

## ABSTRACT

*Public-private partnerships have emerged as an alternative to traditional public procurement in financing and providing infrastructure services. This paper considers public-private partnerships as another form of public sector intervention in the economy. It analyses the microeconomic pros and cons of public-private partnerships by identifying the sources of both higher benefits and higher costs associated with them, as compared to traditional public investment. Such analysis allows the outlining of the conditions under which public-private partnerships may be the optimal form of public sector intervention. In addition, the paper considers public-private partnerships from a macroeconomic perspective, focussing on their impact on fiscal policy and aggregate growth.*

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# How expensive are cost savings?

## On the economics of public-private partnerships

### 1. Introduction

The emergence of public-private partnerships (PPPs) in the United Kingdom (UK) in the early 1990s constituted a structural change in the financing and provision of infrastructure services, at least qualitatively speaking. The mobilisation of private finance to fund infrastructure projects was not entirely unheard of in the pre-PPP Europe; after all, there had been a long tradition of concession agreements in countries like France. However, the establishment of an interactive partnership between the public and private sectors, characterised by the distribution of risks and rewards between them, was an innovation whose spread into and across the continent seems only to have started gathering pace.



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There are diverging views about why PPPs emerged and gained popularity. On the one hand there is the view that they are but a vehicle for the government to shift investment spending off its own books, thereby creating room to spend on other, perhaps politically higher-yielding items, while still getting the infrastructure supplied. A less cynical variant of this view would have it that PPPs allow governments constrained by binding fiscal deficit rules to safeguard the execution of infrastructure projects that would otherwise never materialise, or would only materialise with a delay.

In contrast to the view that the emergence and popularity of PPPs derive from fiscal policy considerations, there is the argument that PPPs offer real benefits in terms of productive efficiency at the project level. In other words, the involvement of the private sector on a partnership-basis would allow the construction and operation of a road, tunnel, school or any other piece of infrastructure more cheaply than traditional public sector provision. According to this view, the microeconomic benefits of PPPs justify their existence and expansion.

There is undoubtedly something to both these polar views. It is easy to see that PPPs have an aspect of short-term political attractiveness to them and that there have been instances where the decision to set up a partnership has been dictated by such considerations. At the same time, it is not implausible to maintain that the provision of an infrastructure service could become more efficient if it were shifted from the public sector to the private sector, with the public sector remaining the ultimate guardian of its availability and quality.

The purpose of this paper is to assess the economic pros and cons of PPPs and to thereby examine the underpinnings of the divergent views on their *raison d'être*. To this end, the issues that will be addressed in what follows include the economic roles of the public sector and private sector partners, respectively (Sections 2 and 3); possible sources of higher cost-efficiency, but also higher costs in a PPP than in traditional public service provision (Sections 4 and 5); and macroeconomic implications of PPPs, including their fiscal impact and its effect on policymakers' incentives to resort to a PPP (Section 6).

### 2. Public intervention and allocative efficiency

For a PPP to make sense from an economic perspective, there must be an economic justification for the involvement of both public and private sectors in the partnership. This chapter recapitulates the case for public sector involvement in economic activity in general and in the provision of

infrastructure services in particular and also discusses the various forms the public sector's involvement can take. The economic case for private sector involvement in a PPP will be assessed in subsequent chapters.

**Public intervention can  
in some cases improve  
society's welfare.**

In general, competitive markets free of public sector intervention provide the most efficient way to allocate scarce economic resources to competing uses. There are, however, some cases where markets fail to supply the socially desirable quantity or quality of a good or a service, and in such cases intervention by the public sector can enhance the society's welfare. Cases where markets fail and public intervention is therefore justified are discussed briefly below.<sup>1</sup>

**Market power and natural monopoly.** Whenever a producer has the power to influence price-setting in a market, the market will be characterised by a price above the social optimum and by a quantity transacted below the social optimum. A special case of such a situation can occur in naturally monopolistic industries with high fixed costs of production. When the fixed costs of production are high, the average cost of production declines with the quantity produced while staying above the marginal cost of production for the demanded range of output. In other words, the production is characterised by economies of scale, which makes it unattractive for other potential producers to enter the market. The incumbent producer will charge a price above the social optimum (the marginal cost of production) to cover his costs, and the quantity transacted will therefore be below the social optimum. This is typically the case in network industries such as power transmission, where the fixed cost of the transmission network is so high as to render the production of power transmission services profitable for only one producer, who will thus become a 'natural' monopolist in supplying the market.<sup>2</sup>

**Externalities.** The production or consumption of a good or service may have spillover effects (either costs or benefits) on third parties, and unless these spillover effects are reflected in the price of the good or service in question, the quantity transacted will be socially suboptimal. For instance, if traffic on a highway causes noise and pollution that reduce the value of houses adjacent to it, and if the users of the highway are not tolled so as to allