Note: Situation as of April 2005

**Initially, PPPs were implemented mainly in the transport sector, but they are now making inroads in other economic activities, notably in the health sector.**

Outside the transport sector, the PPP model is making inroads in the health sector, and studies are being developed in water and waste management, student accommodation, and prisons. Specifically, a large PPP hospital programme has been launched, comprising ten hospitals, of which three are being tendered already. A salient feature of these PPPs is that they envisage the private partner not only to manage hospital facilities (as has traditionally been the case in hospital PPPs in the United Kingdom, for instance) but also to provide clinical services. In addition to this hospital programme, there are plans for smaller projects such as rehabilitation clinics and call centres, the latter providing information on health and health services.

While Portugal's PPPs have been effective in accelerating infrastructure development and in improving service quality, it is far from clear whether they can be considered efficient from a broader economic viewpoint. Of particular concern is that they have created new challenges for the public sector.

For a start, while providing short-term budgetary relief, some PPP programmes and projects have had a significant medium to long-term fiscal impact. The trouble here is that the traditional year-on-year government budgeting has been inadequate to deal with the long-run budgetary commitments the government has entered into under PPPs.

Adverse fiscal implications have also cropped up as a result of sub-optimal risk sharing. By and large, this was not because formal risk-sharing rules were inadequate, but because, in practice, such rules could be changed under specific circumstances to the benefit of the concessionaire.

When the probability of such circumstances materialising was not carefully evaluated, the effective risk sharing was different from the contractually agreed one. For instance, although all contracts allocated design and construction risks to the concessionaire, the public partner was responsible for delays in land expropriations and for substantial changes in projects imposed by environmental regulators or unilateral public sector decision. Indeed, land expropriation schedules were too tight, and environmental regulations, decisions by local authorities, and the successful lobbying by pressure groups forced significant project changes after contracts had been signed. As a result, the risks effectively borne by public partners were much wider than those envisaged under the contract. Clearly, successive expropriation delays and project changes did not create the right incentives for building consortia to meet expected costs and schedules as they saw a good chance of transferring cost overruns to the government and receiving compensation for delays as long as they were able to present them as the outcome of public sector decisions or expropriation delays.

Another challenge for the public sector has been 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 the event, the public sector's progress on this front has not kept pace with that of private sector partners. In fact, the very development of PPPs enticed public sector employees to join the private sector. While this has probably raised overall productivity, it made the objective of creating value for money through PPPs even more challenging.

A lack of effective competition for PPPs is another reason why PPPs have not been as efficient as they could have been, with shortcomings in competition and efficiency evidenced by high construction and financing costs implicit in the bids for PPPs. Bidding for PPPs is inherently more costly than bidding for traditionally procured projects. This tends to limit the number of PPP bidders and thus competition. But in some cases, rigid tender rules have hindered effective competition; what is more, they did not allow bidders to introduce innovative and efficient proposals.

*PPPs accelerated infrastructure development, but for a variety of reasons they were not as efficient as they could have been.*

In principle, PPPs stand a better chance than traditionally procured projects to deliver infrastructure services on time and within budget. The Portuguese experience lends support to this view. That said, most PPP projects suffered delays and cost overruns, but this has been mainly due to difficulties in meeting environmental standards. This, in turn, happened for two reasons. One is that most projects were tendered without previous licensing (by environmental or local authorities); the other is that during the last decade the environmental licensing rules have been steadily reinforced in ways not compatible with the previously agreed contracts.

### **3. Some lessons from the Portuguese PPP experience**

#### **3.1 Fiscal policy implications**

The Portuguese PPP experience strongly suggests the need to carefully consider the long-term fiscal implications of PPPs. Long-term budgeting – covering a period of 30 years – would be ideal in this respect, but no country has ever implemented it. A practical, though very useful second-best solution is a specific appropriation process for PPPs — like the one Portugal has recently adopted (see Section 4). Such a process will rationalise decisions for (or against) PPPs for at least two reasons.

First, it will enable a better evaluation of whether PPPs are affordable. When payments by users are not sufficient to ensure the financial viability of a PPP, an appropriation process would show the amount of public funds required over the whole life of the PPP to achieve financial viability. One can look at this also from a different angle: an appropriation process will indicate the budget support

available for a PPP; if this is too little to ensure the financial viability of the PPP, its characteristics – such as user charges – could be reconsidered with a view to achieving financial viability. Overall, an appropriation process for PPPs promises to make them better and their long-term fiscal implications more transparent.

***To show their long-term fiscal implications, Portugal has recently adopted a specific budgetary appropriation process for PPPs.***

Second, an appropriation process addresses concerns that PPPs simply transfer 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. Again, an appropriation process for PPPs allows a better assessment of their costs, in particular those falling on future generations.

That PPPs have considerable long-term fiscal implications is abundantly clear from Portugal's experience. In Portugal, the central government public investment budget (PIDDAC) amounts to more than EUR 6 billion. Forty percent of this is for transport projects, mainly railways, roads, and ports. In the last years, the annual PIDDAC for roads was less than EUR 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, to be made over a period of 20 years, will reach EUR 700 million. It is clear that this will put the transport budget under considerable pressure. Against this background, the government of Portugal decided in 2004 to replace shadow tolls by real tolls in highway PPP concessions, subject to exemptions for some regions. In the health sector, the ten PPP hospitals (with 30-year contracts for the buildings and 10-year contracts for the provision of services, including clinical services) will create another annual payment of around 0.5 percent of GDP. But as these hospitals are expected to replace spending on old hospitals and to make the hospital sector more efficient, they could help curb expenditures on public hospitals.

Another fiscal policy dimension is worth highlighting. With a switch from investment expenditures (under traditional procurement) to long-term service payments (under PPPs), governments have less scope for changing expenditure in response to the business cycle. One could argue that less expenditure flexibility is of particular concern for small monetary union members like Portugal. Monetary union members have lost the possibility of using monetary and exchange rate policies to stabilise the economy, leaving fiscal policies as the only macroeconomic instrument to possibly deal with cyclical fluctuations in aggregate demand. Substituting long-term service payments for investment expenditure may further reduce the scope for counter-cyclical fiscal policies. But whether one considers this a genuine drawback very much depends on whether one believes in the effectiveness of discretionary fiscal policy in the first place – a question that remains controversially debated. In fact, there is also the view that counter-cyclical fiscal policies are counterproductive rather than merely ineffective. In this case, steady, long-term service payments in lieu of lumpy, politically influenced investment expenditures could help smooth the business cycle. To conclude, even if there are costs in terms of foregone fiscal flexibility, they would have to be compared to the potential benefits of PPPs, especially better long-term budgetary planning and a more efficient use of scarce public resources.

Overall, PPPs have long-term fiscal implications and they may create some rigidity in managing public expenditures. But it is also true that they have potential to make the provision of public services and infrastructure more efficient, thereby lowering the total call on public funds. To enhance the chances of this to happen, a specific appropriation process for PPPs is of crucial importance.

### 3.2 Public sector comparators

A key issue – in Portugal as in other countries – is whether PPP projects provide value for money (VFM). The paper by Grout in this volume specifically deals with so-called value-for-money tests. Suffice to note here that the most comprehensive version of such a test tries to ascertain whether the present value of the net economic benefits of a PPP is at least as high as the net present value of the same project carried out through traditional procurement. The latter project is typically called the public sector comparator. As Grout also argues, there are good reasons not to perform VFM tests that rely on comprehensive cost-benefit analyses, but to conduct simpler tests, which still could incorporate a public sector comparator. In the United Kingdom, for instance, a value-for-money test looks at things from a government budget perspective. Specifically, it compares the budgetary cost of the PPP with that of the public sector comparator. In essence, this is also the approach recently introduced in Portugal. More specifically, to evaluate the effectiveness and efficiency of PPP programmes, the budget law requires the construction of an alternative programme aimed at reaching the same result as the PPP programme, but excluding private financing and private management. This approach was implemented in the last few projects. So far, the experience with modelling the comparator has been very positive. The experience shows that the merit of defining a public sector comparator is indeed that it quantifies how PPPs score compared to traditional procurement. Perhaps more important, the use of a public sector comparator provides a great deal of information and fosters a more consistent approach to designing and evaluating PPP proposals.

*Portugal's PPP decision process now calls for the construction of a public sector comparator.*

To illustrate some of the practical advantages associated with the use of public sector comparators: they have helped to better define the outcome and goals of the underlying infrastructure investment; compile time-series and cross-sectional data from similar projects, thereby improving financial modelling; check and fine tune the consistency of the PPP project with government policy objectives; foster a constructive dialogue between all public sector parties involved – the Ministry of Finance, line ministries, PPP sponsors, and future public managers of the PPP contracts.

### 3.3 Distribution of risks between private and public partners

The success of a PPP crucially depends on the sharing of risk between private and public partners. In this context, it is worth bearing in mind that PPPs are principal-agent relationships. An efficient PPP requires a set of incentive mechanisms to induce the agent (the private partner) to exert the adequate level of effort in order to maximise the objective function of the principal (the public partner). So, it is crucial how project goals are presented and measured and how the performance of private partners is rewarded (or punished).

Let us take a closer look at project goals. The PPP experience in Portugal indicates that projects with clear output specifications (e.g., the specific requirements of the service to be provided) tended to yield better results from the public sector viewpoint: shorter tender processes, better price conditions (e.g., prices lower than expected), and on-time completion of construction. The emphasis on output rather than input specification, which is key for giving private partners the right incentives, requires quite some rethinking on the part of government departments. Under traditional public procurement, departments incorporate in the tender documents many input specifications and prescribe several processes, designs, or technologies. In the case of PPPs, this is counterproductive, but as old habits die hard – not only in government departments – there is a constant need to purge tender documents of unnecessary input specifications with a view to allowing private bidders (and managers) space for innovative, efficiency-enhancing solutions. But it is also clear that with more emphasis on outputs there is a greater need to monitor and reward (or sanction) the actual performance of private PPP partners.

Risk-sharing issues are especially challenging when risks are split between two or more concessionaires. In some of Portugal's PPP schemes, responsibilities, risks, and payments are shared between two concessionaires: one provides an infrastructure for a long period (typically 30 years) and the other delivers a service (for a much shorter period) using this infrastructure. This model is envisaged for hospital PPPs because the contractual arrangements for the clinical services can only be agreed on for a period shorter than the one suitable for the management of hospital buildings. It is also the model devised for some rail and tram PPPs, where the service of the infrastructure and the rolling stock is subject to availability risk, whereas transport services are subject to traffic risk. The contract period for transport services is usually shorter than that for providing the network and trains available; this is because the public sector cannot commit itself for a long period on some factors that affect traffic risk, such as maximum ticket rates, new transport systems, or urban parking rules.

***The Portuguese experience shows how regulatory risk affects PPPs.***

There is also something to be learned from the Portuguese experience about how regulatory risk affects PPPs. It was noted above that most PPPs experienced cost overruns and delays (i) because of changing environmental regulations and (ii) because projects were tendered without prior environmental licensing. Changes in environmental regulation could be minimised, but they are probably difficult to avoid altogether. But it is clear that the public sector, i.e., the regulator, has to bear the consequences of changing environmental regulations. As to the environmental licensing of projects it is crucial that environmental impact studies have been carried out and initial licenses obtained before PPPs are being tendered so that bidders know all the environmental constraints and the mitigating measures they should include in their proposals. That this was often not the case in the past may have undermined competition for PPPs – an issue addressed next.

### **3.4 Competition for PPPs**

PPP projects are usually subject to international public tender, with advertising obligations and tender procedures similar to those used in major public works. The tender typically has two stages: bidders present their bids and after evaluation the two most promising bidders are invited to negotiate with the contracting authority and to present their best-and-final offers (BAFO), which are the basis for selecting the winning bidder. All procedures are required to satisfy the principles of transparency, equality of treatment, and competition and they have to clearly present the rules governing the selection of the private partner. Bidders are given extended information at all stages of the process and have the right to challenge the outcome in court.

Competition is seen not only as a means of ensuring a level playing field for all bidders. More important, it is crucial for obtaining an efficient outcome in the interest of the public. This has a short-term and a long-term dimension: in the short term, competition induces the submission of low-cost and high-quality bids; in the long run, it promotes a selection process that eliminates inefficient bidders and rewards efficient ones.

The Portuguese experience shows the need to reinforce formal competition requirements with additional measures to ensure effective competition for PPPs. For a start, all licenses (from government, environmental authorities, local authorities, etc.) should be provided prior to the launch of tender. But this also obliges government entities to have the nature of the project – including its goals, the targeted quality of services, and mitigating measures in the case of environmental challenges – clearly defined before tendering. If this is not done and if the definition of the project is revised after the first tendering stage – or even after the winning bidder has been selected – the PPP



agreement might be reached with a bidder who is not necessarily the most efficient in delivering the revised project.

Another measure to make competition for PPPs more effective and to create value for money is to refrain from introducing in the tender documents requirements that can block the introduction of innovation in the project technology or management. Too rigid requirements not only raise the costs for users or the public partners, but also prevent the selection of the most efficient private partners. Moreover, it is important to define criteria for evaluating and selecting bids so that they are objective and verifiable. In addition, they should enable an evaluation of innovative proposals made by bidders. Overall, greater project efficiency and tender competition can be obtained by cutting input requirements and, at the same time, by better defining intended outputs. A corollary is that selection criteria need to focus on the targeted output of the PPP project rather than – as under traditional procurement – the means of producing this output.

*Greater project efficiency and tender competition can be obtained by cutting input requirements and, at the same time, by better defining intended outputs.*

These characteristics of efficiency- and competition-enhancing PPP tenders, which are very different from traditional public procurement, suggest that the currently proposed new European Community legislative initiative on PPPs, designed to regulate the procedure for the award of concessions, is not desirable. What is necessary at this stage of Portugal's experience with PPPs is more time to evaluate and test different schemes, including more innovative ones – such as PPP procurement procedures that give the private sector a larger role in finding solutions for public problems and tendering processes that allow for separate but interlinked contests for contractors and financing consortia. Of course, compliance with EU principles should always be required. But before putting in place any EU legislative framework for PPPs, there should be an extended and thorough debate between the European Commission and member states on such a framework.

### **3.5 Long-term management of the contractual relationship**

For PPPs to deliver value for money, the public sector obviously needs the expertise to manage such long-term contractual relationships. Furthermore, it must be committed to the goal of improving the supply of 'public' services. Besides these general requirements, the public sector has to manage PPPs in a consistent way. In this respect, Portugal encountered difficulties, notably in aligning contract provisions with general government policies. This applies in particular to PPPs that rest on user charges.

For instance, in suburban transport projects, it is quite difficult to contractually prescribe user fees (or fee-adjustment rules) for a long period because the opportunity cost of this transport service will be influenced by decisions made by the central government (e.g., petrol taxes, new links, and toll rates) and local authorities (e.g., availability and cost of parking). In principle, this problem can be solved in two ways, or a combination thereof. One solution is to clearly formulate which circumstances would trigger a review of user fees and by how much they could be adjusted. The other solution is to have relatively short contract periods, essentially aligning them with the time horizon over which the government can credibly commit to refrain from actions that would justify a change in user charges. In Portugal, the second solution has been used. In the case of tramway PPPs, for instance, there are typically two contracts: a long-term concession for the provision of the infrastructure and the rolling stock, and a short-term concession for the provision of tram services. In the case of hospitals, a similar approach applies, with a short contract period for the provision of clinical services that, nonetheless, allows for annual revisions of the mix of services offered by the hospitals.

The long-term management of PPP contracts requires developing public sector entities that can be held responsible for managing such contracts and, specifically, for checking the quality of services provided and applying penalties for non-fulfilment or misbehaviour. Those entities should be distinguished from regulators since they manage the relation between the private operators/concessionaires and the contracting authority (making sure, in particular, that all partners fulfil their contractual obligations) whereas regulators care about general matters such as competition, users satisfaction, and public safety. The separation between contract managers and regulators aims at avoiding inherent conflicts of interest.

#### 4. Recent institutional changes

*The experience gained by Portugal with its PPPs has led to a number of institutional changes.*

The experience that Portugal has gained with its PPPs, and in particular the challenges it encountered, has induced a number of institutional changes aimed at improving the quality of PPP projects, optimising the PPP contractual relationships, and increasing political awareness about the long-term costs and risks of PPPs and their appropriate budgeting.

The budget laws now clearly define several PPP appraisal procedures, supplemented by a specific legal decree<sup>1</sup>. A key feature is that the case in favour of PPPs – and the specific PPP model chosen – has to be made on the basis of a public sector comparator and with the involvement of experts from the Ministry of Finance. This should help ensure that the PPP route is taken only if PPPs offer value for money. To further rationalise the decision process, the PPP proposals have to specify long-term budgetary implications and, more important, adequate long-term budgetary appropriation have to be made prior to launching a PPP programme.

Another institutional change is the creation of a PPP Unit, in *Parública*, which is responsible for surveying public-private relationships, for collecting, analysing, and disseminating information on PPPs, and for advising sectoral ministries. In addition to this more general mandate, the PPP unit has a role in evaluating PPP projects, tender documents, and bids, and in negotiations with private partners<sup>2</sup>. At present, the PPP Unit is involved in the appraisal of several new large projects, mainly in the transport and health sectors, which are at different stages of the project cycle (evaluation of departmental proposals, preparation of tender documents, bid evaluation); the unit is also involved in the supervision of PPP contracts that are being renegotiated or refinanced.

Centres of PPP expertise are also being established in sectoral ministries with the creation of departmental PPP units in charge of developing specific PPP programmes. For instance, the PPP hospital programme is being developed and managed by *Parcerias Saúde*, the Health Ministry PPP unit, with assistance from *Parública*.

#### 5. Conclusions

Public-private partnerships certainly have potential to provide public services more efficiently, and if they are chosen for that reason, they present a way of facilitating the development of infrastructure and public services in an environment of severe budget constraints. In addition, they could have the positive side effect of fostering competition among government departments for setting best practice in delivering public services to users. What is more, PPPs themselves may set good practice

<sup>1</sup> *Decreto-Lei* 86/2003, April 26<sup>th</sup>.

<sup>2</sup> *Decreto-Lei* 86/2003, April 26<sup>th</sup>; and Finance Minister legal order, *Despacho Normativo* 35/2003, August 20<sup>th</sup>.

that is spreading to those services that the public sector will continue to supply. For instance, most publicly-managed hospitals, traditionally paid according to their input needs (personnel, equipment, etc.), are now being paid for their output, and new incentive schemes are being devised for their managers and staff. Obviously, there could be a positive feedback from more efficiently publicly-managed hospitals to PPP hospitals as the performance of the latter is benchmarked against the most efficient publicly-managed hospitals.

Overall, we arrive at the following conclusion: the Portuguese experience demonstrates the effectiveness of PPPs in rapidly developing infrastructure and in improving the quality of public services. But the ultimate goal is economic efficiency, not just effectiveness. The recent changes to the institutional framework – especially a more rigorous appraisal of PPPs, their long-term budgetary implications, and the contractual arrangements supporting them – aim at ensuring efficiency in the provision of infrastructure services and, thus, value for money.

Looking ahead, in Portugal and elsewhere, different PPP models and procedures should be carefully analysed and evaluated in order to continue to learn from experience. As a national PPP Unit and knowledge centre, *Parpública* clearly sees the need for a European and international exchange of views on PPPs to find out what works and what does not.

## ABSTRACT

*This paper analyses the role of public-private partnerships (PPPs) for infrastructure development in the new EU member states and candidate countries in Central and Eastern Europe. We survey projects in transport, water, energy, and telecommunications sectors and then focus on the highway sector. Based on theoretical considerations and extensive fieldwork in Hungary, Poland, Croatia, and the Czech Republic, we find that PPPs have not been very successful in the region to date. This is mainly due to the unfavourable institutional environment during the transition period, suboptimal project design, and unrealistic demand projections. However, the conditions for successful PPPs have considerably improved, partly due to EU membership, so that PPPs remain an important option for the second generation of infrastructure projects.*

**Andreas Brenck** (ab@wip.tu-berlin.de) is Visiting Professor, **Thorsten Beckers** (tb@wip.tu-berlin.de) and **Maria Heinrich** (mrh@wip.tu-berlin.de) are Research Associates at the Workgroup for Infrastructure Policy (WIP), Berlin University of Technology. **Christian von Hirschhausen** (cvh@mailbox.tu-dresden.de) is Professor of Energy Economics and Public Sector Management at Dresden University of Technology. The authors thank the participants of the 2005 EIB Conference on Economics and Finance for useful comments and suggestions, furthermore Timo Vällilä, Thomas Barrett, and Antonio Estache for background discussions and suggestions. Special thanks go to our interview partners in Hungary, Poland, Croatia, and the Czech Republic, and in diverse financial institutions. The usual disclaimer applies.

# Public-private partnerships in new EU member countries of Central and Eastern Europe:

An economic analysis with case studies from the highway sector

## 1. Introduction

In the quest to upgrade their infrastructure in the early and mid 1990s, many countries in Central and Eastern Europe (CEE) placed considerable hopes on public-private partnerships (PPPs).<sup>1</sup> Initial conditions indeed seemed to lend themselves for PPPs, which includes non-governmental capital provision: a lack of domestic public resources, relatively favourable lending conditions from international financial institutions, and the desire of international project developers to prove that “PPP could work in Central and Eastern Europe” led to many PPP projects, conceived in the second half of the 1990s. Official statistics list 217 projects in the region by 2003. However, looking back at 15 years of transition in CEE countries, attempts to institutionalise PPPs as a key instrument for infrastructure financing have not been successful. For example, in the water sector, some projects have taken off (e.g., in Budapest, Sofia, and Tallinn) but the overall impact has been lower than expected. In the highway sector, some ambitious plans to join private co-financing and to introduce user-tolls have been postponed or cancelled. Therefore, the question arises, why PPPs have not played a more important role in the region’s infrastructure development and what should be the way forward for PPPs in the new EU member states of Central and Eastern Europe.

EBRD (2004) and Guasch (2004) provide extensive surveys of PPPs and forms of ‘private participation in infrastructure’ (PPI) in transition countries. They conclude that PPI in CEE countries is on the rise, but that it remains largely underdeveloped relative to comparable regions of the world, such as Latin America or Asia. Additional sectoral surveys and selected case studies are provided by Simpson (2004) and Clement-Davies (2001). Comparative international analysis of the experiences with PPPs in Eastern Europe is provided by Estache and Serebrisky (2004). They conclude that PPPs only work for a limited period of time, but often result in complex renegotiation after some time, either due to macroeconomic shocks (such as in Argentina) or because individual projects run into problems. Estache and Serebrisky also emphasise the need for strong political commitments to make the PPP reform path sustainable in regions such as Latin America and Central and Eastern Europe. In addition, a high technical competence is required on both sides (public and private) to make PPPs work.

This study analyses the approach and results of PPP infrastructure financing in CEE countries, mainly between 1993 and 2005. We carry out a quantitative analysis of projects in different sectors and then focus on the highway sector in detail. In line with Bentz *et al.* (2003), De Bettignies and Ross (2004), and others, we define a PPP as a contractual structure where the public sector buys a service from the private sector through a long-term contract, and where more than one element of the infrastructure value-added chain is passed on to the private sector. PPPs also include sophisticated rules on risk allocation between the public and the private sector. It is important to make a distinction between a PPP and ‘simply’ raising private capital. Private financing can be part of a PPP deal, but does not have to be. Likewise, a PPP does not necessarily require tolls or user charges; these are characteristics for a commercial concession scheme that can be a PPP, but does not need to be one. In the highway sector, the value-added chain generally consists of design, construction, capital maintenance, routine maintenance, and financing. An essential characteristic of a PPP in the highway sector is that, at least, the tasks of construction and capital maintenance are passed on to the private sector.



**Andreas Brenck**



**Torsten Beckers**



**Maria Heinrich**



**Christian  
von Hirschhausen**

<sup>1</sup> In this study we focus on the Central and Eastern European countries that have joined the EU in May 2004 (Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia) and on Croatia, Bulgaria, and Romania.

Our working hypothesis is that a PPP generally entails complex contract structures, which may to some extent have exceeded the institutional capabilities of the former socialist countries of Central and Eastern Europe. That said, given substantial institutional progress over the last few years, in particular EU accession in May 2004, a more fertile ground is provided for future PPPs. Our study is based on an extensive survey of the literature on the topic. For the empirical analysis of PPPs in the highway sector we carried out field research in four countries (Hungary, Poland, Croatia, and the Czech Republic) and expert interviews with banks, international financial institutions, project developers, and construction companies. The study was carried out between August 2004 and March 2005.

The study is structured in the following way. Section 2 provides a survey of PPPs in Central and Eastern Europe over the last decade. We examine the 'macro' perspective of infrastructure investment in the region, which is still characterised by a lack of basic infrastructure. But we also take a 'micro' perspective, which suggests a wide variety of institutional settings for PPPs. From the variety of sectors in which PPPs have been initiated, we focus in Section 3 on highways as a particularly strategic sector. From a state of underdevelopment, the region has been able to expand its highway system significantly. However, as Section 4 shows, this development has only been partly spurred by PPPs. As in the EU-15, traditional state financing and contracting have remained the dominant methods. We sketch the overall tendencies of highway development in Central and Eastern Europe and summarise case study evidence and country experiences from Hungary, Poland, Croatia, and the Czech Republic. Section 5 derives lessons from the case studies, and Section 6 gives general conclusions.

## **2. A survey of PPPs in Central and Eastern Europe**

### **2.1 The 'macro' perspective: infrastructure requirements**

***PPPs in Central and Eastern Europe have to be seen in the context of transition, including the goal of CEE countries to catch up with living standards in Western Europe.***

To comprehend the situation in the mid 1990s correctly, one has to place PPPs and the financing of infrastructure in a broader context. The collapse of the socialist infrastructure in the early 1990s had led to large investment requirements in CEE countries, including the extension and/or reconstruction of entire networks (such as telecommunications, highways, railways, airports, air traffic security, and water). Investment requirements were determined by changes in the demand for infrastructure services, but also by political constraints: governments of CEE countries were eager to reduce the infrastructure gaps with Western Europe. The integration into the European and world economy also called for urgent investments to attain international quality and security standards (for example in water, energy, and telecommunications).<sup>2</sup>

Quantifying the investment needs of the region is rather difficult. Table 1 summarises different estimates for several CEE countries. If one were to set a political objective that these countries should attain an average EU-15 infrastructure level by 2010, the investment needs for the sectors of material infrastructure alone would have amounted to more than EUR 500 billion by the mid 1990s. This corresponds to about 5 percent of annual GDP in these countries, for a period of 15 years.

---

<sup>2</sup> This section is based on Hirschhausen (2002).

**Table 1: Estimated infrastructure investment needs of new EU member countries, 1995-2010**

Sector	Reference	Investment needs	
		in EUR billion	in percent of annual GDP
Roads	Modernisation/construction to EU-15 average density	44	0.5
Railways	Modernisation/construction to EU-15 average density	37	0.4
Telecoms	Teledensity: 35 mainlines per 100 citizens	63	0.9
Water/ Sewage	European standards for collection and treatment	180	1.5
Energy	Network development, oil-, gas- and coal sector reform	110	1.4
Environment	EU-Directive Air Pollution and Waste	71	0.3
<b>Sum</b>		<b>505</b>	<b>5.0</b>

Source: European Commission, TINA, EBRD, and own calculations.

EUR 500 billion does not appear to be much and indeed it is a modest sum compared to the infrastructure investments in large EU countries, in particular those carried out in Eastern Germany over a similar period (around EUR 1,500 billion). However, only a small fraction of the necessary investments has materialised in CEE countries. During the transition period, access to infrastructure financing was limited in the public and in the private sector. Public infrastructure financing was constrained by the need to consolidate state budgets in an environment of falling tax revenues. Between 1989 and 1995, the share of public investments in GDP therefore fell from 5-10 percent to 2-3 percent (EBRD 1996 and Vällilä *et al.*, this volume). At the same time, private infrastructure financing was constrained by underdeveloped capital markets and high uncertainty and risk. International financial organisations therefore played an important role as a catalyst for infrastructure financing in the early years of transition, but they too were unable to meet the substantial requirements (EBRD 1996).

The following figures indicate the investment carried out: between 1992 and 2003, private financing for infrastructure (transport, energy, telecommunications, and water) in CEE countries amounted to USD 53 billion (EBRD 2004). During that time, the large international financial institutions, the European Investment Bank (EIB), the European Bank for Reconstruction and Development (EBRD), and the World Bank, invested roughly EUR 35 billion in these eight countries (own calculations on the basis of published information). Assuming that each Euro of this 'seed money' came together with about EUR 1.5 from the government, the value of public investment amounted to some EUR 80 billion. Thus, total investment in modernising CEE infrastructure until 2003 was about EUR 140 billion.<sup>3</sup>

<sup>3</sup> In this paper, we use USD 1 for one euro. The euro exchange rate has oscillated in the period under observation between 0.8 USD and 1.25 USD; investment figures are also distorted by imprecise information by project participants on the real values of investment (e.g., in constant 2000-terms). This is not to mention the problem that investments disbursed are much lower than investments announced. Therefore, the investment figures used in this study should be regarded as estimates.

***During the transition from plan to market in Central and Eastern Europe, access to infrastructure financing was limited.***

When looking at the sectoral distribution of private investment, we observe significant differences. Using data (EBRD 2004) on private investment in infrastructure in all transition countries (rather than those that have become members of the EU), the following picture emerges: energy and telecommunications have by far attracted the largest share of financing with roughly 45 percent each; the transport sector is seriously lagging behind, with only 9 percent of total private investment, and the share of water is negligible (below 1 percent).

## 2.2 The 'micro' perspective: a survey of projects

We now examine PPPs in CEE countries from a 'micro' perspective, i.e., we look at individual projects. To give an overview, we use the World Bank's database on Private Participation in Infrastructure (PPI). The PPI database details projects that are owned or managed by private companies as long as these companies or investors share the project's operating risk. Thus, as a first approximation, one can equate PPI and PPP. The PPI database focuses on infrastructure sectors: water (potable water and sewage), energy (electricity and natural gas), transport (railways, airports, toll roads, and seaports), and telecommunications.<sup>4</sup>

The PPI database classifies private infrastructure projects into four categories.<sup>5</sup> First, 'greenfield' projects: a private entity or a public-private joint venture builds and operates a new facility for the period specified in the project contract; build, operate, and transfer or own (BOT or BOO) are the most common contractual forms. Second, 'divestitures': a private company buys an equity stake in a state-owned enterprise through an asset sale, public offering, or mass privatisation programme; the contracts can entail a full transfer of the equity (100 percent) or a partial transfer. Third 'concessions': a private operator takes over the operation and maintenance for the contract period during which he also assumes significant investment and commercial risks; the long-term contracts include a detailed list of investments and service obligations. Fourth, 'management and lease contracts': a private company takes over the management for a fixed period, while ownership and investment decisions remain with the public sector; the operational risk is only transferred to the private operator by lease contract.

***The number of infrastructure projects in CEE countries with private participation is impressive.***

The number of PPI projects in CEE countries is impressive. Table A1 in the Annex shows 217 projects, which have reached financial close since 1990, with Hungary, the Czech Republic, and Poland accounting for 157 projects. The distribution between the four categories shows an emphasis on 'greenfield' projects and 'divestitures' with 67 and 107 projects, respectively. As to a breakdown by sector, telecommunications and energy dominate, accounting for 136 projects, i.e., more than 50 percent of all projects. Management and lease contracts are mostly used in the potable water and sewage sector. Among the 20 concessions listed in the PPI database, there are six toll road projects; all structured as build-rehabilitate-operate-transfer (BROT) contracts.

We now look at the volume of investment. The PPI database lists expenditure for some of the projects but not for all. Investment in infrastructure projects is recorded on the basis of expenditure on expanding and modernising facilities and on acquiring government assets or rights to

<sup>4</sup> Cp.: <http://ppi.worldbank.org/methodology.asp>.

<sup>5</sup> For the definitions, see <http://ppi.worldbank.org/glossary.asp#201> and Estache and Serebrisky (2004). Most infrastructure projects fit in one of these four categories. However, as boundaries between categories are not always clear and some projects have features of more than one category, such projects have been classified in the category that best reflects the risk borne by the private sector.



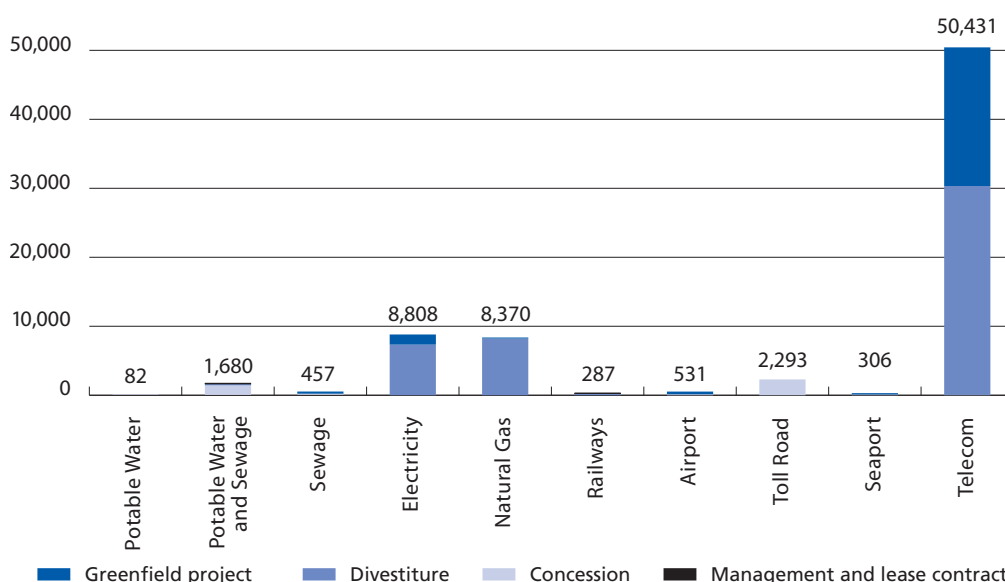
provide services. It is worth noting, however, that expenditure have generally been recorded on a commitment basis in the year of financial close and not on a disbursement basis, implying a considerable overestimation of actual investment.

Among the 217 projects listed in the World Bank’s PPI database, investment figures are available for 188 projects. The investment commitments amount to EUR 73 billion, of which more than two-thirds represent investments in Hungary (42 projects, EUR 17.4 billion), the Czech Republic (46 projects, EUR 16.4 billion), and Poland (35 projects, EUR 18.0 billion). Regarding the sectoral distribution, telecommunications dominate by far, with a total of 69 projects and an investment value of EUR 50.4 billion. Figure 1 shows the distribution of investments by sector and PPI category.<sup>6</sup> Within the energy sector, electricity (57 projects, EUR 8.8 billion) and natural gas (17 projects, EUR 8.4 billion) have been equally important. The other sectors, such as toll roads or water, are far behind.

**The telecommunications sector accounts for the bulk of infrastructure investment with private participation.**

Figure 1 also shows the dominance of ‘divestiture’ in infrastructure investments. More than 50 percent of the PPI investments in telecommunications and almost all investments in the energy sector have been generated through divestiture (total of 94 projects, EUR 46.4 billion). 64 ‘greenfield’ projects have been realised, amounting to an investment of EUR 22.6 billion. Figure 2 provides a more detailed analysis of investments in the two other categories, i.e., ‘concessions’ and ‘management and lease contracts’. These are the types of private participation that are closest to the typical PPP model. Toll roads and potable water and sewerage are the leading sectors. The six toll road projects alone account for about EUR 2.3 billion, more than the potable water and sewerage sector with 20 projects (EUR 1.4 billion.).

**Figure 1. PPI investments, by sector and PPI category (in millions of USD)**



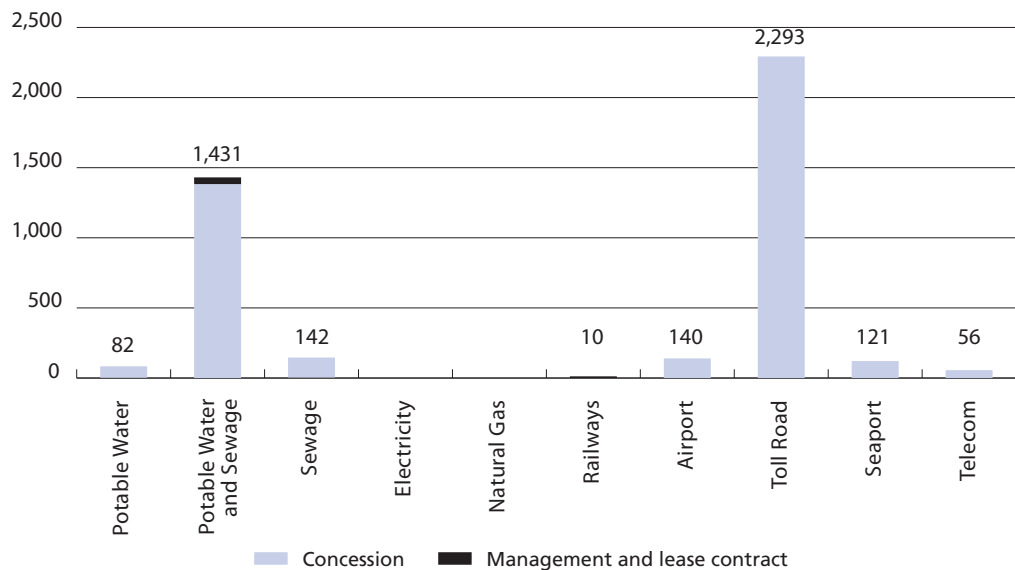
Source: World Bank PPI database

As discussed by Riess (this volume), private participation works differently across sectors, and we can confirm this hypothesis from the experience of CEE countries. To begin with telecommunications,

<sup>6</sup> See Heinrich (2005) for a more detailed presentation of the case studies. Note that the dominance of telecoms in PPI does not imply the dominance of this sector in public-private partnerships. In fact, most of the telecoms projects are outright privatisations.

there have been many PPI projects (71) in this sector, simply reflecting the high profit prospects of this sector and the minor role of the public sector.

**Figure 2. Investments in PPIs, by sector and the PPI categories 'concession' and 'management lease contract' (in millions of USD)**



Source: World Bank PPI database

***The water and sewage sector has been a prime target for concessions and management and lease contracts.***

By contrast, the water sector has proven to be a difficult sector for PPIs, mainly due to the low commercial value of the projects. However, water and sewage have been prime targets for PPPs, mainly due to the backwardness of the water sector in the region and the urgent need for financing, but also because project developers in the water sector rode on a wave of successful international projects, which they hoped to transfer to Central and Eastern Europe. Some large PPPs, often in combination with the award of concessions, were initiated. Whereas some of them are considered a success (e.g., Sofia, Budapest, and Tallinn), in particular small projects often suffer from non-commercial contract structures, facing difficulties right from the start.

Within the transport sector, railways are in the most difficult position. None of the CEE national railway systems is profitable and the ongoing fall in market shares suggest little hope for a significant change. Thus, contrary to roads, most projects in the rail sector have never been seen as profitable without extensive public support. Exceptions may be individual connections (such as the Prague airport link). Thus, PPP in the railway sector are unlikely to become an easy solution to the sector's problem. The situation is different with airports, which are 'easy' targets as increasing traffic to the capitals of CEE countries ensures the commercial viability of these ventures. Lastly, seaports had a much more difficult time as most of the ports in the region were over-dimensioned and experienced declining turnovers.

In the following sections, we will focus on the highway sector. The highway sector lends itself particularly well to an analysis of the experience with PPPs in Central and Eastern Europe because investment needs in this sector were considered to be exceptionally large and urgent. International experience – especially from the United Kingdom – seemed to indicate substantial efficiency gains of PPPs in the highway sector. Last but not least, highway sector PPPs are generally perceived to be technically simple: the technology is well known, fairly straightforward, and not prone to rapid change (in contrast to telecommunications, for instance), therefore posing low technical risks.

### 3. Highway sector PPPs: key theoretical considerations

The economics of PPPs is a relatively new but rapidly growing research area. Building on other research areas – such as property rights, transactions costs, and asymmetric information – there are many ways to explore the economic pros and cons of PPPs. Moreover, the debate of the 1960s on differences between public and private financing of projects has re-emerged recently. In what follows, we will not review the state of the art (this is done by De Bettignies and Ross 2004 for instance) but focus on key aspects that are of particular importance for our case. Besides, the theoretical literature has focused on narrowly defined problems thereby ignoring institutional aspects. While this is necessary to expose the economics of PPPs as clearly as possible, case studies of PPPs must also take into account institutional and organisational issues that affect the implementation of PPPs. In this section we will, first, briefly review efficiency aspects relevant for the assessment of highway sector PPPs and, second, account for the fact that highway investments cannot be considered in isolation but must be examined as components of road networks.

#### 3.1 Efficiency aspects

In assessing the efficiency of PPPs in the highway sector, it is helpful to distinguish three different though interdependent stages. More specifically, one needs to examine, first, the economic efficiency of PPPs relative to other forms of public procurement, second the institutional framework for PPPs in the country considered and, third, the highway sector policy of that country.

At the first stage, the merits of PPPs relative to other forms of procurement must be assessed. Vällilä, Dewatripont and Legros, and Riess (all in this volume) discuss various aspects of this assessment. Suffice it to note here that the decision for or against a PPP typically involves trading off productive efficiency gains of a PPP (such as whole-life cycle cost savings) against possible allocative efficiency losses of a PPP (such as a decline in the quality of infrastructure services). In the case of highway sector investments, it seems fair to say that the cost-benefit trade-off is typically in favour of PPPs. But whether the net benefits of PPPs materialise in practice depends very much on the institutional framework for PPPs and highway sector policies.

The institutional framework for PPPs has many dimensions, but design, evaluation, and award procedures as well as renegotiation rules are especially important. Design, evaluation, and award procedures are without doubt more demanding for PPPs than for traditional procurement. It is crucial to have institutions in place that possess the know-how and incentives to assess and enforce project requirements, especially since a PPP usually calls for output (or performance) specifications rather than input specifications as in the case of traditional procurement. There is a need for a tender regime that enables the proper evaluation of bids (domestic and foreign) that possibly differ significantly in terms of construction methods, schedules, costs, tolls, and financing plans. What is more, the PPP framework must be clear about issues such as real tolls vs. public payments, regulation of tolls, payment rules, public warranties, and the allocation of risks between public and private sector partners.

Renegotiations are a central characteristic of highway PPPs in many countries, particularly in emerging economies, and they have often been the moment for rent shifts from the users and/or the public sector to the private operators (Guasch 2004). In principle, renegotiations need not to be efficiency reducing. Aghion *et al.* (1994) have shown that simple rules, such as appropriate default options in the event of renegotiation failure and allocation of bargaining power to one party, can result in optimal investment decisions. In practice, however, these results require an institutional setting with a regulator directed by straight and binding rules and controlled by independent agencies or courts. In many countries, independent agencies have not been created and rules have often been unclear.

*The performance of highway PPPs has been driven by their underlying economics, the institutional framework for PPPs, and highway sector policies.*

This takes us to the third stage of assessing the efficiency of highway PPPs: the underlying highway sector policy. An important issue here is whether the policy framework supports the raising of funds necessary for developing an adequate highway network. There are strong arguments in favour of a system that relies on the earmarking of traffic-related taxes and an independent agency, the latter implementing a general investment or, even better, network development plan (Heggie and Vickers 1998 and Heggie 2003). In this system, PPPs represent just one of several instruments. In fact, a coherent framework for raising funds to develop the highway infrastructure could weaken one of the major reasons for establishing highway PPPs in the first place, that is the use of private capital with a view to containing governmental budget deficits.

Another important policy issue is the prioritisation of projects and how they fit into an overall road network development plan. We address this topic next.

### 3.2 Network effects

*Integrating a highway PPP into a road network poses various challenges.*

We use the term 'network' simply to characterise strong complementary and substitutable relationships on both the supply and demand side. Highway systems generally embody such relationships since for the same origin-destination pair one can often use different routes, the quality of a route can depend strongly on the number of users in case of congestion, and even for a single route the overall quality of a journey depends on the quality of different sections of that route. Cognisant of these relationships, the integration of a PPP project into a network poses several problems. We will illustrate them by distinguishing between profitability effects and welfare effects.

For the profitability of a PPP highway project, users' willingness to pay plays a crucial role, and this willingness, in turn, can depend strongly on complementary investments. For example, the attractiveness of a highway, or a stretch of it, depends on the availability and quality of access roads and of upstream and downstream segments of the highway. Complementarities can be fairly extreme: in the case of international freight transport, for instance, waiting times at borders can be a decisive factor in the decision of whether to use roads or other modes of transport. Against this background, it is clear that the profitability of a particular PPP highway project also depends on the government's commitment, or lack thereof, to invest in other parts of the road network. Another decisive factor for the profitability of a highway PPP is the availability of alternative routes and the cost of using them. From the perspective of profitability, it may be necessary to restrain availability or to include alternative routes in the tolling system.

Turning, more generally, to welfare effects, economic theory and empirical evidence suggest that when users' route choice is taken into account, a first-best solution requires tolls on all segments of the road network (Yang and Meng 2000 and 2002). What is more, without general network pricing, profit-oriented PPP projects – even projects that just aim at cost recovery – might be welfare reducing if alternative public roads are not priced at all or if the pricing system does not depend on actual usage (such as a vignette system). The argument in favour of pricing the entire road network, rather than only certain segments such as those carried out as PPPs, becomes stronger when the possibility of a rise in congestion, accident risks, and environmental damages on alternative routes is taken into account. A corollary is that without network pricing, negative welfare effects on alternative routes must be considered when setting the tolls for PPP highways. Obviously, in practice, pricing the entire road network is rather difficult, and second-best pricing must be employed, leading to quite complex pricing schemes.

To conclude, network aspects seriously question the wisdom of real tolls – as opposed to shadow tolls – for PPP highways, in particular when these highways constitute isolated stretches of the road network. Empirical studies for the projects discussed in this paper have not been carried out and, as a result, the empirical evidence for negative welfare effects of tolling isolated highway segments cannot be assessed. However, anecdotal evidence indicates that bypassing of tolled highways resulted in a rise in congestion, accidents, and environmental damages on alternative routes. Bearing this in mind, we move on to the case studies on PPPs in the highway sectors of CEE countries.

#### 4. Case studies on PPPs in the highway sectors of Central and Eastern Europe

At the beginning of transition, CEE countries started with a very underdeveloped highway network and practically no cross-country highway connections. The shift of the modal split, away from collective railway transport towards individual motorised transport, created new demand for roads of better quality. In this section, we analyse the approach and results of PPP in four countries, which have either adopted the most ambitious initial approach (Hungary), have embarked on significant modifications of the programme (Poland), have awarded concessions slowly but surely (Croatia), or are about to implement a PPP programme (Czech Republic). The map shown in Figure 3 shows the location of the projects examined in this paper.<sup>7</sup>

*At the beginning of transition, the highway systems of CEE countries were underdeveloped, and there were practically no cross-country highway links.*

Figure 3. Map of initiated highway PPP/concession projects in Central and Eastern Europe



<sup>7</sup> Heinrich (2005) includes details of the case studies that we omit for the sake of simplicity.

## 4. Hungary<sup>8</sup>

### 4.1 The policy framework

Hungary is a particularly interesting case of PPP and concession models for highways, although not a very successful one. In fact, Hungary was the first CEE country that decided, in 1991, to rely almost entirely on private concessions for its highway development. The required investments for highway construction alone were estimated at around EUR 3 billion, to be raised through concessions to domestic and foreign private investors. Initially, concessions were planned for Hungarian's major motorway stretches M1, M15, M3, M5, M7, and two bridges over the river Danube. The introduction of cost-covering tolls was a necessary condition for the success of this type of PPP.

***A major obstacle to a coherent PPP policy in Hungary was the frequent change in political attitudes towards PPPs and user tolls.***

A major obstacle to a coherent PPP policy in Hungary was the frequent change in political attitudes towards PPPs and user tolls. In fact, since 1990 each change in government has resulted in a different attitude and a different institutional framework for PPPs. A glance at the major events of the past 15 years highlights the Hungarian stop-and-go policy regarding PPPs.

From 1990 to 1994, the right-oriented government considered PPPs the main way of financing investments in the highway network; in this period, the first two projects were tendered. From 1994 to 1998, the left-oriented government stopped promoting BOT concessions in light of substantial problems; moreover, it renegotiated existing concession contracts. In 1998, the government changed again, resulting once more in considerable policy changes. The National Motorway Company (*Nemzeti Autópálya Rt.*) was established, with responsibility for preparing and managing individual projects through traditional public procurement. A vignette system was introduced, while all revenues were earmarked for the newly founded State Motorway Management Company (*Állami Autópálya Kezelő Rt.*), which became responsible for operation and maintenance. Earmarking of revenues for expenditures on operation and maintenance follows the recommendations of Gwilliam and Shalazi (1999, p.180) who argue that "road fund's expenditure should be limited to maintenance in order to correct a systematic bias against maintenance despite the link between investment and maintenance". This bias is quite common because "maintenance spending can always be deferred with little visible short-term impact" (Heggie 1999, p. 88). In 2002, the left-oriented government returned to power and immediately began revitalising the PPP approach in the highway sector. However, PPPs are now considered a way of financing projects outside the government's balance sheet with private money. The remuneration of the operators in all PPPs is now based on availability payments, which are financed from the central budget.

In the light of accession to the EU, tendering of construction work contracts has become more transparent in recent years. EU procurement rules were applied, for example, for the tendering of the M10, for which significant co-financing from EIB was received – a sign of an improving institutional environment. The current investment policy aims at maximising receipts of EU grants. The policy rests on the Motorway Development Act, which has identified projects for implementation over the short-to medium term. But these projects have been chosen without thoroughly evaluating their economic effects – let alone their network consequences. There is thus a risk that Hungary is putting too much burden on future generations given that availability payments, which will reflect the cost of private finance, will have to be made eventually. Looking ahead, it is clear that network enhancements should be planned more carefully. In this respect, co-financing through EU grants and loans from international financial institutions has potential to help rationalise project appraisals and prioritisation.

<sup>8</sup> This case study is based on Szabo (1999), Léderer (1999), Hirschhausen (2002), Rubin and Leece (2004), and expert interviews with Atkins, EBRD, EIB, Kreditanstalt Austria, National Motorway Company, *Strabag*, and *Swietelsky*, and homepages of EBRD, Hungarian Ministry of Economy and Transport, and *Alföldi Koncessziós Autópálya Rt.* (AKA).

#### 4.1.2 Analysis of PPP projects

The history of Hungarian highway sector PPPs tendered in the 1990s is littered with problems and disappointments, partly related to the challenges of transition, but also caused by professional mistakes such as unrealistic traffic forecasts. Let us take a look at a three telling examples.

*The history of Hungarian highway PPPs is littered with problems.*

The conversion of the M1 from 'finance project of the year 1995' to its re-nationalisation is the most striking example for an inappropriate concession scheme. Hungary proceeded very quickly: a procurement notice for the M1 was issued in September 1991 and the concession was granted in April 1993 to a French-Austrian-Hungarian consortium. The consortium obtained the right to receive toll revenues and committed itself to build, rehabilitate, operate, and maintain the M1 for 30 years. The estimated costs of the project were USD 370 million. The government's contribution comprised the provision of land, archaeological exploration, and the clearing of sites (Szabo, 1999).

With the opening of the M1 (January 1996) it became clear that traffic forecasts had been too optimistic: actual traffic was some 50 percent below forecast.<sup>9</sup> There was a strong diversion of traffic to a toll-free, parallel running road. Moreover, several litigation procedures were initiated against the consortium, claiming that tolls were too high and in conflict with Hungarian law. Although tolls had been set according to the concession contract, the consortium lost the case. Before the issue was finally resolved in court, the lenders – in particular the EBRD – had suspended, at the end of 1996, disbursements for the completion of the M15 section and renegotiations commenced. But the idea of restructuring the whole project was refused by the new government, which was opposed to toll motorways and the provision of national capital assets by private finance. In the end, the project was renationalised thanks to diverging interests of various contractual private partners and the strong desire of the Hungarian government to finalise the project. Supposedly, equity holders were hit hard by the liquidation, but it should not be ignored that for some of the consortium's shareholders the remuneration of construction works might have been more than sufficient to compensate for the loss of equity. *Ex post*, a number of factors can explain the failure of the PPP project, such as a too optimistic traffic forecast, an overestimation of users' willingness to pay, the availability of a toll-free, parallel road, an inefficient allocation of risks, and political and institutional instability.

The M5, running from Budapest South to the Hungarian-Serbian border, is considered the 'younger brother' of the M1 and it also developed from a flagship PPP-BOT project to *de facto* re-nationalisation – although this process was less dramatic than in the case of the M1. In May 1994, only shortly before the elections, the 35-year BROT (build, rehabilitate, operate, transfer) concession agreement on the M5 was signed. By December 1995, the agreement was modified because the financial close was in danger due to investors' mistrust of traffic forecasts. The negotiation effectively led to a state-guaranteed return on the concessionaire's investment. Financing was provided by the EBRD and other subordinated commercial lenders; furthermore, the EBRD guaranteed the refinancing of the project in 2008.

In early 1997, only a few months after its opening, it became evident that traffic forecasts could not be met mainly because of a massive diversion of traffic to a parallel road. The outcome of subsequent negotiations was an agreement on subsidised (preferential) toll rates, accompanied by a transfer from the government budget to the concessionaire. In other words, risk allocation changed: the concessionaire no longer carries traffic risk and is certain to earn a rate of return of

<sup>9</sup> Anybody seriously interested in the forecasts would have noticed that these were largely exaggerated. In fact, the scenarios were based on observed traffic flows from 1992 without tolls; thus, it was assumed that demand would not respond at all to the introduction of tolls. Furthermore, the standard scenario (11,500 vehicles per day) unrealistically assumed high growth rates of GDP and tourism (Léderer 1999).

12 percent on his investment. The new contract, agreed on in 2004, also includes a change in the shareholders of the concessionaire, with the State Motorway Management Company acquiring 40 percent of the shares for an estimated EUR 82 million. Until 2009, the Hungarian state has a call option to buy the remaining 60 percent. If the call option is not exercised, the Hungarian state must provide the agreed availability payments until 2030.

After the failure of the first two flagship projects (i.e., M1 and M5), the government that came to power in 2002 attacked the PPP issue from a different angle. A special PPP department was founded in the Ministry of Economics and Transport, charged with proposing feasible projects. In this new setting, a concession was offered for the design, build, finance, operation, and maintenance of the M6 from Érd (which is in south of Budapest) to Dunaújváros. The concessionaire receives availability payments during the operation phase. The investment (EUR 470 million) is privately financed. The tendering process took seven months, and consortia participating in the process report that competition was very intense. The concession was signed in October 2004. While it is far too early to assess this PPP, it is fair to say the distribution of risks has been solved efficiently as the concessionaire only carries the risks he can control. That said, the investment cost are on the high side, probably reflecting a lack of competition for this PPP and the absence of a public sector comparator, which – had it been carried out – could have curbed investment costs.

#### 4.1.3 Assessment

***Hungary's experience suggests that tolling individual highway sections is inappropriate when toll-free alternative routes exist and consumers' willingness to pay is low.***

Hungary learned its PPP lesson the hard way. It is clear that tolling individual highway sections is inappropriate for financing investments in a road network where toll-free, parallel roads exist and users' willingness to pay is limited. The Hungarian experience can also be taken as evidence that concession companies in Central and Eastern Europe almost always entered into renegotiations, in which they succeeded in gaining additional financial support from the public sector. In an emerging country, which tries to attract foreign investors, the visible bankruptcy of a concession company adversely affects the country's reputation, and this is why the public sector is particularly weak in renegotiations.<sup>10</sup> Even without renegotiating 'failed' projects, PPPs and concessions enable construction companies that hold shares in the concession company to make profits by overpricing construction works.

Overall, Hungary's highway sector PPPs in the 1990s were an expensive way of procuring road services. The transaction costs associated with the renegotiation of contracts raised the overall costs. Anecdotal evidence from private sector participants indicates that institutional instability in the Hungarian public sector complicated renegotiations and raised transactions costs; responsibilities were often transferred from one government institution to another, and staff working on PPPs in the ministries changed frequently (especially when a new government came to power).

That said, Hungary has learned from its experience and, as a result, its policy governing PPPs in the highway sector has become more rational. The institutional environment is now more stable, encouraging the revival of PPPs. Nevertheless, shortcomings remain. For one thing, as in other countries, PPPs seem to be motivated by fiscal constraints while they should be pursued only if they offer value for money. For another, without properly appraising and prioritising projects and analysing solutions for the whole road network, Hungary may be embarking on a too ambitious road sector development programme, thereby burdening future government budgets with large contingent liabilities.

<sup>10</sup> A similar argumentation is presented in Engel *et al.* (2003).



## 4.2 Poland<sup>11</sup>

### 4.2.1 The policy framework

Poland embarked on the transition from plan to market with an exceptionally underdeveloped highway system. In the early 1990s, the total highway network comprised only 199 km and not a single 4-lane highway existed in the country. In addition, the quality of the existing intercity roads was deplorable due to a long period of negligence. Poland's inadequate road network was widely recognised as an impediment to its economic development and, consequently, the Polish government placed particular emphasis on the development of its highway system.

Three phases of the Polish highway development policy can be distinguished. In 1993, the government unveiled a plan to build 2,600 km of highways by 2005. It was assumed that private contractors would meet most of the estimated USD 8 billion of construction costs. The finance was expected to be generated exclusively through the introduction of tolls on the respective highway stretches. In 1994, a new legal framework was introduced with the Motorway Development Act. However, reality never met expectations. As late as 2000, only two concessions had been granted and not a single new kilometre had become available. Regarding traditional procurement, only a modest stretch (about 150 km) was built with loans from the EIB and the EBRD and EU grants (World Bank 2004). By the late 1990s, the government had recognised the slow progress and, subsequently, scaled down its highway expansion plan. The government also acknowledged that more public sector funding would be necessary to implement the PPP scheme successfully. The Motorway Development Act of 1994 was amended, allowing contractual payments (shadow tolls and co-financing of construction costs) to the concessionaire. The third phase saw a considerable reorganisation of institutional responsibilities: a National Motorways Fund was set up (active since the start of 2004), and the Agency for Motorway Construction and Operation and the General Directorate of Public Roads were merged into a new organisation, called General Directorate of Public Roads and Motorways (GDDKiA). Moreover, the responsibility for road network development and maintenance was decentralised. As a result, the network of national roads fell from 46,000 km to 18,000 km, with all remaining roads now under regional and local responsibility. Further institutional changes include the creation of the National Road Fund. The purpose of this fund is to channel the support of international financial institutions, including EU funds, to the national road network and to mobilise domestic resources for its extension and rehabilitation. Domestic resources mobilised by the fund comprise revenues from a fuel charge (which has been added on to existing fuel taxes) and transfers from the state budget. The GDDKiA and the National Road Fund also take a lead role in traditional public procurement, and their capacity to handle road network extension and rehabilitation will be decisive for the efficient use of funds.

*Three phases of the Polish highway sector development policy can be distinguished.*

Recent announcements by the Polish government indicate an increasing reliance on EU funds and loans from the EIB and the World Bank.<sup>12</sup> To illustrate, the EU has committed some EUR 1.5 billion for the period 2004-06. The highway network is planned to be extended by 2,063 km in 2005-13, with two east-west highways (A2 and A4) and one north-south highway (A1) among the priority investments. Within this development strategy, PPPs are supposed to play a more important role than in the past. To this end, a new PPP law is being drafted with a view to creating a stable institutional framework for PPPs.

11 This case study is based on Bak and Burniewicz (2004), Siwek (2003), World Bank (2004), and on expert interviews with EBRD, the Polish Ministry of Infrastructure, and on homepages of the institutions involved.

12 Since the beginning of the 1990s, the EU has been providing grants (EUR 510 million), mainly through PHARE and ISPA. The Polish road sector has mainly been supported by three international financial institutions: the EIB (with a total amount of EUR 1.7 billion), the EBRD (EUR 45 million), and the World Bank (USD 455 million).

#### 4.2.2 Analysis of PPP projects

*In the mid 1990s, Poland's highway sector development plan envisaged several PPPs, but most of them were either significantly delayed or not implemented at all.*

In the mid 1990s, several concession-type PPPs were envisioned, but most of them were either significantly delayed or were not implemented at all. For none of these projects was the PPP option compared to traditional public procurement. The experience with the PPPs that materialised reflects the changes in Poland's highway policy. We look at three cases.

The first highway PPP was the A4 between the two industrial centres in southern Poland: Krakow and Katowice (61 km). The first phase of the project consisted of an extensive rehabilitation of the existing highway and its operation and maintenance. The concession scheme was signed in September 1997 and put in operation in 2001. The financial viability of the project was envisaged to rest fully on toll revenues. The second stage of the project, which consisted of rehabilitating a major bridge, turned out to be more difficult, mainly because of lower-than-expected traffic and difficulties in raising the finance for this phase of the project. Overall, the commercial success of the A4 is still doubtful.

The other attempt to develop the Polish highway system through PPPs is the A2, linking Warsaw with Poznan and the German border at Slubice. With a total financing need of EUR 870 million, the A2 is the largest transport project in Poland with involvement of the private sector (Rubin and Leece 2004). A 150 km stretch of the A2, connecting Nowy Tomysl and Konin, was awarded as a BROT project in 2000. The concession is for 40 years and includes the right to levy tolls. Construction began in 2001 and the project is now on stream. The trouble is, however, that almost nobody is using it. Only transiting private users – for whom time is of high value – are willing to pay the toll. As to freight transport, more than 60-80 percent of the trucks are estimated to bypass the tolled stretch of the highway. At present, the government and the concessionaire are negotiating compensation payments. While the outcome of these negotiations is yet unclear, it is obvious that the commercial problems of this section of the A2 have diminished the chances for the westward extension of the A2, covering the remaining 100 km between Nowy Tomysl and the German border.

Last but not least, there have been attempts to develop PPPs along the A1, which is connecting Gdansk with Katowice (597 km). The section between Gdansk and Torun (152 km) was granted as a 35-year BROT concession in August 1997. However, the concession agreement was not signed until August 2004 and only for a 90 km stretch (Gdansk – Nowe Marzy). Estimated project costs are EUR 700 million, with the high costs per km attracting considerable criticism. Financial close has not been reached as the concessionaire is still negotiating the government's support for the project. That such support is now deemed necessary is partly due to worsening economic expectations. While originally planned as a self-financing toll road, the profitability of the project turned out to be questionable when expected traffic growth failed to materialise. To advance the project in an environment of less buoyant traffic, the project was split into two sections and radically restructured, replacing real tolls by availability and performance payments and shadow tolls. To make such payments possible, the Motorway Development Act had to be changed significantly because the 1994 Act forbade direct subsidies and restricted the granting of state guarantees. While this hurdle has now been removed, a new one seems to have emerged with the proposal to incorporate the A1 into the vignette system planned for Polish highways. Overall, the changing nature of the A1 confirms a tendency to step away from a full transfer of the demand risk to the private concessionaire towards a more traditional approach, including state financing.

### 4.2.3 Assessment

PPPs in the Polish highway sector are characterised by a piecemeal approach, lacking consistency for quite some time. Several PPP projects have been tried, but the overall strategy to make PPPs thrive on user charges has failed bitterly. As in Hungary, traffic forecasts have been far too optimistic and the diversion of traffic to parallel roads has been substantial. The investment plans underestimated Poland's financial constraints and its lack of public management capacity. The original policy to install self-financing BROT projects was not based on sound economic analyses. This is true for both the demand side (willingness to pay for highway use) and the supply side (evaluation of construction costs).

Curiously, although the overall Polish highway strategy has failed, the PPPs that saw the light of day generally score well with regard to completing construction on time and within budget. However, the time needed to prepare, negotiate, and finance PPPs turned out to be a major problem. A rigid legal framework stood in the way of solving problems that concessions had run into. Exaggerated traffic forecasts, combined with a lack of network pricing, legal inflexibility, and ongoing policy changes (e.g., the debate of the vignette system) resulted in complex renegotiations.

All PPPs have triggered a strong response by users, leading to congestions on smaller parallel roads. More fundamentally, the piecemeal approach to developing Poland's highway system did not sufficiently account for network effects, i.e., the interplay between highways and lower categorised and/or parallel roads. As a result, the highway and trunk road network resembles a patchwork, and the beneficial effects to the economy are negligible.

To summarise, following a period of trial and error, Poland's strategy for developing highway sector PPPs seems to be on the right track. The government has abandoned its initial approach of user tolls and now contemplates a country-wide vignette system and a unified highway management system. While expected changes in the road pricing policy may cause further distortions in the future, the decision to use performance-related payments is a step in the right direction. Furthermore, the government has also intensified its efforts to create a legal and institutional framework that facilitates PPP projects. In this context, capacities to appraise and manage projects and investment programmes are being strengthened – though attracting and retaining high-calibre staff remains a challenge. What is more, the establishment of the National Road Fund – bundling external and domestic funds – will facilitate the financing of expanding and maintaining the national road network. Having said this, several challenges remain: while changes to the legal and institutional framework have been initiated, they still need to be adopted and become effective; and then, even with an improved capacity to professionally appraise and manage road sector investments, political interference in the decision-making process remains a risk. Lastly, the combination of PPP and EU funds is still largely unexplored (although possible as Ireland's experience suggests) and may result in a bias in favour of traditional procurement.

## 4.3 Croatia<sup>13</sup>

### 4.3.1 The policy framework

Croatia stands out among transition countries as it has realised a large number of PPP projects despite the small size of its economy. The strategy was, however, mainly state-driven with few

***Although Poland's overall highway sector development strategy failed, the PPPs that were implemented delivered highways on time and within budget.***

13 This case study is based on Nicolopoulos and Herodotou (2004), Senft and Vilanek (2004), Rubin and Leece (2004), and expert interviews with Atkins, Croatian Ministry of Transport, EIB, HSH Nordbank, Kreditanstalt Austria and homepages of the Croatian Motorways Ltd., the concessionaires, the World Bank Group, and other institutions involved.

**When Croatia began considering PPPs in the second half of the 1990s, it had an extensive road network, though of poor quality due to insufficient maintenance.**

'true' commercial projects. After the violent break-up of the former Yugoslavia, Croatia began to ponder a coherent road development strategy only in the second half of the 1990s. At that time, the country had an extensive public road network, though of poor quality due to a long period of insufficient maintenance. In 2001, the government recognised the need to rapidly rehabilitate and extend Croatia's highway network, including major transport corridors within Croatia and with its neighbours, notably EU countries. To achieve this goal, the Croatian government passed the 'Programme of Construction and Maintenance of Public Roads' bill, which – among other things – put in place a new model for financing road transport infrastructure and a new structure for the management of this sector. Management of the existing road network was to be fully financed from public expenditures, whereas the management and construction of new highways was to rely primarily on foreign long-term loans and private participation. Specifically, two fully state-owned incorporated companies were founded: the Croatian Road Authority (*Hrvatske ceste d.o.o.*), responsible for the financing, construction, and maintenance of state roads which are not tolled; and Croatian Motorways Ltd. (*Hrvatske autoceste d.o.o.*), responsible for the operation, construction, and maintenance of highways, which are tolled but not under concession. In January 2005, the company also took over all operative responsibilities as grantor (e.g., technical efforts for preparing and granting the tender).

The two companies are largely independent in their financing, but they may also obtain additional state guarantees for highway development investments. This instrument has been used quite extensively, leading to a high level of debt of Croatian Motorways Ltd. Evidence suggests that the companies act quite independently in defining and evaluating their projects; the Ministry and Parliament seem to play a rather passive role in this process, and there is a lack of coordination between all concerned institutions and companies.<sup>14</sup>

The Croatia government considers PPPs important for raising private capital for the highway sector. The 2001 public road programme estimated investment requirements at EUR 2.1 billion, of which budgetary funding could cover only EUR 860 million. Several projects were earmarked for private concessions reflecting their advanced stage.<sup>15</sup> However, contrary to the initial objective, the bidding process was replaced by direct negotiations between the Ministry and the companies. Overall, bureaucratic procedures were a high burden on the bidding process, and perhaps too much discretion was left with public bodies (i.e., state-owned companies and/or the Ministry itself). This inevitably makes a meaningful comparison between PPP projects and traditionally procured ones difficult. It is also worth noting that under Article 42 of the Croatian 'Law on Public Roads' only the Croatian government may set up concessions. As the following section indicates, this is possibly the reason why the programme has become so expensive.

### **4.3.2 Analysis of PPP projects**

Of the five concession projects that have been considered, four have materialised, all evidencing Croatia's bold approach to toll-based PPP concessions, the difficulties in realising them, and the strong financial and managerial involvement of the government.

To start with the A4, this 97 km highway from Zagreb to Gorican (Hungarian border) is part of the Trans-European corridor. It serves as a link between Central and Eastern Europe and the seaports on

<sup>14</sup> In addition, the state-owned company *Autocesta Rijeka - Zagreb d.d.* (ARZ) was founded in December 1998. The purpose of ARZ is to plan, prepare, and manage the ongoing construction of the 147 km long toll road A6, which runs from the Croatian capital Zagreb to the largest seaport in Rijeka. The concession for the A6 was signed in July 2001.

<sup>15</sup> These projects are Rijeka-Zagreb, Zagreb-Gorican, Zagreb-Macelj, Dragonja-Pula-Rijeka (Istrian Motorway) and Rupa-Jusici.

the Adriatic coast. The 32-year BROT concession was signed in August 1998 and total project costs were estimated at USD 460 million. The ownership structure of the concessionaire was split, with the private sector holding 51 percent of the shares and the Croatian government the remainder. The concession agreement called for limited-recourse refinancing, but the concessionaire was unable to achieve financial close, the concession went to arbitration, and – eventually – was terminated when renegotiations of the project agreements failed. The construction of the highway was then taken over by Croatian Motorways Ltd. and fully completed in 2003. At present, Croatian Motorways Ltd. also operates the highway.

The A8 and A9 (Istrian Motorway) comprise 145 km, running from the south of the Istrian peninsula to central Croatia and then branching to the northeast and northwest, the latter branch continuing all the way to the Slovenian border. In September 1995, the concessionaire signed a 32-year BROT contract. Financing of the project (EUR 185 million) was assured through a combination of equity and commercial bank debt, toll revenues, and a significant element of government support. Project revenues are exclusively generated by tolls for the usage of the Ucka Tunnel, but the government has guaranteed a minimum level of revenues if traffic is below forecast.

The first phase of the project, consisting of 37 km of construction works between Rogovići and Vodnjan, was completed on time and within budget in December 1999. The A8/A9 has become a modern highway and further expansion plans are under way. Furthermore, in February 2003, the first phase of the project was also successfully refinanced, and in this context the Croatian government and the concessionaire raised the funds for the second phase of the project. Considering all these points, one could consider the project a success. However, from an economic perspective, it must be stated that the PPP has not worked out and the current setting, featuring considerable government guarantees, resembles more a traditional state-financed investment with some contracting out.

*The PPP for Croatia's A8/A9 highway resembles very much a traditional state-financed investment.*

This takes us, lastly, to the Zagreb-Macelj Motorway (A2). The A2 is part of the Pyhrn route (Nuremberg - Graz - Maribor - Zagreb) and the European corridor Xa and connects Slovenia with Croatia and thereby the CEE countries with south-eastern Europe. In March 2003, the Croatian government decided to upgrade and extend this route on a PPP basis. The 28-year DBFMO (develop-build-finance-maintain-operate) scheme was awarded to a consortium in which a group of construction companies holds 51 percent and the government of Croatia the remaining 49 percent of shares. The financing of this project (EUR 372 million) benefits substantially from commercial and political risk coverage granted by the Federal Republic of Germany. As in the case of the A8/A9, the government has assumed a significant part of the traffic risk, thereby guaranteeing the concessionaire a minimum level of revenues. The entire length of the highway will become a closed toll system, except for the Zagreb bypass (7.4 km). The project is on schedule, and daily traffic on the highway sections already commissioned amounts to an average of 8,600 vehicles (15,400 in summer). Moreover, the average yearly traffic increase has been above 8 percent, indicating that users accept the tolling scheme. Full operation is scheduled for end-April 2007. Similar to the A8/A9, this is a project that is moving forward smoothly in technical terms, but – contrary to the idea of a PPP – with a strong involvement of the Croatian state.

### **4.3.3 Assessment**

Croatia's approach to developing its highway sector, gaining momentum over the past five years, has two very distinct characteristics. On the one hand, a relatively large number of projects and highway kilometres have been carried out, involving either the modernisation of existing highways or the construction of new ones. Despite the challenging construction work, most of the awarded projects were built on time and within budget. The introduction of distance-linked and

user-specific tolls was successful. In contrast to Hungary and Poland, the Croatian highway network is predominantly tolled (in 2003, 676 km out of 731 km), a concept generally well accepted by the public.

On the other hand, the government has maintained a considerable involvement, as witnessed by joint ventures between public entities and private partners instead of typical PPP structures under which the public sector procures highway sector services. Some observers have noted that the lack of separation within the public sector (notably between the function of a PPP-manager and a shareholder in the concession) may have made negotiations with the private partners not as transparent as they should have been, possibly resulting in overpriced construction costs. In this context, shortcomings in the quality of project appraisals have been pointed out. What is more, because of the direct profit interests of the Croatian State and its state-owned companies, some have expressed concerns that the quality of construction works and management may have suffered.

Overall, the evaluation of the Croatian case depends on whether one considers the glass to be half full or half empty. Optimists emphasise the large number of highway kilometres built under PPP schemes in the last decade and that private investment has been forthcoming. Pessimists would argue, however, that none of the PPPs seem to have attained the expected results in terms of commercially viable highway projects. The reality most likely lies somewhere in between: Croatia has certainly advanced with high speed in the area of PPP ventures, which have driven motorway densities to record levels. Yet, it is uncertain whether this strategy is sustainable given its large medium- to long-run fiscal burden. In fact, public debt is not negligible, and international financial institutions have argued strongly in favour of more fiscal discipline, including a cut in expenditure on highways.

***It is yet uncertain whether Croatia's highway sector development strategy is sustainable given its large long-term fiscal burden.***

#### **4.4 Czech Republic**

Compared to the other three countries reviewed in this paper, the experience of the Czech Republic is more limited. This section will therefore only broadly review the Czech experience without distinguishing explicitly, as before, between the policy framework, individual projects, and overall assessment.<sup>16</sup>

The network density of the Czech trunk road system averages 6.3 km/1,000 km<sup>2</sup> – less than half of the Western European average. An accelerated expansion of the road network has been ranking high on the list of political priorities. An early attempt to implement a toll-based PPP concession (D5, from Prague to the German border close to Nuremberg) was abandoned as it became evident during the tendering process in 1993 that demand for the toll road would be too low to ensure cost recovery. From then onwards, the Czech government pursued a conservative policy, with funding for highway expansions exclusively based on the state budget.

In 2000, a reorientation of the strategy took place, with the foundation of the State Fund for Transport Infrastructure (SFTI). SFTI is a legal entity, subordinated to the Czech Ministry of Transport, with the purpose of collecting financial means and of allocating them to transport infrastructure, i.e., building, maintenance and modernisation of highways, railway lines and inland waterways.

---

<sup>16</sup> This section is based on CRA (2004), expert interviews with the Czech Ministry of Transport, PPP Centre of the Czech Republic, the Czech Republican State Fund for Transport Infrastructure, and homepages of the institutions involved.

According to the Ministry of Transport, an important advantage of the SFTI is that it offers more financial flexibility, facilitating the transfer of means not spent in one year to the next year. The SFTI receives its revenue mainly in the form of transfers from the Fund of National Property (privatisation revenues, 45.4 percent of all SFTI revenues in 2004), road taxes (13.4 percent), a share in the earnings from the consumers' tax on fuels (29.8 percent), and all earnings from fees that trucks pay for the use of selected highways and speedways (5 percent). Additionally, the fund receives allocations from the state budget (6.4 percent). Grants from the EU and credits (especially from the EIB) allocated to specific projects are transferred to SFTI as well. Since 2000, payments by the Fund of National Property to SFTI have declined and may possibly end within the next two years. It is planned to displace the vignette system for trucks in 2006 or 2007 by a distance-related toll that could substitute for a great part of the diminishing payments by the Fund of National Property.

The Czech government has guaranteed an annual budget of around EUR 1.5 billion for SFTI until 2007. SFTI is part of the public sector and, therefore, its borrowing is on the government's balance sheet and, thus, relevant under the Maastricht treaty. Almost two-thirds of the funds of SFTI are allocated to highways (62 percent capital expenses, 38 percent current expenses), with the remainder earmarked for railways (34 percent) and waterways (2.1 percent). The SFTI has the obligation for the future repayment of the credits raised for transport infrastructure investments. The Fund's strategy follows an investment plan set up by the government in 2001, which encompasses mainly highway projects of European importance. The newly established institutional framework is also a major improvement: responsibilities are clearly assigned, financial flows are transparent, and revenues are at least partly earmarked for the transport sector. It is therefore possible that the Czech Republic may become an example for how a sustainable financing without strictly separating highway financing from the budgetary process can work.

***Recent improvements to the financing of transport investment point the way to a sustainable financing of transport projects.***

In 2001, the Czech government began a second attempt to realise a PPP, but failed again. It directly awarded a BOT concession for the construction of a stretch of the D 47. The project should provide a new 80 km long stretch of the four- and six-lane highway between the city of Lipník nad Bečvou and the Polish border, via the city of Ostrava. The concession contract was signed, but the project was cancelled in 2003 by the government due to criticism of the direct concession award and a probably overpriced remuneration. The government was forced to pay some EUR 20 million for breach of contract. The Minister of Transport announced that the project would be carried out by the public sector.

The Czech government has recently started its third attempt to launch PPP projects in the highway sector. A variety of projects are being considered, among them the D3 (Tábor-Sobeslav-Bosilec), a ring road at Brno, and the R52 (Pohorelice-Mikulov-Austrian border), which may even be structured as a bi-national PPP in combination with stretches of the A5 in Austria, and there are also plans to rehabilitate the R4 and the R10. The government has embarked on a PPP programme that aims at a systematic application of PPPs in all infrastructure sectors. To this end, a 'PPP Centre' has been founded. The Centre, a division of the Ministry of Finance, has three primary tasks: (i) to develop standardised procedures and methodologies for PPP evaluation and implementation, (ii) to accompany the PPP process and advise the different public actors, (iii) to support the Ministry of Finance, which must approve PPP projects as long as future public disbursements exceed a given limit.

According to the PPP Centre, the overall aim of PPPs in the Czech Republic is not to exploit short-term financing possibilities, but to focus the public sector on its core activities and to achieve cost efficiency. In contrast, the Ministry of Transport considers the widening of financial possibilities as one of the main advantages of PPPs. This indicates that the drivers of PPPs can differ between the Ministry of Finance and line ministries.

These substantial institutional and legal changes seem to meet the central requests of a professional preparation and management of PPPs. International experiences, particularly from the United Kingdom, concerning the design of projects and the remuneration schemes have also been taken into account. Moreover, institutional stability has increased, particularly since accession to the EU. However, it should be noted that several risks still remain: legal reforms are still not completed, a sound comparison of PPP and traditional procurement has yet to be developed, and the selection of projects strongly reflects the availability of EU funds. It remains to be seen, therefore, whether the Czech Republic will turn out to be the 'PPP-Tiger' of the next decade, or if it will remain on a slow track.

## **5. Lessons from PPPs in the highway sectors of Central and Eastern Europe**

Our survey of the highway sectors in Hungary, Poland, Croatia, and the Czech Republic has shown that 13 projects have been seriously considered as PPPs since the early 1990s. Of those, six have eventually been carried out as PPPs, of which two have been significantly restructured and another two have been renationalised in the meantime. This leaves two projects currently in the process of being implemented as PPPs. In quantitative terms, the outcome is therefore mitigated at best. Table A2 in the Annex summarises the chequered history of these projects.

While 13 is not a big number, our survey nonetheless allows us to draw some general lessons, covering the following aspects: (i) efficiency of the approach, (ii) sources of revenues and remuneration of concessionaires, (iii) transparency and appropriateness of institutional design, (iv) financing and investment appraisal, including the role of EU funds and international financial institutions. In drawing these lessons, we apply some of the theoretical checkpoints defined in Section 3 and refer implicitly, and sometimes explicitly, to two PPP benchmark cases in the highway sector – one in the United Kingdom, the other in Chile. We also offer some recommendations for future PPPs in the highway sectors of Central and Eastern Europe.

***Narrow design specifications seem to have hindered innovative solutions.***

To start with efficiency, the first point worth highlighting is that PPPs in the highway sector scored well in terms of delivering projects on time and within budget. One can thus argue that transferring construction risks to private partners has resulted in appropriate incentives. Concerning a possible trade-off between cost savings and quality shading, we have found only one case, the Polish A2, where this may have been an issue. The concessionaire proposed a type of road surface that was slightly thinner than specified in the contract. Checks performed with a test road proved, however, that output specifications could be met with this type of road surface and deviation from the original contract was thus approved. More generally, design specifications seem to have been too narrow for allowing concessionaires to realise major innovative solutions – a result known from the experience of EU-15 countries.

A comprehensive efficiency evaluation also calls for a comparison of a PPP with alternative forms of procurement. As pointed out in Section 3, highways are, in principle, suitable candidates for PPPs. That said, the contracting authorities of the countries considered here have not compared different procurement options. Anecdotal evidence and experts' judgement suggest, however, that traditionally procured highway projects outperformed PPPs on three counts: traditionally procured projects were often implemented faster than PPPs; they were less costly when all costs, notably transaction costs, were accounted for; and they resulted in lower distortions of modal and route choice, largely because toll-free, traditionally procured highways did not, by definition, divert traffic to other (toll-free) roads. All this does not mean that PPPs are inferior. Rather, their disappointing performance is the result of institutional shortcomings and mistakes in the design of PPPs. This takes us to lessons with regard to the remuneration of concessionaires.



The exclusive reliance on tolls has proven to be a failure. The evidence supports the theoretical prediction that tolling small stretches of highway networks causes inefficient traffic relocation and seriously affects the profitability of the concessionaires' investments. In the event, renegotiations of remuneration schemes, even the restructuring of entire projects, became necessary in many cases. Availability payments, already introduced in the United Kingdom, are now a salient feature of highway sector PPPs in Poland, Hungary, and the Czech Republic. This should substantially improve the viability of existing and future PPPs.

**The exclusive reliance on tolls has proven to be a failure.**

Turning to the importance of having, or putting in place, an appropriate institutional framework, several conclusions can be drawn. First, a systematic assessment of procurement types has to be established. Although there is no perfect method to perform such an assessment, they foster not only a comparison of alternatives, but – perhaps more importantly – a thorough preparation of the PPP tendering stage.<sup>17</sup>

Second, the contract awarding processes have to be improved drastically. Lack of transparency and unclear awarding criteria curbed competition for PPPs, leading to relatively high construction costs. In part, this problem will be solved with the adoption of EU procurement rules. But even under these rules, there is a wide array of institutional solutions, leaving the challenge of choosing those that make the awarding of contracts efficient, transparent, and fair. In fact, experience from elsewhere in the world, Chile for instance, advocates auctions instead of negotiations to award contracts.

The third conclusion as to the institutional framework is that the process of renegotiating contracts needs to be rationalised. Renegotiations have led to serious delays in project implementation and additional transaction costs. Moreover, they turned intended fix-price contracts (allocating risk to the private sector) into some kind of cost-plus contracts, pushing back risk to the public sector.

There are several reasons why renegotiations often have become necessary in CEE highway PPPs. One is political interference, which has been particularly acute in transition countries – in part because they experienced more frequent changes in governments and political attitudes towards PPPs than more settled EU-15 countries. Hungary in the period 1994 to 2002 provides a vivid example: every change in government triggered a significant reorientation of transport sector policies. Another reason – related to the first – is that erratic policy changes adversely affect the administrative capacity of governments, making it difficult to establish trust and a fruitful working relationship between contractors, on the one hand, and contracting authorities on the other. And then, changes to the legal framework in preparation for EU membership caused severe disruptions and delays. Far too optimistic demand projections provide another explanation for the frequent need to renegotiate contracts. To some extent, overoptimistic demand projections may reflect strategic behaviour of both bidders and contracting authorities. Bidders have an incentive to overestimate demand and, thus, to promise low tolls if they count on renegotiations once the contract has been awarded to them. Contracting authorities may be willing to accept too optimistic demand projections, rather than abandoning projects for which there is not enough demand, as this allows them to avoid cancelling expensive and highly visible projects (Trujillo *et al.* 2000). Although all of this is true, Hensher and Goodwin (2004) – for instance – have pointed out that traditional estimation procedures and their application tend to result in an upward bias of demand projections. A last reason for renegotiations worth mentioning is straightforward: the public acceptance of tolls turned out to be much lower than expected, thus putting political pressure on governments to renegotiate remuneration schemes with a view to lowering or even abandoning tolls.

<sup>17</sup> The methods used are called value-for-money tests. This topic is treated in detail by Grout (this volume).

An awareness of the reasons that may make renegotiations necessary helps to avoid them in the first place. Even then, however, they cannot be avoided completely. Against this background, a clear and efficient framework for renegotiations is essential. This framework should “specify the conditions that would allow renegotiation, the types of events that could trigger renegotiation and the frequency with which reviews can occur” (Estache *et al.* 2000, p. 273). In addition, the renegotiation process, dispute settlement mechanisms, and the inclusion of third parties should be governed. The Chilean use of a rule-based process appears to be best practice. With detailed contractual terms and an independent legal system, private sector investment should be protected adequately.

But even when all this is taken care of, problems are bound to emerge if PPPs are highly politicised and a matter of prestige for governments and administrations. Thus, some leniency towards concessionaires can be expected. A controversial question remains whether a separation of institutions that award concessions and institutions that manage them, a regular involvement of independent agencies (e.g., a central auditing authority and competition authorities), and control by the Ministry of Finance are sufficient to limit this leniency. As a minimum requirement, central PPP units should be placed in Ministries of Finance and an independent central auditing authority should be set up and regularly involved. While line ministries might assess PPPs not only on efficiency grounds but also on the availability of funds for investments in ‘their’ sectors, Ministries of Finance may be more interested in efficiency (reducing budget requests) and current and future fiscal implication. A central PPP unit fosters learning and scale economies, which are especially important for small countries. An independent central auditing authority – while usually not authorised to impede decisions by the government or a ministry – can have an important role in the public discourse.

***The institutional framework for PPPs in Central and Eastern Europe has been strengthened, improving the outlook for future PPPs.***

To conclude the discussion of improvements to the institutional framework, it is fair to say that institutions in CEE countries have become more stable. This bodes well for the future and promises that a new generation of PPPs, like those planned in the Czech Republic, will be more successful and result in higher efficiency. But a key condition for higher efficiency is that the PPP route is chosen because it offers value for money and not because governments perceive it as a way to circumvent budget constraints. This takes us to some lessons concerning the financing of PPPs.

A key driver of PPPs in several CEE countries is still the desire to finance infrastructure outside the government budget. There is thus a bias in favour of PPPs – even after Eurostat has ruled that a PPP can be considered to be outside the government budget only if the private partner bears the construction risk and either availability or demand risk. From an efficiency perspective, a network-wide solution for the financing of highways that avoids a systematic selection bias in favour of PPPs is called for. Several countries have taken such an approach. Austria is one of them, and its approach can serve as a model for CEE countries, not only because it avoids the bias in favour of PPPs, but – perhaps more importantly – because it entails a systematic approach to highway planning, the earmarking of revenues, and the charging of road users on a network-wide basis (see Box 1 and Beckers *et al.* 2005).

An increasingly important aspect of PPP financing could be support by the EU. EU structural and cohesion funds for the new EU member countries are expected to triple by 2007. At present, it is not entirely clear whether and how EU funds can support PPPs, although there are cases where EU funds have been used indirectly to meet availability and deferred payments in the context of a PPP (e.g., Ireland; see PricewaterhouseCoopers 2004). The problem lies in assuring that public funds are not used to raise private profits above normal returns. But incentive-oriented contracts, e.g., fixed-priced contracts, blur this distinction. A challenge in the period ahead is to remove the uncertainty about how EU funds could support PPPs, thereby eliminating the selection bias associated with EU funds in favour of traditional procurement.

### Box 1. The Austrian road network approach

The issue of appropriate highway financing is an urgent one for Western European countries as well. In this context, Austria has established an interesting model of financing the trunk road sector outside of the government balance sheet based on user payments. This box summarises the Austrian experience, which holds interesting lessons for Central and Eastern Europe as well.

The public enterprise ASFINAG (Austrian Trunk Road Financing cooperation) plays a key role within the system and works as a kind of road fund. On the one hand, ASFINAG receives up to the year 2047 all revenues from user charges (at present a network wide heavy-duty-vehicle toll, which is calculated according to EU Directive 1999/62, and a vignette system for private cars, which might be replaced by a toll within a few years). On the other hand, ASFINAG has to operate and maintain the network of approximately 2,000 km and undertake new investments. In 1997, when the current system was established, ASFINAG additionally had to take over 'old' debt of approximately EUR 5.7 billion.

According to a government-approved plan for future investments, ASFINAG will invest approximately EUR 7.5 billion in the extension of the network between 2002 and 2012. As revenues from user charges (EUR 1.2 billion in 2004) are lower than current expenditures (EUR 450 million for operation and maintenance, EUR 675 million for new investments, EUR 310 million for interest payments), ASFINAG has to raise new debt. At end-2004, ASFINAG debt stood at EUR 9.4 billion; in 2012, when the network extension will have been substantially advanced, ASFINAG will start to amortise the debt.

Currently, the price of the vignette is determined mainly by political considerations. But this does not jeopardise the financial viability of ASFINAG since the net present value of revenues from user charges is expected to be higher than the net present value of ASFINAG's future financial obligations. In any event, to secure long-term financial viability, ASFINAG is interested in obtaining the authority to determine user charges for private cars. In this case, a regulatory system should be set up.

The repayment of ASFINAG's debt is guaranteed by the Austrian state. Therefore, ASFINAG's cost of raising debt is just a few basis points higher than that of the Austrian state. ASFINAG's rating is AAA. The European Statistical Office (EUROSTAT) has decided that ASFINAG is not part of the public sector. Thus, ASFINAG borrowing and its debt do not affect the thresholds under the Maastricht treaty – despite the state guarantees for the repayment of ASFINAG's debt. This decision of EUROSTAT is based on regular and intensive analysis of the relationship between ASFINAG and the state.

To summarise, Austria has a trunk road financing system based on earmarked user charges, a network-wide charging system, and a decentralised management authority. As ASFINAG is 'outside' the Maastricht treaty, there is no reason for undertaking PPPs to circumvent short-term budgetary constraints. This should foster decisions on PPPs solely based on efficiency considerations.

A last observation concerns international financial institutions, which have provided more than finance. In particular in the early years of transition, they offered advice and played a catalytic role in the mobilisation of funds. While the process of transition has been successfully completed in those CEE countries that have joined the EU, international financial institutions will continue to play a role in further upgrading the infrastructure of Central and Eastern Europe.

## 6. Conclusions

**PPPs in CEE countries have underperformed due to the adverse institutional conditions, high transaction costs, and unrealistic demand projections.**

In this paper, we have analysed the approach to and the results of PPPs in the infrastructure development of new EU member states from Central and Eastern Europe. The investment requirements in the region are substantial. Great hope has been put in private participation in infrastructure (PPI) and especially PPPs to undertake these investments. Although the overall portion of PPI in general and specifically of PPPs has not fulfilled the high expectations, the World Bank PPI database lists 217 projects in the region. However, a closer look at individual projects suggests a rather critical assessment. Due to the adverse institutional conditions prevailing in the transition period, high transaction costs, and unrealistic demand expectations, PPPs in CEE countries have been less successful than in other countries, and certainly less successful than initially hoped for. In general, they seem to have been less successful than traditional procurement would have been.

With respect to the specific institutional conditions prevailing in CEE transition countries in the 1990s, it has been argued that PPPs were particularly suited for this period, or, alternatively, that they were particularly unsuited (see discussion in Hainz 2002, Hirschhausen 2002, and Hashi 2003). The former argument is based on the lack of traditional infrastructure financing in the transition period, where PPPs could have filled part of the financing gap through more private involvement. The latter argument is based on the institutional void of the first years of transition and the difficulty to establish contracts that should be binding for several decades. *Ex post*, the PPP sceptics have won the debate, as the expected potential for PPPs has not materialised by any means.

Although the overall picture of PPPs in Central and Eastern Europe does not match expectations, we have to acknowledge that the conditions for successful PPPs have considerably improved recently. This is confirmed by consequent development of the institutional infrastructure for PPPs; one also observes improvements of the EBRD infrastructure indicators (see EBRD 2004). Given substantial institutional progress over the last years, in particular in the context of EU accession, these countries have developed a more fertile ground for PPPs in the future. Institutions in most of the new member countries have become more stable, professional, and focused. Transparency and accountability have improved. Countries now have to show that they are able to make use of improved institutional capabilities to put in place efficient PPPs for the second generation of projects.

Nevertheless, several further steps are required. This concerns especially the necessary institutional framework: efforts to avoid inefficient renegotiations and to include PPPs in a systematic, network-wide approach of financing and managing highways should be on top of the agenda. From an international perspective, a clarification of the relationship between EU funding and PPPs, further assistance on project selection and concession design, and assistance in developing efficient institutions and know-how are the most important future tasks.

## Annex

Table A1. PPI projects in Central and Eastern Europe, by country and category

	Water and sewage			Energy			Transport			Telecoms	Σ
	Potable water	Potable water and sewage	Sewage	Electricity	Natural gas	Railways	Airport	Toll road	Seaport		
<b>Czech Republic</b>	16 D:4; C:1, M:11	1 C:1		17 G:3, D:14	10 G:1, D:9	4 D:1, M:3	3 G:1, C:2			15 G:11, D:3, C:1	<b>66</b> G:16, D:31, C:5, M:14
<b>Estonia</b>	1 C:1			3 D:3	1 D:1	2 D:2				4 G:3, D:1	<b>11</b> G:3, D:7, C:1
<b>Hungary</b>	5 C:1	1 C:1		18 G:4, D:14	7 D:7	2 G:1, C:1	2 C:2			18 G:4, D:14	<b>54</b> G:9, D:35, C:5, M:5
<b>Latvia</b>					1 D:1			2 G:1, M:1		4 G:3, D:1	<b>7</b> G:4, D:2, M:1
<b>Lithuania</b>				3 D:3	1 D:1					6 G:5, D:1	<b>10</b> G:5, D:5
<b>Poland</b>	3 D:1, M:2	1 G:1		16 G:2, D:14	1 G:1	2 D:2	2 C:2	2 G:1, C:1		10 G:8, D:2	<b>37</b> G:13, D:19, C:3, M:2
<b>Slovak Republic</b>	1 M:1			3 D:3	1 D:1					3 G:2, D:1	<b>8</b> G:2, D:5, M:1
<b>Bulgaria</b>	1 C:1			1 D:1						3 G:3	<b>5</b> G:3, D:1, C:1
<b>Croatia</b>		1 G:1		3 G:3			2 C:2			2 G:1, D:1	<b>8</b> G:5, D:1, C:2
<b>Romania</b>	3 C:3			1 G:1				1 G:1		6 G:5, D:1	<b>11</b> G:7, D:1, C:3
<b>Σ</b>	<b>1</b>	<b>4</b>	<b>4</b>	<b>65</b>	<b>22</b>	<b>6</b>	<b>7</b>	<b>6</b>	<b>5</b>	<b>71</b>	<b>217</b>
<b>Σ</b>	<b>C:1</b>	<b>D:5, C:6, M:19</b>	<b>G:2, C:2</b>	<b>G:13, D:52</b>	<b>G:2, D:20</b>	<b>D:3, M:3</b>	<b>G:2, D:2, C:3</b>	<b>C:6</b>	<b>G:3, C:1, M:1</b>	<b>G:45, D:25, C:1</b>	<b>G:67, D:107, C:20, M:23</b>

Source: World Bank PPI database (G: greenfield, D: divestiture, C: concession, M: management and lease contract)

Table A2. Status of PPP projects in the highway sectors of Poland, Hungary, Croatia, and the Czech Republic

	Length (km)	Cost	Status				
			Planned	Realised	Realised, but substantially restructured	Renationalised	Under implementation
<b>Poland</b>							
A1 North-South connection (Gdansk-Katowice)	90	EUR 700 m	x				
A2 Frankfurt/Oder-Poznan-Warsaw	254	EUR 870 m			x		
A4 Kattowice-Crakow	61	USD 590 m		x			
<b>Hungary</b>							
M1/M15 Győr-Austrian Border/Slovakian Border	57	USD 370 m				x	
M3 Budapest-Polgar	59	EUR 295 m	x				
M5 Budapest-Kecskemét-Röszke	144	EUR 670 m			x		
M6 Erd-Dunaujvaros	59	EUR 470 m					x
M7 Budapest-Székesfehérvár	42	EUR 251 m	x				
<b>Croatia</b>							
A2 Zagreb-Macej	60	EUR 372 m					x
A4 Zagreb-Gorican	96	USD 460 m				x	
A8+A9 Istrian Motorway	145	EUR 185 m		x			
<b>Czech Republic</b>							
D5 Prague-Nuremberg	41	-	x				
D47 Ostrava-Lipnik Nad Bečov	80	-	x				

## References

- Aghion, P., Dewatripont, M. and Rey, P. (1994). "Renegotiation design with unverifiable information". *Econometrica*, (62:2), pp. 257-282.
- Bak, M. and Burnewicz, J. (2004). "Country study - Poland. Polish programme of motorways constructions – Barriers of implementation". Bergamo workshop on highways: Cost and regulation in Europe.
- Beckers, T., Brenck, A., Hirschhausen, C.v., and Klatt, J.-P. (2005). "Die ASFINAG und das österreichische Modell der Fernstraßenfinanzierung: Vorstellung und Bewertung." Working Paper, Berlin University of Technology (Homepage <http://wip.tu-berlin.de>).
- Bentz, A., Grout, P. A. and Halonen, M. L. (2003). "What should governments buy from the private sector – Assets or services?". CMPO Working papers series No. 01/40.
- Clement-Davies, C. (2001). "Public/private partnerships on Central and Eastern Europe: Structuring the concession market". *Business Law International*, (1), pp. 18-37.
- CRA (2004). "State fund of infrastructure – Rating analysis; rating of the state fund of infrastructure". CRA Rating agency.
- De Bettignies, J.-E. and Ross, W. (2004). "The economics of public-private partnerships". *Canadian Public Policy – Analyse de Politiques*, (XXX:2), pp. 135-154.
- EBRD - European Bank for Reconstruction and Development (1996). *Transition Report: Infrastructure and Savings*, EBRD, London, UK.
- EBRD - European Bank for Reconstruction and Development (2004). *Transition Report 2004 Infrastructure*, EBRD, London, UK.
- Engel, E., Fischer, R. and Galetovic, A. (2003). "Privatizing highways in Latin America: Is it possible to fix what went wrong?". *Economia: The Journal of LACEA*, (4:1), pp. 129–158.
- Estache, A. and Serebrisky, T. (2004). "Where do we stand on transport infrastructure deregulation and PPP?". World Bank Policy Research Working Paper No. 3356.
- Estache, A., Romero, M. and Strong, J. (2000). "Toll roads". in Estache, A. and de Rus, G. (eds), *Privatization and regulation of transport infrastructure*. World Bank, Washington D. C., United States of America.
- Guasch, J. L. (2004). *Granting and renegotiating infrastructure concessions. Doing it right*, The World Bank, Washington D. C., USA.
- Gwilliam, K. and Shalizi, Z. (1999). "Road funds, user charges, and taxes". *The World Bank Research Observer*, (14:2), pp. 159-186.

- Hainz, C. (2002). "Project financing in transition economies". FOROST Working Paper No. 5.
- Hashi, I. (2003). "The legal framework for effective corporate governance: Comparative analysis of provision in selected transition economies". Center for Social and Economic Research Studies and Analyses No 268.
- Heggie, I. G. (1999). "Commercially managed road funds: managing roads like a business, not like a bureaucracy". *Transportation*, (26:1), pp. 87-111.
- Heggie, I. G. (2003). "Commercializing management and financing of roads in developing and transition countries". *Transport Review*, (23:2), pp. 139-160.
- Heggie, I. G. and Vickers, P. (1998). "Commercial management and financing of roads" World Bank Technical Paper No. 409.
- Heinrich, M. (2005). "Public-private partnerships in the highway sector of East European transition economies – An economic analysis with observations from Croatia, the Czech Republic, Hungary, and Poland." Berlin University of Technology, Workgroup for Infrastructure Policy (WIP), diploma thesis.
- Hensher, D. A. and Goodwin, P. (2004). "Using values of travel time savings for toll roads: avoiding some common errors". *Transport Policy*, (11:2), pp. 171-181.
- Hirschhausen, C. (2002). *Modernizing infrastructure in transformation economics*, Edward Elgar Publishing, Cheltenham, UK.
- Léderer, K. (1999). "After two years of operation of M1/M15 the first Hungarian concession motorway: Dilemmas of private motorway concession in the transition economies" in École Nationale des Ponts et Chaussées (ed.), *Road Financing*. Presses de l'École Nationale des Ponts et Chaussées, Paris, France.
- Mohring, H. and Harwitz, M. (1962). *Highway benefits: An analytical framework*, Northwestern University Press, Evanston, USA.
- Nicolopoulos, A. and Herodotou, C. (2004). "Driving the first project bond to success in Eastern Europe: Bina Istra Case Study". in *Inframation - developing Central & East European infrastructure*. The International Project Finance Association, London, UK.
- PriceWaterhouseCoopers (2004). "Developing public private partnerships in New Europe". London, United Kingdom.
- Rubin, B. and Leece, P. (2004). "Developing motorways in Central and Eastern Europe". in *Inframation - Developing Central & East European Infrastructure*. The International Project Finance Association, London, UK.
- Senft, W. and Vilanek, C. (2004). "Next year's model?" *Project Finance Magazine*, (March), pp. 12-14.
- Simpson, I. (2004). "Successfully negotiating road concessions in CEE". *Transportation Finance Review*, (2004/2005), pp. 52-55.



- Siwek, K. (2003). "Key incentives for PPP in Poland. Progress and questions". Berlin - 4th European symposium „European and German competence centres for public private partnership”.
- Spackman, M. (2002). "Public-private partnerships: lessons from the British approach". *Economic Systems*, (26:3), pp. 283-301.
- Szabó, F. (1999): "Public-private partnerships in Hungarian motorways' Construction". ECMT-Seminar on public-private partnerships (PPPs) in transport infrastructure financing.
- Trujillo, L., Quinet, E. and Estache, A. (2000): "Forecasting the demand for privatized transport - What economic regulators should know and why". World Bank Policy Research Working Paper No. 2446.
- World Bank (2004). "Proposed loan in the amount of Euro 100 Million to the Republic of Poland for a road maintenance and rehabilitation project". World Bank Project Appraisal Document.
- Yang, H. and Meng, Q. (2000). "Highway pricing and capacity choice in a road network under a build-operate-transfer scheme". *Transportation Research Part A*, (34), pp. 207-222.
- Yang, H. and Meng, Q. (2002). "A note on "highway pricing and capacity choice in a road network under a build-operate-transfer scheme"". *Transportation Research Part A*, (36), pp. 659-663.

## ABSTRACT

*This paper presents the findings of an evaluation of public-private partnership (PPP) projects financed by the EIB. The evaluation, carried out by Operations Evaluation of the EIB, suggests that EIB involvement can add financial and non-financial benefits and that PPP projects score well in terms of delivering infrastructure on time and budget. There is also evidence, however, that optimistic demand forecasts may compromise the efficiency and financial sustainability of some projects. A key finding of the evaluation is that, in reality, the choice was not so much between a PPP and traditional public procurement, as between a PPP project and no project, at least in the short to medium term. Key factors for success were the level of competition and the clarity of the project's output specification.*

**Campbell C. Thomson** (c.thomson@eib.org) is Adviser in Operations Evaluation of the EIB. The views expressed are strictly personal.



# Private-public partnerships: prerequisites for prime performance

## 1. Introduction

This paper presents some of the findings of an evaluation of public-private partnership (PPP) projects financed by the European Investment Bank (EIB). Fifteen projects, either fully operational or close to full completion, were selected for a desk review, based on data and information available in the Bank. Ten of these were then selected for in-depth evaluation, covering the scope and geographical range of the Bank's PPP portfolio. The evaluation assessed the performance of the projects against the Bank's standard evaluation criteria<sup>1</sup>, but paid particular attention to the Bank's role in the process and the impact of the PPP structure on both the project and the Bank. The paper is split into five sections, plus this introduction. Section 2 outlines key background issues to PPP operations, with particular reference to the EIB. Section 3 describes the impact of the PPP mechanism on the investment projects that were evaluated in depth. This is complemented by Section 4, which examines the impact of the PPP process on the EIB, while Section 5 considers the performance of the underlying projects. A summary and conclusions are presented in Section 6.

At its simplest, a PPP is the provision, long-term operation, and maintenance, of public infrastructure by the private sector. However, this description also fits a range of other activities, including privatised utilities. The Bank has no formal definition of PPP itself so, for the purposes of the evaluation, a definition was established in consultation with the Bank's operational directorates: a PPP should (i) have been initiated by the public sector, (ii) involve a clearly defined project, (iii) involve the sharing of risks with the private sector, (iv) be based on a contractual relationship limited in time, and (v) have a clear separation between the public sector and the borrower. This was the definition used to identify the portfolio of relevant projects and potential projects to be evaluated. During the evaluation, Eurostat presented guidelines on the accounting treatment of PPP projects. They did not provide a PPP definition *per se*; rather a set of criteria to define whether an investment should be 'on' or 'off' the national balance sheet. To be off-balance sheet, a PPP investment must involve the transfer of risk to the private sector of both project completion and either project use or project availability. All except one of the projects evaluated in depth would have satisfied the Eurostat tests. However, it should be noted that the governments concerned have not necessarily accounted for the projects in this way.

Private sector involvement in public infrastructure is not new. Historically, toll roads, bridges, canals, schools, railways, hospitals, etc. were normally outside the public sector. It might therefore be argued that what PPPs are doing is complementing, or replacing, a system of ownership and operation that largely developed in the nineteenth and twentieth centuries. The current developments in PPPs have been driven by a general move to the application of market disciplines and the involvement of the private sector. The growth of PPPs can therefore be seen as a parallel process to privatisation and outsourcing, lying somewhere between the two. At the policy level, this move has had widespread political backing. However, it can be argued that the growth of PPPs is due to a growing gap between investment needs and available public resources. There are two dimensions to be considered: 'quality', that what is delivered is better, and 'volume', that more can be delivered earlier. The first of these is obviously a desirable attribute for all investments. The second is less certain. Gaining economic benefit early is desirable, but only if later projects with



**Campbell C. Thomson**

<sup>1</sup> Relevance/efficacy, efficiency and sustainability. See the Annex for definitions.

greater through-life benefits are not displaced. It is difficult to describe a typical PPP because they are so diverse. However, as an introduction to the vocabulary used in this paper, a PPP is a long-term contract between a public sector promoter and a private sector provider. Under this contract the provider will typically arrange the funding for the project, build the asset the promoter has specified, operate and maintain it, and hand it over in good working condition to the promoter at the end of the contract. In return, the provider will receive either direct payments from the end users or be paid to provide the service by the promoter.

***There is clear EU support for the PPP mechanism and for the EIB playing a major role in this process.***

There is clear EU support for the use of private funding for public infrastructure, including the use of the PPP mechanism, and for the EIB playing a major role in this process. By the end of 2003, the Bank had signed loans to the value of EUR 14.7 billion for PPP operations. However, eligibility for EIB funding is always based on the underlying project, not the fact that it is a PPP. Further information on the Bank's PPP operations may be found in 'The Role of the EIB in Public-Private Partnerships (PPPs)', available at [www.eib.org/publications](http://www.eib.org/publications).

## **2. Background to the Bank's PPP projects**

### **2.1 Factors influencing the choice between PPP and traditional procurement**

PPPs typically involve complex financial structures, and complexity normally implies higher costs. The question is whether these extra costs are outweighed by any PPP quality and/or volume benefits. When choosing between a PPP and traditional public procurement, there are a number of issues to be considered:

**Capital budget.** Traditional public procurement investments depend on the availability of an appropriate capital budget. If capital budgets are constrained, for whatever reason, a promoter may not have the resources available to implement economically desirable investments. PPP investments may be used to circumvent these restraints and may be 'off-balance sheet' depending on the balance of risk between the public and private sectors.

**Recurring budget.** In a PPP, the private sector provider needs to be paid – either by end users through real tolls or by the public sector promoter through shadow tolls, asset availability fees, etc. These payments have to cover the costs of funding the project, plus operating and maintenance (O&M) costs.

**Risks.** There must be some sharing of risk in a PPP, for example project completion risk and operating risk, and the provider has to be paid a premium to accept these risks. The argument is that the private sector is better at managing some of these risks than the public sector and therefore the risk premium is lower than the cost to the public sector of carrying the risk itself.

**Complexity premium.** A PPP is an inherently more complex operation than public procurement. Some countries, such as the United Kingdom, carry a higher complexity premium than others; Spain for instance. The argument is that private sector disciplines will generate sufficient savings to offset the complexity premium, at least in the longer term, once the parties are fully experienced and standardised methodologies and documentation have become available.

**Skills transfer.** It is argued that the public sector should benefit from exposure to the skills of the private sector.

**Flexibility.** PPPs are normally less flexible than traditionally procured projects and may therefore be better suited to projects where the public sector does not anticipate frequent or substantial changes to the asset specification or how it is used, e.g., roads.

**Innovation.** PPPs can bring innovation through the private sector finding new ways of achieving 'output' targets, as opposed to meeting 'input' or 'design' specifications which normally form the basis of public procurement contracts.

It is clear from the above that any rational decision between PPP and public procurement will involve a complex analysis. It is further complicated by the need to consider a range of non-project issues, including: the maturity of the financial sector, taxation, and the level of sophistication of potential bidders. One option is to apply a common, structured decision tool such as a public sector comparator (PSC). A typical PSC will compare the likely costs and benefits of the two processes and generate a net present value for the public and PPP cases. However, the PSC approach can be rather artificial and, in practice, it is used in relatively few countries. Whether or not a PSC is used, or any other value-for-money test, it is clear that using a PPP does not change the fundamentals of the underlying project.<sup>2</sup>

## 2.2 Structure of a typical EIB-funded PPP project

The figure below sets out the legal structure of a typical EIB PPP project: a road project where users pay tolls. It is important to note that much of this complexity is not due to the PPP mechanism *per se*. It is generated by risk mitigation and loan guarantee mechanisms.

***The legal structure of a typical EIB PPP project is complex, largely because of risk mitigation and loan guarantee mechanisms.***

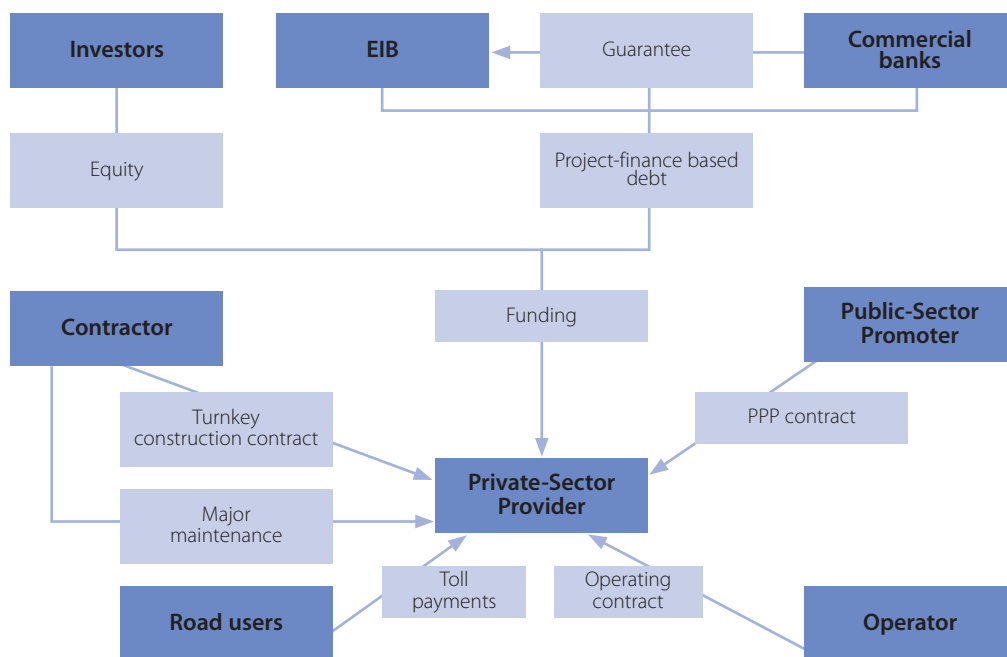
Most of the blocks are self-explanatory, but two remarks are useful. Firstly, there is the role of contractors and operators. The provider usually subcontracts the construction of the project on a fixed-price, fixed-delivery basis. This transfers some or all of the project risk to the subcontractors. Like the provider, these are typically unincorporated joint ventures, with some or all of the shareholders in common with the provider. It is also quite usual to subcontract the O&M of the PPP as well. These subcontractors may either be specialist suppliers or, again, special purpose vehicles (SPVs) with one or more shareholders in common with the provider.

Secondly, 10 to 25 percent of a PPP's capital costs are usually funded by equity or subordinated debt from the provider's shareholders, with the balance coming from external debt financiers. Apart from the EIB itself, debt finance may be provided by commercial banks or, in some cases, by the bond market. In most PPP transactions, the physical asset (e.g., a road or a school) cannot be pledged as security and, as noted above, the provider is usually an SPV. Security for the debt funding therefore cannot be based on either the provider's balance sheet or the value of physical assets. Instead, project finance techniques are employed, based on the project's cashflow. This takes account of the risks assumed under the PPP contract, combined with limitation of these risks through the various subcontracts.

<sup>2</sup> The question of how to assess the value for money that PPPs are expected to generate (relative to traditional public procurement) is the subject of Paul Grout's contribution to this volume of the *EIB Papers*.

Limitation of risk is important to enable the provider to raise a high ratio of external debt for the project, which reduces the cost of the project to the promoter because debt is assumed to be cheaper than equity.

Figure 1. Relationships between parties to a typical EIB-funded PPP Project



### 2.3 Risk sharing

*The allocation of risks between PPP partners should be such that each partner carries the risks he can manage, control, and mitigate better than the other partners.*

The key to the PPP process is the sharing of risks between the parties. However, PPPs also introduce risks that do not exist under traditional public procurement. In allocating risk, it is a general principle that risk should be carried by the party best able to control, manage, or mitigate that risk. The cost to potential providers of preparing PPP bids can be significantly higher than for traditional procurement, but this will depend on national legislation and the procurement procedure employed. Considering only the stages in the PPP process after the final bidder has been selected, let us consider some of the main risks and how they are shared between PPP promoter and PPP provider.

**Funding risks**, which mainly result from failure to reach financial close, are largely carried by the promoter. A winning bidder who cannot reach financial close will probably suffer a significant financial loss, as well as a loss in reputation. However, it is the promoter who has to deal with the consequences of the failure. The promoter normally mitigates this risk either by inviting bids only from well-established and qualified bidders, or by making it a condition when bids are submitted that bidders demonstrate the availability of finance. Funding risks can also stem from interest rate movements between the submission of bids and financial close. This risk is carried either by the promoter or the provider, depending on the terms of the bidding.

**Completion risk** is the risk that an asset cannot be designed and built on time, on cost and to specification. This risk should clearly be the responsibility of the provider who should have the appropriate skills and experience to mitigate it. The public sector could mitigate this risk on its

own projects (i.e., traditionally procured infrastructure assets) by employing the same device as the provider, i.e., the fixed-time, fixed-cost, fixed specification turnkey contract. However, historically it has not used this type of contract, and traditional public sector procurement has a history of large capital cost overruns.<sup>3</sup>

**Operating and maintenance risk** is typically carried by the private sector provider. It has two key elements: firstly, that the asset's maintenance requirements will differ from those predicted and, secondly, that there will be a difference in unit cost of maintenance. The potential up- and down-sides of this risk are both transferred to the private sector, which should therefore have an incentive to produce an asset with the lowest whole-life cost, or at least the lowest cost until the asset is handed back to the promoter.

**Termination risk**, which does not arise under traditional public procurement, is borne both by the promoter and the provider. It is the risk that the PPP arrangement will be terminated early, either because the provider fails financially or technically, for instance by not providing the contracted service in an acceptable manner. This is a risk for the provider as it will almost certainly suffer a material financial loss on termination. However, it is also a risk for the promoter if the service still needs to be provided after the termination. The risk can be partly mitigated by selecting suitable bidders. However, PPPs involve long-term contracts and there is a trend for the original technical members of a consortium to be displaced by purely financial investors who may not have the relevant experience and expertise. It should also be said that provider failure may be due to an inappropriate allocation of risk from the outset. In particular, it may apply to revenue risk, which is addressed next.

**Revenue risk** comes in different forms, depending on how the provider is remunerated. Although different remuneration schemes may be combined in practice, it is useful to distinguish three stylised schemes. When there are direct payments (e.g., tolls on roads/bridges and treatment fees for waste management), revenues depend on the unit price and the demand for the infrastructure service (e.g., the toll for each crossing of a bridge and the number of cars crossing). As far as risk is concerned, the unit price can be negotiated, but demand (e.g., traffic) is usually beyond the control of the provider, exposing it to revenue risk. When there are indirect payments (e.g., shadow tolls on roads), the provider's revenues also depend on demand for the service, but shadow tolls, and fee structures in general, can be designed to minimise the risk carried by the provider, while limiting windfall profits from large increases in demand. Finally, when the provider receives availability payments (e.g., for schools, hospitals, or physical transport infrastructure), revenues depend on the asset being available for use, with penalties for failure to perform. Under this remuneration scheme, the provider can control the risk, and so should carry the risk rather than the promoter.

*There are three stylised types of revenue risk: unit-price risk, demand risk, and availability risk.*

### 3. The impact of PPPs on projects

#### 3.1 Why use a PPP?

In all the projects evaluated in depth, the main reason for choosing the PPP route was to launch investment programmes, which would not have been possible within the available public sector

<sup>3</sup> As Mathias Dewatripont and Patrick Legros argue in their contribution to this volume of the *EIB Papers*, however, cost overruns are not necessarily a bad outcome. They suggest that a PPP project of a given quality costing 200 without any cost overruns is less desirable than a traditionally procured project with the same quality planned to cost initially 100 and experiencing a 50 percent cost overrun.

budget, within a reasonable time. In any discussion of the merits of one procurement mechanism against another, or when evaluating the economic value of a project, the project should be compared against the next best alternative. However, what account should be taken of the probability of that next best alternative being available in practice? This is not an issue for the EIB, which historically has evaluated the economic worth of projects in isolation, i.e., without rating either alternative procurement mechanisms or one project against another. However, it probably should be an issue for public policy analysts. It also raises questions over the applicability of public sector comparators (PSCs). The value of a PSC may depend on the realistic availability of the alternative to the PPP. In the cases studied, it was clear that the real choice was not between a PPP and traditional public procurement, it was a choice between a PPP and either no project, or a delayed/smaller-scale project.

***The evaluation of EIB PPP projects found that there was a genuine sharing of risks between public and private partners.***

This does not imply that PPPs are nothing more than a device to limit government borrowing. The evaluation found that there was a genuine sharing of risks between the public and private sectors. In most cases the public sector was able to accelerate the construction of key infrastructure, to the economic benefit of the country concerned, and usually with ancillary environmental or social benefits. The EIB's own analyses of these projects confirmed this. The growth of PPPs could also be seen as being part of a wider change in the role of the state from a direct provider of services to that of a facilitator and regulator of these services.

### **3.2 Negotiations and contractual issues**

The PPPs evaluated in depth were more complex than they would have been under public procurement and posed new problems for the public sector. A public procurement award of contract has to deal with the timing and specification of the physical works. PPPs, on the other hand, also have to deal with revenue, O&M, financing and termination issues. The public sector may also be at a disadvantage during contract negotiations. An individual promoter will only rarely have to negotiate a PPP contract, while the provider is negotiating regularly. There may also be an issue of asymmetry in the quality of advice available to the public and private sector. Similarly, PPPs impose a much higher workload on both the promoter and the provider, but mainly on the provider. Referring to Figure 1, all of these contractual relationships have to be formalised. This can be time consuming and expensive. However, as the process develops this 'complexity premium' reduces: contracts become standardised and the parties learn to handle the relationships.

### **3.3 Project implementation**

The evaluation supports the premise that, *ex post*, PPPs are more likely to be on time and on budget. There was only one case where the PPP appeared to have higher costs than the public procurement alternative, and that was probably due to a lack of competition rather than complexity. Conversely, on two projects, the availability of the PPP option meant that bidding took place against a depressed construction market, producing very tight pricing. The use of standardised contracts and experience with PPPs should bring down the 'complexity cost' but, even now, there is probably no substantial cost disadvantage to the use of PPPs in the real world.

One of the arguments put forward in favour of PPPs is that they are more likely to be on time and on budget. The evaluation therefore sought to test whether this was true and, if not, whether delays were due to the promoter, the provider, or outside factors. Three projects exhibited significant delays and cost overruns. On one project, there were long delays in agreeing detailed project specifications with the promoter, which delayed completion and increased costs. On the second, costs increased when the specifications had to be changed to take account of new legislation.



The last project was delayed due to geological problems. In all cases, the additional costs were carried by the promoter.

Taking now a closer look at the potential PPP advantages, two of the promoters of the projects evaluated specifically referred to histories of public sector cost overruns as a major additional reason for going down the PPP route. The evaluated projects generally avoided such problems, but this was not because they were PPPs. Firstly, it was because the promoter specified its requirements for the project and kept to this specification. The cost overruns and delays referred to above were largely attributable to changes in the technical specifications or work scope after the contracts had been awarded. Secondly, the provider subcontracted construction to a construction company, often a shareholder in the provider, on the basis of a fixed-price turnkey contract. These benefits can be realised in conventional public procurement if the public sector applies the same approach. However, it is often difficult to replicate the external discipline imposed by the PPP due diligence process, i.e., from lenders such as the EIB, or to have the in-house skills needed to administer this type of process. There may also be economies of scale from the PPP route if it enables projects to be undertaken in larger units—e.g., a group of schools rather than schools procured individually, or a road procured as one complete project rather than split into sections.

***In principle, conventional public procurement could replicate some of the advantages of PPPs - but in practice, this is often difficult.***

However, there are also potential PPP disadvantages. The fixed-price turnkey construction contracts used in PPPs appear to be more expensive *ex ante* than standard quantities-based contracts – because not only are the contractual arrangements more complex, but the contractor is pricing in the risk of cost overruns and penalties for late completion. The question is whether the additional costs are compensated by savings later, so that the cost is lower *ex post* than it would have been under traditional procurement.

There are further questions. Firstly, the additional skills and resources needed to set up a PPP may restrict the potential bidders, reducing competition and increasing prices. Secondly, also on competition, using PPPs to accelerate a large-scale construction programme may create an increased demand for construction work, which itself pushes up prices. Finally, the time taken to set up the contractual arrangements for a PPP, and to reach financial close, may increase the project implementation time.

On costs, the promoters of two of the projects evaluated in depth stated that there was no significant cost disadvantage from using the PPP route, and that there may have been cost savings. However, in another case, the small number of eligible bidders almost certainly resulted in a bid price that was higher than necessary. Similarly, in the case of one specific country, circumventing the public sector budget constraint appears to have led to a roadbuilding boom, which resulted in increasing prices.

Referring to a range of previous EIB evaluations, some 50 public infrastructure projects were identified that had used public procurement. On project delays, 60 percent of projects were more than one year late, which is poor in comparison to the PPPs included in this evaluation. This figure is similar to the finding of an analysis carried out by the National Audit Office of the United Kingdom.

### **3.4 Project operation**

In evaluating the impact of PPPs on the operation of projects, the key question is: how have PPPs affected operating and maintenance costs and revenues? To start with O&M costs, in some EU countries, the public sector has a poor track record in the maintenance of its infrastructure and buildings. All projects analysed in depth had been completed to a standard at least as high as normal public procurement would have provided, and two promoters specifically commented

that the quality was higher than expected. Maintenance costs should therefore be no higher, and possibly lower, than for the public procurement alternative. The rationale is that the infrastructure or buildings will be designed for efficient long-term use, because the provider's return is based on their operation and maintenance. The provider will also face penalty charges if it fails to hand over a fully functioning asset at the end of the contract. The standing of maintenance is reinforced by two PPP characteristics. Firstly, the promoter's budget is precommitted to the provider, so maintenance does not have to compete with other budgetary demands. Secondly, detailed maintenance requirements are specified in all types of PPP contracts, therefore short-term budget constraints within the provider should not affect maintenance standards. Similar budget arrangements could be applied to traditionally procured projects, of course, but would be difficult to realise in practice. Since the projects evaluated were all quite new, no conclusion could be drawn on whether these long-term benefits would materialise.

***PPPs in the road sector seem to have been based on too optimistic demand projections, but this is also a feature of many traditionally procured projects.***

Turning to revenues, problems with project revenues, as compared to the original projections, are occurring in projects where the provider is bearing usage risk, i.e., the road projects with 'real', i.e., user-paid tolls. The evaluation included five of this type of project. On two of them, traffic is either at or above the original projections. On the other three, traffic is below projections. The 'hit rate' is therefore quite poor, although all the roads are at an early stage of operation, and long-term trends may improve. This result is similar to the findings of other EIB evaluations. There is also a risk that the pricing on a real-toll road inhibits the use of the infrastructure. The Bank's project appraisal department raised this issue at the project appraisal stage in the case of one project, and the evaluation did indeed find that the traffic was below expectations. That said, it is too early in the operation of the project to reach any firm conclusions. Two PPP projects included in other EIB evaluations found that users' willingness to pay was a serious issue. In one of those cases, social and political pressure to reduce the level of tolls led to the renegotiation of the PPP contract. In a third case - an EIB project that has not been evaluated - the issue has led to the promoter 'buying out' the provider's rights under the PPP contract. In the one shadow-toll project evaluated in depth, the traffic is below the provider's projections, but this is not a major issue because the structure of the shadow-toll payments is such that even a significant drop in traffic does not affect revenues. In essence, the promoter, and not the provider, has taken almost all of the traffic risk. In this case, the promoter is not worried by the current traffic levels: they are close to its original projections, which were lower than the provider's. The projects based on availability, where revenues depend on providing the service as specified, are all meeting revenue projections.

Overall, one, or possibly more, providers may not be financially sustainable in the long term. However, the underlying projects are technically sound and the economic benefits they produce are independent of the ownership of the assets. In most of the projects evaluated, the failure of a provider would involve either the promoter taking over the project itself or re-tendering the operation and management of the project to a new provider. There would be costs associated with either of these options, but the promoter would probably still be better off than if they had carried out the project using public procurement. The private sector shareholders will have lost their investment, but that possibility is inevitable and, in any event, shareholders freely chose to accept the risks involved.

### **3.5 Other issues**

There are other PPP impacts worth mentioning. To begin with, a PPP generates more tax revenues than public procurement: there are long-term revenues from the provider's equity investors, O&M subcontractors, and lenders. There may also be capital gains tax payable on the increase in value of the provider's equity. Although they may not benefit the promoter directly, and may be difficult to

quantify, these extra tax revenues can be set against payments by the promoter when evaluating the net cost to the public sector. Secondly, PPPs may foster innovation in design and operation of a project. The promoter defines a specified output, but it is normally the provider who determines how it is delivered. It was probably too early to find evidence of innovation in operation of the projects evaluated, although on one education project, a number of O&M developments had been introduced that might have a wider impact on how educational infrastructure is managed. However, there is no obvious medium through which these benefits could be disseminated. Thirdly, the use of PPPs alongside traditionally procured projects has the potential to bring private sector management and implementation skills to the public sector (for instance, in areas such as keeping projects to schedule or improving service quality in operations). However, no evidence was found to support this, and it is possible that the use of PPPs may result in a transfer of technical skills from the public sector to the private sector. Finally, one could argue that lenders bring external discipline to the project. Indeed, in several of the projects evaluated, both promoter and provider agreed that intervention by the lenders, including the EIB, in the PPP contract and subcontract negotiation processes produced a better deal.

### **3.6 PPPs vs. traditional public procurement – summarising the findings**

As stated in Section 3.3, there is clear evidence from this evaluation that PPPs are more likely to be on time than traditionally procured projects. Other studies have come to the same conclusion. Similarly, provided there is no change in the project definition, and assuming the provider is carrying the completion risk, there would normally be no additional costs charged to the promoter. However, while these findings may be important for the management and availability of public infrastructure, they are not critical for the assessment of whether, or when, to choose the PPP mechanism. Assuming that the same economic benefits will be realised, the question is: which mechanism will provide the lower whole-life cost to the economy? This is, of course, the question that value-for-money tests (as discussed by Grout in this volume) are designed to answer *ex ante*. However, *ex post*, the evaluation could not quantitatively answer the question. Two methodologies were considered: the *ex post* modelling of the alternatives available *ex ante*, and direct project comparisons. The modelling approach was rejected for two reasons. Firstly, because of the level of uncertainty associated both with the risks being transferred and the behaviour of the public sector. Secondly, the resources needed to carry out this work on a reasonable number of projects placed it beyond the scope of the evaluation. The direct comparison approach also had to be rejected. To make an effective comparison it would be necessary to identify two projects of similar specification, constructed and operated in the same legal, financial and fiscal framework, and subject to the same market conditions. Although the EIB has a large and diverse portfolio, it was not possible to identify suitable project pairs. Under these circumstances, Operations Evaluation was unable to determine *ex post* whether the original decision to use a PPP was more cost-effective than other procurement options.

***The EIB evaluation confirms that PPPs are more likely to deliver infrastructure assets on time and within budget than traditionally procured projects.***

## **4. The impact of financing PPPs on the EIB**

The EIB's PPP exposure may be traced back to the loans made in 1987 to Eurotunnel (France/UK), in 1989 for the Orlyval project (France), and in 1992 for the Second Severn Crossing project (UK). These projects offered the Bank the opportunity to learn a number of valuable lessons. At the same time, project-finance lending techniques were being developed through the Bank's involvement with private sector project finance deals in the UK power industry and elsewhere. The main growth in the portfolio began with loans to projects under the UK Private Finance Initiative (PFI). The UK PFI dates back to 1992, but has developed rapidly since 1997, and similar schemes have been adopted

in many other EU member states. The Bank is now lending to PPP projects in Belgium, Denmark, Germany, Spain, France, Greece, Ireland, Italy, Netherlands, Austria, Poland, Portugal and the UK, as well as in non-member states, e.g., China and South Africa. The EIB is one of the largest individual lenders to PPPs, by volume, within the EU. Further information can be found in Table A1 of the Annex and in “The EIB’s role in Public-Private Partnerships (PPPs)”, as previously referenced.

In all cases evaluated, the EIB’s involvement in the projects was fully in line with EU policy, national policy, and the Bank’s own internal policies. As to EU policy it should be said that, historically, the EU has been neutral as to ownership of assets, e.g., there has been no policy on privatisation. However, in addition to a policy on deregulation of public services, there has been, since 1999, a clear policy from the European Commission to increase the level of private funding of infrastructure – for example in the transport sector – and the PPP structure is one way of achieving this policy objective. The Council of the European Union meeting of December 2003 also endorsed the use of the PPP mechanism.

Turning to national policies, there is no common policy between EU member states on the desirability of the PPP mechanisms. Some countries – the UK, Spain, and Portugal for instance – have made substantial use of the mechanism. Others have not used it at all. Projects supported by the Bank have to have the consent of the relevant member state government and it must be assumed that any PPP project receiving this consent is in line with national policies.

To appreciate the EIB’s policy towards PPPs, it is useful to note that most international finance institutions, e.g., World Bank and EBRD, have policies that actively promote the PPP mechanism. The EIB, on the other hand, reflects EU policy on how public projects are procured, and has no preference as to whether a project is implemented using conventional public sector procurement or through a PPP. The Bank may be perceived as supporting the use of PPPs, but its involvement in PPPs only reflects how a number of its clients want to procure the provision of public services. Similarly, ‘PPP’ is not an eligibility criterion for the EIB. Eligibility is based on the underlying project, and the Bank’s normal eligibility and project quality tests are applied.

***A particular challenge for the Bank when supporting PPPs is to effectively play two roles: mentor to the PPP promoter and lender to the PPP provider.***

A particular challenge for the Bank – and any other international finance institution supporting PPPs – is to effectively deal with two clients. On one side, there is the provider – normally the Bank’s borrower, on the other, there is the promoter, a public sector institution. This gives the Bank two roles: lender to the provider, and mentor to the promoter, who may have much less experience in PPPs than the Bank. This situation arises where the Bank gets involved in projects at an early stage, and there is an obvious potential conflict between these roles. Initially the Bank may be sitting on the promoter’s side of the table, helping to define and shape the project. It then moves to the provider’s side, sitting opposite the promoter, to help negotiate the PPP contract that is the main security for the Bank’s loan. There is a danger of a confusion of objectives and loyalties in this type of situation, but the Bank, or to be more accurate the staff involved, handled the transition well.

## **5. Rating EIB-financed PPPs against evaluation criteria**

### **5.1 Relevance and efficacy, efficiency, and sustainability**

The performance of EIB-financed projects is generally assessed on the basis of three core evaluation criteria: relevance/efficacy, efficiency, and sustainability (the Annex sets out these criteria in more detail). For the ten PPP projects that were evaluated in depth, Table 1 summarises the findings with respect to each core criterion and it also shows how many PPPs have received a ‘good’ and ‘satisfactory’ overall rating, respectively.

**Table 1. Rating of EIB-financed PPP projects against various criteria**

	Good	Satisfactory	Unsatisfactory	Poor
Relevance/efficacy	4	6	-	-
Efficiency	2	4	2	-
Sustainability	2	5	1	-
<b>Overall Rating</b>	<b>4</b>	<b>4</b>	-	-

Note: Only eight projects received an overall rating. This is because two projects could not be rated for efficiency or sustainability and were therefore not given an overall rating.

With respect to relevance/efficacy, four projects were rated ‘good’ and six ‘satisfactory’. Starting with the relevance criterion, all projects’ objectives are consistent with at least one EU policy (for example transport, regional development, and the EU environment policy), and most support more than one. All projects thus rate well against ‘relevance’, or will do once fully operational. Moreover, while all projects were eligible for EIB funding, six were also consistent with the priority policy objectives of regional development, environment, and education. As to efficacy, all projects were rated as either ‘good’ or ‘satisfactory’, although the rating for one project should be regarded as provisional until the project is fully operational. It is worth pointing out, however, that problems with this project can largely be attributed to interface problems with a related, traditional public procurement project. One project – although strong on ‘relevance’ – was weak on ‘efficacy’ as its implementation was neither on budget nor on time. The problem here has not been due to the provider but because of the public sector’s inability to define its needs and to manage multiple, interlocking PPPs. Once complete and with full benefits being achieved, the ‘satisfactory’ rating would almost certainly apply to both relevance and efficacy.

*The majority of EIB PPP projects evaluated received a good or satisfactory overall rating.*

Moving on to the second core evaluation criterion, i.e., efficiency, the most notable finding is that two projects have been rated as less than satisfactory. One suffers from lower than expected traffic combined with higher than necessary costs while the other has experienced cost overruns that are reducing its economic profitability. In the case of one of the projects that could not be rated, early traffic levels on the completed sections are below expectations and the project was unnecessarily expensive, but traffic may pick up once the full system is available.

Traffic levels have been lower than expected on a further two projects, but not to the extent that the economic viability of the projects has been compromised. In the first case, the problem is a combination of wider economic problems reducing traffic levels and a delay in completing a linked section of motorway. For the second, a combination of lower-than-expected traffic growth due to regional economic problems and exogenous factors, has resulted in traffic that is lower than the provider’s projections – but not the promoter’s.

This takes us to the sustainability criterion. On this count, all except one project has been rated as ‘good’ or ‘satisfactory’. Technically, all projects are sound and sustainable, with no particular problems identified during the evaluation, and providers having sound incentives to maintain assets properly. One of the unrated projects has a potential financial weakness, but it should still meet its original economic objectives.

Concentrating on financial sustainability, the projects most at risk are those where the provider is carrying the usage risk. Of these, one may recover: it is being managed by a financially strong group

that can accept low initial returns in the expectation of a full recovery in the long term. The position of another project, on the other hand, is less certain. The project is currently only sustainable by virtue of the EIB lending being based not just on a bullet repayment of capital, but also the 100% capitalisation of interest. Current projections show that there will be enough free cashflow to repay the commercial banks, but not to build up sufficient funds to repay the Bank's bullet loan. This suggests that some degree of refinancing will be required in the future. However, the concession stretches well beyond the term of the EIB loan and the Bank expects that there will be sufficient revenue, after the initial commercial bank loans have been paid off, to interest commercial bank's in such a refinancing. This potential refinancing structure was foreseen at appraisal and is reflected in the design of the Bank's operation. Finally, there is a third project where the provider is also under pressure, with projected equity returns at zero for at least a decade.

## 5.2 EIB value added

### *The most noticeable impact of EIB involvement in PPPs was to enhance their affordability...*

A key objective for the Bank is that its operations provide value added, implying that EIB support is instrumental in launching projects, enhancing the viability of projects, or in providing non-financial value added to promoters, providers, and/or society at large. With respect to the PPP projects analysed in depth, there is only one case where the project could not have proceeded without the EIB's participation, or at least not without being substantially revised. Conversely, there was also at least one case where the project would have proceeded with exactly the same funding structure whether the Bank had got involved or not. In between these two positions, the Bank usually had an impact on the affordability of the project.

While issues of loan term and repayment profile were important, the most important reason for the EIB being brought into the projects was its lower 'all-in' cost of financing. This raises the issue of displacement of commercial lending, especially as this lower cost did not always accrue to the public sector. However, once the EIB was involved, other types of value added from the Bank's presence could also be identified. This was particularly true in new PPP markets. In most cases, it was the fact that the EIB offered much longer loan maturities than other financing sources – often combined with fixed-rate pricing - which made the difference. That said, absolute availability of alternative funding, i.e., the ability and willingness of domestic banks to fund the project, was probably also a factor in countries with relatively less developed financial sectors.

There are cases where the final project scope depends on costs (i.e., the cheaper the funding, the greater the scope of the project), and there were a number of examples where lower-cost EIB funding clearly added financial value. This effect made a significant difference to the affordability of some projects and to the scope of others. In some cases, EIB involvement may also have helped to keep down the parallel commercial lenders' pricing and so produced a further, indirect reduction in costs. There is also a direct link between the Bank accepting project risk and the cost of its funding. If the Bank does not take project risk, the provider, who is also the borrower, normally has to pay the extra cost of commercial bank guarantees.

Several EU member states are now beginning to use public sector funding for PPP projects, in effect adding to what the EIB is already doing in this field, e.g., the UK Treasury's 'Credit Guarantee Finance'. These are public-sector loans to PPPs, guaranteed by commercial banks or insurance companies, and are an obvious parallel with the EIB's role. Similarly, there is the provision of funding for PPPs by *Infrastrutture SpA* in Italy. This approach lowers total costs and is something that providers have also been looking for in other countries, Germany for example.

What about non-financial value added associated with the Bank's support for PPPs? The promoters, providers, and commercial banks involved in the evaluation identified a number of areas where they felt that the Bank had brought substantial non-financial value added to their projects. To start with, the Bank is seen to have played a useful role in the validation of projects. Promoters also generally found the Bank's technical, economic and financial appraisals helpful in validating both their decision to go down the PPP route and the structure selected for the project. Similarly, other lenders to the projects had a high opinion of the EIB's project appraisal process, especially in the economic and engineering fields. In some cases, this helped commercial bankers to get their own internal credit approvals and it was especially helpful where the commercial bank loan underwriters were placing their loans in the syndication market. The effect was most obvious where the loan was the first of its type in the market.

Secondly, there were a few cases amongst the projects evaluated where the EIB truly acted as a catalyst to develop third-party funding for PPP projects, with the Bank actively encouraging participation by local and foreign banks, and promoting longer-term financing through its guarantee release structure.

Thirdly, commercial banks generally considered the Bank 'good partner', not only playing a major role in the funding, but also acting in a responsible and consistent manner once a PPP is up and running. The alternative would have been a much larger syndicate with less predictable partners from whom approval would be needed for all variations, waivers, and the like.

*... but the EIB is also considered to have provided significant non-financial value added.*

Fourthly, the Bank is seen to help the transfer of skills. This applies, in particular, to the transfer of PPP experience from one country to another; several promoters and providers in new PPP markets considered this an important contribution made by the Bank.

Fifthly, several providers commented that they are more comfortable with the EIB's policy of holding the whole of its loan for its entire life, thus creating a long-term partnership with their lender, rather than the approach of commercial banks, which sell their loans on the secondary market.

Finally, EIB support has several political effects, which arise from the Bank's status as a multilateral bank owned by EU member states. As an illustration, a number of providers and commercial banks feel that the EIB presence in a project helps to ensure that the promoter – or its government – meets its contractual obligations. Several promoters also said that the involvement of 'European money' via the EIB made their project more acceptable in regions where there was opposition to the use of PPPs on political grounds.

To conclude, there are many cases where the Bank provided significant non-financial value added, generally to the public sector rather than the private sector. Almost all promoters saw the exposure to the Bank's skills and the opportunity to learn from the Bank's experience as a valuable aspect of having the Bank involved in their projects. In at least two countries, it was clear that Bank staff, formally and informally, contributed significantly to building up PPP skills. Overall, although not a Bank policy objective, the evaluation allows to conclude that the Bank has a positive impact on institutional development, particularly in countries at an early stage of PPP development.

## **6. Summary and conclusions**

Broadly reflecting the structure of this paper, this section, first, summarises the impact of the PPP mechanism on the projects and the EIB and, second, concludes with a few remarks on prerequisites for prime performance of PPP projects.

To start with implications of the PPP mechanism, it is fair to say that PPP structures are more complex than traditional public procurement, although traditional procurement's apparent simplicity is often lost when proper account is taken of the risks involved. PPP complexity is due to the number of parties involved and, particularly, the mechanisms used to share the risks. The funding costs of PPPs are also higher, reflecting the impact of the risk being carried by the private sector, the cost of the additional loan structuring, and the private sector's higher financing costs. For the public sector, this is compensated by the private sector accepting a proportion of the risks and, in certain cases, the acceleration of investment programmes.

The evaluation found that the underlying physical projects evaluated in depth were largely completed on time, on budget, and to specification. This reflected the use of fixed-price, fixed-term construction subcontracts. These are common in PPP structures, but could also have been applied to public procurement. There was also evidence on some projects that the standard of the works was better than would have been found on a public procurement project.

**The key impact of the PPP mechanism was that the projects were implemented at all.**

The key impact of the PPP mechanism was that the projects were implemented at all. In all of the projects evaluated in depth, public sector budget constraints meant that the alternative to a PPP project was no project, or at least no project within the foreseeable future, rather than a public procurement project. The extent to which government spending limits could have been adjusted to accommodate these projects can be debated, but almost all promoters clearly stated that there would have been no budget for the projects as they were eventually implemented. In such cases, the use of a public sector comparator (PSC) to look at whether a PPP offers better value than public procurement might be questioned, and a PSC was carried out on only a minority of the projects evaluated. That said, the argument remains strong for carrying out some value-for-money test to assess the economic efficiency of the proposed solution, and as Grout (this volume) emphasises, useful value-for-money test do not necessarily have to use a PSC.

In some cases, the promoter was able to take advantage of a highly competitive construction market at the time of bidding, which produced cost savings. Conversely, restricted competition in one particular case meant that construction costs were probably some 30 percent higher than necessary. A cost risk noted in this context was that implementing a large PPP programme could raise demand for construction services in the short term, increasing bid prices as competition falls. This phenomenon has now been recognised as an important issue, and administrations are trying to manage the flow of projects to ensure that the market remains competitive.

The evaluation established that there is no generalised answer *ex post* as to whether PPPs are more or less expensive than public procurement projects. Each case has to be considered individually, taking into account factors such as: legal framework, existence of standardised contracts, type and degree of risk sharing, incidence of changes to project specification during project implementation, and taxation.

Turning to the impact of the PPP mechanism on the EIB, it is important to recognise that the Bank can often be seen as having two clients on PPP projects. Initially, it is the public sector promoter when the PPP structure and a financing strategy is being developed. Following the calls for tender, it is the bidder who becomes the Bank's client. Bank staff handled this transition well, but it does add another dimension to their responsibilities.

Similarly, the Bank can have multiple clients during the bidding phase. All potential bidders have to be treated equally, which might mean developing financing proposals for a number of bidders in parallel. The Bank has no formal system of 'Chinese Walls' or protocols on how the potential conflict



of interests should be handled. The evaluation found that potential conflicts were handled on a case-by-case basis, rather than established processes, but all relationships were handled correctly and professionally.

The previously mentioned complexity of PPPs makes them more demanding than traditional loans on staff resources, in terms of workload and duration. This was managed well where staff were devoting most of their time to PPPs, but was more difficult for staff working on a mixture of PPP and conventional projects.

Given the existence of third-party guarantees, at least during the periods of highest risk, none of the projects evaluated are likely to leave the EIB itself at significant risk. This is particularly important in the case of projects where the Bank may, at some point, be exposed to direct project risk, dependent on the project satisfying predefined financial, technical, and economic conditions.

What then can be concluded about the prerequisites for prime performance? Obviously, there is no general formula for successful PPPs, but there are clear indications on how to avoid problems. One is that projects should have clear boundaries and a fixed definition/specification. The contractual complexities of most PPPs mean that change will be expensive. By extension, the PPP mechanism may not be appropriate for projects that cannot be clearly defined/specified from the outset. Another indication is that the underlying project must be economically and financially sustainable: the PPP mechanism will tend to magnify project deficiencies. And then, competition must be maintained to minimise costs. The number of bidders for a PPP contract is typically lower than for a traditional contract. As a result, there is normally less competition, which implies higher prices. Any further restriction on the number of bidders will exacerbate this problem. A corollary is that competition can be used to minimise costs. Using the PPP mechanism can allow infrastructure to be tendered when the construction market is weak. Conversely, over-use of the PPP mechanism can create short-term increases in demand that absorb capacity and so drive up bid prices. Finally, for PPPs to provide value for money, providers need to carry risk. An important issue here is that a provider who carries usage risk needs to have a stronger capital structure than one who only carries construction and operating risks. An inadequate capital structure could lead to failure of the concessionaire. This can block projects and, depending on the nature of the local law and contract structure, can increase the costs to the promoter without creating any additional benefit.

***Clear output specifications, sufficient competition for PPPs, and adequate risk allocation are key for the success of PPPs.***

In sum, PPPs are not a panacea for public expenditure. They create new problems for promoters, providers, and financing bodies to solve. However, in the right circumstances, they can make public infrastructure available earlier, more effectively, and more efficiently than traditional public procurement. The challenge is to match their use to the circumstances.

## Annex

### EIB core evaluation criteria: Relevance/Efficacy, Efficiency, and Sustainability

Project performance is assessed using the core evaluation criteria as defined by the Evaluation Cooperation Group (ECG), which brings together the operations evaluation units of the multilateral development banks (World Bank group, regional development banks, and EIB), in line with the work of the OECD-DAC Working Party on Aid Evaluation, and adapted to meet the particular operating needs of the EIB. Evaluations take due account of the analytical criteria used in the *ex ante* project appraisal and the strategy, policies and procedures that relate to the operations evaluated. Changes in EIB policies or procedures following project appraisal, which are relevant to the assessment of the project, will also be taken into account.

**Relevance** is the extent to which the objectives of a project are consistent with the relevant EU policies (the Treaty, Directives, Council Decisions, Mandates, etc.) and the decisions of the EIB Governors, as well as the beneficiaries' requirements, country needs, global priorities and partners' policies. In the EU, reference is made to the relevant EU policies in the context of the Article 267 of the Treaty that defines the mission of the Bank and the EIB related policies. Outside the Union, the main reference are the Community's relevant external policy objectives considered in the specific mandates given to the EIB by the Council of the European Union and the EIB interpretation of them.

**Efficacy (or effectiveness)** relates to the extent to which the objectives of the project have been achieved, or are expected to be achieved, taking into account their relative importance, while recognising any change introduced in the project since loan approval.

**Efficiency** is the measure to which project benefits/outputs are commensurate with resources/inputs. For the *ex ante* appraisal, a project's efficiency is normally measured through the economic and financial rate of returns. In public sector projects the economic and financial rate of returns often are not calculated *ex ante*. In those cases the efficiency of the project is estimated by a cost effectiveness analysis.

**Sustainability** relates to the likelihood of continued long-term benefits and the resilience to risk over the intended useful project life. The assessment of the project's sustainability varies substantially from one case to another depending on circumstances and takes into account the issues identified in the *ex ante* due diligence carried out by the Bank. Among the issues reviewed in the assessment are:

- Technical and management issues, mainly willingness, capacity and funding to carry out the necessary maintenance of the project in order that it can reach its useful life;
- Government commitment, regulatory environment and socio-political support (this is particularly important in weak institutional context such as in some developing countries);
- Financial sustainability for revenue generating projects, whether there is a significant risk that those revenues become unacceptably low, e.g., that they cannot cover at least the operating and maintenance costs;
- Environmental sustainability, whether there are environmental risks that might be a significant threat to the future operation of the project;
- Others issues that might affect the continued long-term benefits during the useful project life.

**Table A.1 EIB Loans for PPP projects, 1990-2003**

Sector	Contract (EUR millions)	(% of total)
Roads and motorway (includes combined road/rail projects, tunnels and bridges)	9,120	62
Urban development, renovation and transport	2,600	17
Airports	999	7
Traditional and high-speed trains	997	7
Social infrastructure (education and health)	549	4
Power generation, transmission, and distribution	258	2
Drinking and waste water treatment	165	1
<b>Total</b>	<b>14,688</b>	<b>100</b>

Note: Figures on contract values are based on the PPP definition used for this evaluation.



## Economic and Financial Reports\*

- Report 2005/02** Eric Perée and Timo Vällilä, *"Fiscal Rules and Public Investment"*.
- Report 2005/01** Timo Vällilä and Aaron Mehrotra, *"Evolution and determinants of public investment in Europe"*.
- Report 2004/02** Alfred Steinherr, Ali Tukul and Murat Ucer, *"The Turkish Banking Sector: Challenges and Outlook in Transition to EU Membership"*.
- Report 2004/01** Federico Galizia, *"Systemic credit risk in the presence of concentration"*.
- Report 2003/02** Federico Galizia, *"Measuring the "financial gap" of European corporations: an update"*.
- Report 2003/01** Rien Wagenvoort, *"Bank Survey evidence on bank lending to SMEs in the European Union"*.
- Report 2002/02** A. Rossi, G. Bichisao & F. Campolongo, *"Hedge accounting within IAS39"*.
- Report 2002/01** Luisa Ferreira de Almeida & Patrick Vanhoudt, *"Catching the Celtic tiger by its tail"*.
- Report 2001/03** Eric Perée & Alfred Steinherr, *"The euro and capital markets: A new era"*.
- Report 2001/02** Federico Galizia & Dermot O'Brien, *"Do capital expenditures determine debt issues?"*
- Report 2001/01** Federico Galizia with Thomas Steinberger, *"The "savings gap" of European Corporations: A first look at the available data"*.
- Report 2000/02** Christopher Hurst & Kristian Uppenberg, *"Investment issues in south-eastern Europe"*.
- Report 2000/01** Dermot O'Brien & Rien Wagenvoort, *"Some empirical findings on the characteristics of cost-efficient credit institutions"*.
- Report 99/P3** Carsten Sprenger, *"Direct investment and the eastern enlargement of the EU"*.
- Report 99/P2** Daniel Piazolo, *"The credibility and growth effects of EU institutions for Eastern Europe"*.
- Report 99/P1** Hendrik Hassheider, *"Private sector investment as a means of financing Trans-European Networks"*.
- Report 99/02** Rien Wagenvoort & Paul Schure, *"The recursive thick frontier approach to estimating efficiency"*.
- Report 99/01** Paul Schure & Rien Wagenvoort, *"Economies of scale and efficiency in European banking: New evidence"*.
- Report 98/05** Daniel Ottolenghi, *"Walking a tightrope: Financial liberalisation in Mediterranean countries"*.
- Report 98/04** Christian Keuschnigg, *"Venture capital: A case for investment promotion"*.
- Report 98/03** Roman Arjona, Pascale Viala & Rien Wagenvoort, *"Small business finance and the European financial environment: Some empirical evidence"*.
- Report 98/02** Alfred Steinherr & Roman Arjona, *"The impact of European Monetary Union on the development of the Mediterranean zone"*.
- Report 98/01** Marco Buti, Lucio R. Pench & Paolo Sestito, *"European unemployment: Contending theories and institutional complexities"*.
- Report 97/05** Mireille Fischbach & Maria Scattaglia, *"Financial flows to Eastern Europe: Determinants, volatility and sustainability issues"*.
- Report 97/04** Mirela Keuschnigg, *"Banking in Central and Eastern Europe"*.
- Report 97/03** Gregorio Impavido, *"Pension funds and stock market development in Eastern Europe: Is there a link?"*.
- Report 97/02** Agnès Belaisch & Kristian Kjeldsen, *"Value-at-risk models for determining capital adequacy: Does allowance for correlation within broad risk categories matter?"*.
- Report 97/01** Agnès Belaisch, *"Why are long-term interest rates so high in Europe?"*.

Economic and Financial Reports are preliminary material circulated to stimulate discussion and critical comment.

\*As from 2004, EFRs are available in electronic format only.

---

The above publications are available free of charge from:

### European Investment Bank

Economic and Financial Studies

100, boulevard Konrad Adenauer

L-2950 Luxembourg

 [infoefs@eib.org](mailto:infoefs@eib.org)  (+352) 43 79-8895

[www.eib.org/efs](http://www.eib.org/efs)

## EIB Papers 2004 – 2005

### Volume 10, Number 2, 2005: Innovative financing of infrastructure - the role of public-private partnerships: lessons from the early movers

Armin Riess, *"Is the PPP model applicable across sectors?"*

Paul A. Grout, *"Value-for-money measurement in public-private partnerships"*

Patricia Leahy, *"Lessons from the Private Finance Initiative in the United Kingdom"*

Rui Sousa Monteiro, *"Public-private partnerships: some lessons from Portugal"*

Andreas Brenck, Thorsten Beckers, Maria Heinrich, Christian von Hirschhausen, *"Public-private partnerships in new EU member countries of Central and Eastern Europe"*

Campbell Thomson, *"Public-private partnerships: prerequisites for prime performance"*

### Volume 10, Number 1, 2005: Innovative financing of infrastructure - the role of public-private partnerships: infrastructure, economic growth, and the economics of PPPs

Timo Väilä, Tomasz Kozluk, & Aaron Mehrotra, *"Roads on a downhill? Trends in EU infrastructure investment"*

Ward Romp & Jakob de Haan, *"Public capital and economic growth: a critical survey"*

Christophe Kamps, *"Is there a lack of public capital in the European Union?"*

Timo Väilä, *"How expensive are cost savings? On the economics of public-private partnerships"*

Mathias Dewatripont & Patrick Legros, *"Public-private partnerships: contract design and risk transfer"*

### Volume 9, Number 2, 2004: The internationalisation of production in Europe: Case studies of foreign direct investment in old and new EU members

Frank Barry, *"Export-platform FDI: the Irish experience"*

Thierry Mayer, *"Where do foreign firms locate in France and why?"*

Magdolna Sass, *"FDI in Hungary: the first mover's advantage and disadvantage"*

Gábor Hunya, *"FDI in small accession countries: the Baltic states"*

### Volume 9, Number 1, 2004: The internationalisation of production in Europe: Causes and effects of foreign direct investment and non-equity forms of international production

Armin Riess & Kristian Uppenberg, *"The internationalisation of production: moving plants, products, and people"*

Zbigniew Zimny, *"Long-term trends in international production"*

Kristian Uppenberg & Armin Riess, *"Determinants and growth effects of foreign direct investment"*

Jozef Konings, *"The employment effects of foreign direct investment"*

Ari Kokko & Patrik Gustavsson, *"Regional integration, FDI, and regional development"*

---

The above publications are available free of charge from:

#### European Investment Bank

Economic and Financial Studies

100, boulevard Konrad Adenauer

L-2950 Luxembourg

 [infoefs@eib.org](mailto:infoefs@eib.org)  (+352) 43 79-8895

[www.eib.org/efs](http://www.eib.org/efs)

## EIB Papers 2002 – 2003

### Volume 8, Number 2, 2003: Europe's changing financial landscape: The financing of small and medium-sized enterprises

Rien Wagenvoort, *"SME finance in Europe: introduction and overview"*.  
Rien Wagenvoort, *"Are finance constraints hindering the growth of SMEs in Europe?"*.  
Ulrich Hommel & Hilmar Schneider, *"Financing the German Mittelstand"*.  
Michel Dietsch, *"Financing small business in France"*.  
Luigi Guiso, *"Small business finance in Italy"*.

### Volume 8, Number 1, 2003: Europe's changing financial landscape: Recent developments and prospects

Eric Perée & Armin Riess, *"The transformation of finance in Europe: introduction and overview"*.  
Thorsten Beck, *"Stock markets, banks, and economic development: theory and evidence"*.  
Graham Bishop, *"The role and development of EU capital markets"*.  
E. Philip Davis, *"Institutional investors, financial market efficiency, and financial stability"*.  
Arnoud Boot, *"Restructuring in the banking industry with implications for Europe"*.

### Volume 7, Number 2, 2002: The financial integration of an enlarged EU: Macroeconomic interlinkages

Robert A. Feldman & Nancy Wagner, *"The financial sector, macroeconomic policy and performance"*.  
Paul De Grauwe & Marianna Grimaldi, *"Exchange rate regimes and financial vulnerability"*.  
Willem Buiter & Clemes Grafe, *"Anchor, float or abandon ship: exchange rate regimes for the Accession countries"*.

### Volume 7, Number 1, 2002: The financial integration of an enlarged EU: Banking and capital markets

Armin Riess, Rien Wagenvoort & Peter Zajc, *"Practice makes perfect: A review of banking in Central and Eastern Europe"*.  
Dana Hájková, Jan Hanousek & Libor Němeček, *"The Czech Republic's banking sector: Emerging from turbulent times"*.  
Éva Várhegyi, *"Hungary's banking sector: Achievements and challenges"*.  
Peter Zajc, *"Slovenian banks a decade later"*.  
Erich Hampel, *"Successful banking in an enlarged EU"*.  
Jens Köke & Michael Schröder, *"The future of Eastern European capital markets"*.

---

The above publications are available free of charge from:

#### European Investment Bank

Economic and Financial Studies

100, boulevard Konrad Adenauer  
L-2950 Luxembourg

 [infoefs@eib.org](mailto:infoefs@eib.org)  (+352) 4379-8895

[www.eib.org/efs](http://www.eib.org/efs)

## EIB Papers 2000 – 2001

### Volume 6, Number 2, 2001: The 2001 EIB Prize

**First Prize;** Erich Gundlach & Luder Wößmann, *"Better school for Europe"*.

**Second Prize;** Jan Fidrmuc, *"Democracy in transition economies: Grease or sand in the wheels of growth"*.

**Third Prize;** Gilles Duranton & Vassilis Monastiriotis, *"The evolution of the UK North-South divide: Should we mind the gap?"*.

### Volume 6, Number 1, 2001: European economic growth: The impact of new technologies

Christopher Hurst & Kristian Uppenberg, *"Wonders will never cease: Prospects for a new economy in Europe"*.

Paul David, *"Productivity growth prospects and the new economy in historical perspective"*.

Patrick Vanhoudt & Luca Onorante, *"Measuring economic growth and the new economy"*.

Danny Quah, *"ICT clusters in development: Theory and evidence"*.

Hermann Hauser, *"Nothing ventured, nothing gained"*.

Andrew Gillespie, Randal Richardson & James Cornford, *"Regional development and the new economy"*.

Luc Soete & Bas ter Weel, *"Computers and employment: The truth about e-skills"*.

Harald Gruber, *"The diffusion of information technology in Europe"*.

### Volume 5, Number 2, 2000: Regional convergence in Europe: Theory and empirical evidence

Daniel Mouque, *"A survey of socio-economic disparities between the regions of the EU"*.

Angel de la Fuente, *"Convergence across countries and regions: Theory and empirics"*.

Jacques-François Thisse, *"Agglomeration and regional imbalance: Why? And is it bad?"*.

Philippe Martin, *"The role of public policy in the process of regional convergence"*.

Patrick Vanhoudt, Thomas Mathä & Bert Smid, *"How productive are capital investments in Europe?"*.

### Volume 5, Number 1, 2000: Regional development in Europe: An assessment of policy strategies

Christopher Hurst, Jacques-François Thisse & Patrick Vanhoudt, *"What diagnosis for Europe's ailing regions?"*

Yannis Ioannides & George Petrakos, *"Regional disparities in Greece: The performance of Crete, Peloponnese & Thessaly"*.

Rodolfo Helg, Giovanni Peri & Gianfranco Viesti, *"Abruzzo & Sicily: Catching up and lagging behind"*.

Andrés Rodríguez-Pose, *"Economic convergence and regional development strategies in Spain: The case of Galicia & Navarre"*.

Margarethe Quehenberger, *"Lessons from Eastern Germany"*.

Bertrand Rossert, *"Contributing to regional development through project selection"*.

---

The above publications are available free of charge from:

#### European Investment Bank

Economic and Financial Studies

100, boulevard Konrad Adenauer

L-2950 Luxembourg

 [infoefs@eib.org](mailto:infoefs@eib.org)  (+352) 43 79-8895

[www.eib.org/efs](http://www.eib.org/efs)



## EIB Papers 1998 – 1999

### Volume 4, Number 2, 1999: The 1999 EIB Prize

**First Prize;** Philippe Martin, *"Are European regional policies delivering?"*.

**Second Prize;** Rudi Dornbusch & Francesco Giavazzi, *"Hard currency and sound credit: A financial agenda for Central Europe"*.

**Third Prize;** Jordi Gual, *"Deregulation, integration and market structure in European banking"*.

**Special Topic Prize;** Jens Verner Andersen & Jørn Henrik Rasmussen, *"Solving the unemployment puzzle in Europe"*.

### Volume 4, Number 1, 1999: European banking after EMU

Christopher Hurst & Rien Wagenvoort, *"European banking after EMU"*.

Martin Brookes, *"The impact of EMU on portfolio management"*.

Graham Bishop, *"New capital market opportunities in Euroland"*.

Colin Mayer, *"European capital markets: Competition between systems"*.

Luigi Spaventa, *"Comments on the future of the EMU capital markets."*

Daniel Gros & Karel Lannoo, *"The structure of financial systems and macroeconomic instability"*.

Clas Wihlborg, *"Supervision of banks after EMU"*.

Christopher Hurst, Eric Perée & Mireille Fischbach, *"On the road to wonderland? Bank restructuring after EMU"*.

Rien Wagenvoort & Paul Schure, *"Who are Europe's efficient bankers?"*.

Philip Molyneux, *"Increasing concentration and competition in European banking: The end of anti-trust?"*

Jean Dermine, *"The case for a European-wide strategy"*.

Ingo Walter, *"Financial services strategies in the euro-zone"*.

### Volume 3, Number 2, 1998: International financial institutions in the 21st century

Christopher Hurst & Eric Perée, *"Only a mid-life crisis? The future for IFIs in an integrated world"*.

Michael Klein, *"One hundred years after Bretton Woods: A future history of the World Bank Group"*.

Jannick Lindbaek, Guy Pfeffermann & Neil Gregory, *"The evolving role of multilateral development banks: History and prospects?"*.

Jean-François Rischard, *"Multilateral development banks and global public networks: Speculations for the next century"*.

Pasquale Scandizzo, *"The purpose, management and governance of IFIs: A case study of ambiguity"*.

Nicholas Stern & Hans Peter Lankes, *"Making the most of markets: The role of IFIs"*.

Joseph Stiglitz, *"IFIs and the provision of international public goods"*.

A discussion between Alfred Steinherr & Jacques Attali.

### Volume 3, Number 1, 1998: Employment in Europe

Christopher Hurst, *"A discussion of the papers and an overview of the role of investment"*.

Jørgen Elmeskov, *"The unemployment problem in Europe: Lessons for implementing the OECD Jobs Strategy"*.

Gilles Saint-Paul, *"Does technical progress create unemployment?"*.

Michael Burda, *"The consequences of EU enlargement for Central and Eastern European labour markets"*.

José Viñals & Juan Jimeno, *"The impact of EMU on European unemployment"*.

Jacques Drèze, Alain Durré & Henri Sneessens, *"Investment stimulation, with the example of housing"*.

Ole Rummel & Thomas Schröder, *"The employment effects of investment projects"*.

Pascale Viala, *"Financing young and innovative enterprises in Europe: Supporting the venture capital industry"*.

---

The above publications are available free of charge from:

#### European Investment Bank

Economic and Financial Studies

100, boulevard Konrad Adenauer

L-2950 Luxembourg

 [infoefs@eib.org](mailto:infoefs@eib.org)  (+352) 43 79-8895

[www.eib.org/efs](http://www.eib.org/efs)

## EIB Papers 1996 – 1997

### Volume 2, Number 2, 1997: The 1997 EIB Prize

**First Prize;** Bernadette Frédérick & Peter Vanden Houte, *“What is the optimum strategy for freezing exchange rate parities at the start of EMU”*.

**Second Prize;** Jean Dermine, *“Eurobanking, a new world”*.

**Joint Third Prize;** Daniel Gros, *“The dynamics of European integration”*.

**Joint Third Prize;** Martin Kolmar, *“On the efficiency of national social security systems in the European Union”*.

**Awards for Authors under 30** for essays by Pablo de Andrés Alonso & Félix J. Lopez Iturriaga; Volker Köllmann & Andri Kopperschmidt; and Jérôme Vacher.

### Volume 2, Number 1, 1997: Banking in an uncertain world

Edward Gardener & Philip Molyneux, *“The too-big-to-fail doctrine revisited”*.

Agnès Belaisch, *“High real interest rates: A long-term risk?”*.

Pier-Luigi Gilibert, *“Expected loss as a credit risk measure”*.

Jacques Girard & Christopher Hurst, *“The capital structure of private infrastructure projects and the risk of default”*.

Kristian Kjeldsen, *“Value-at-risk and capital adequacy: The challenge for financial regulation”*.

### Volume 1, Number 1, 1996: Special Issue on EMU

Daniel Gros, *“The steeple chase towards EMU”*.

Ole Rummel, *“On the feasibility of EMU with diverse European economic transmission mechanisms”*.

Bernhard Winkler, *“Is Maastricht a good contract?”*.

Paul de Grauwe, *“How to fix conversion rates at the start of EMU”*.

Luis Gonzalez-Pacheco & Alfred Steinherr, *“A proposal to stabilise the value of the ECU”*.

---

The above publications are available free of charge from:

#### European Investment Bank

Economic and Financial Studies

100, boulevard Konrad Adenauer

L-2950 Luxembourg

 [infoefs@eib.org](mailto:infoefs@eib.org)  (+352) 43 79-8895

[www.eib.org/efs](http://www.eib.org/efs)



Talous- ja rahoitustutkimukset  
*Studi economici e finanziari* Ekonomiska och fin  
Økonomiske og finansielle undersøgelser  
*Wirtschafts- und Finanzstudien* Talous- ja raho  
*Gazdasági és pénzügyi tanulmányok* Estudos Econ  
Studi economici e finanziari  
*Études économiques et financières* Ekonomiska och fin  
Estudios económicos y financieros  
*Wirtschafts- und Finanzstudien Wi*  
*Estudios económicos y financieros* Economic and Financial  
*Estudios económicos y financieros*  
Οικονομικές και χρηματοοικονομικές μελέτες  
*Majandus- ja finantsanalüüsid* Økonomiske o  
Estudios económicos y financieros  
*Études économiques et financières* Estu  
Ekonomikos ir finansų studijos  
Οικονομικές και χρηματοοικονομικές μελέτες  
*Talous- ja rah*  
Estudos Económicos e Financeiros  
Ekonomické a fi  
Economic  
*Economic and*  
Estudios económicos  
*Etudes économiques*  
Επίσημο  
*Étude*  
Οικονομικές και χρ  
he en financière studies  
*Talous- ja*  
*Études économiques et financières*  
*Studi econo*  
*Talous- ja rahoitustu*  
*Analisy Ekonomiczne i Fina*  
Økonomiske og  
Ekonomiska och finansiella utredningar  
*Études économiques et financière*  
Estudos Económicos e Financeiros  
*Economic and Financial Studies* Talous- ja rahoitu  
*Estudios económicos y financieros*  
*Talous- ja rahoitustutkimukset* Ekonon  
*Talous- ja rahoitustutkimu*  
*Wirtschafts- und Finanzstudien* Estudos Econ  
Ekonomické a finančné štúdie  
*Wirtschafts- und Finanzstudie*  
*Études économiques et financière* Økonomis  
*Ekonomiske in finančné študije* Estudios económic  
*Talous- ja rahoitustutkimukset*  
*Estudios económicos y financieros* Ekonomiska o  
Studi economici e finanziari  
Οικονομικές και χρ  
*Wirtschafts- und Finanzstudien*  
*Étude*  
Studji ekonomiçi u finanzjarji  
*Études économiques et financière*  
Studi economici e fir  
Οικονομικές και χρηματοοικονομικές μελέτες  
*Talous- ja rahoitustutkimuks*  
Estudos Económicos e Financeiros  
*Economic and*  
*Ekonomikas un finansu analīze* Economische en financiële studies  
*Studi economici e finanziari* Økonomiske og finansiell  
*Economic and Financial Studie*  
Estudios económicos y financieros  
*Studi econo*  
*Majandus- ja finantsanalüüsid* Økonomiske  
Οικονομικές  
*Étu*  
*Gazdasági és pénzügyi tanulmányok* Økonomiske o  
*Economische en financiële s*  
*Wirtschafts- und Finanzstudien*  
Οικονομικές και χρηματοοικονομικές μ  
*Estudios económicos y fia*  
Economische en finanzielle  
*Studi economici e finanziari*

ISSN 1830-3676

**EIB PAPERS**



**European  
Investment  
Bank**

**Economic and Financial Studies**

100, boulevard Konrad Adenauer

L-2950 Luxembourg

[www.eib.org/efs](http://www.eib.org/efs)

ISBN 92-861-0326-3



9 789286 103261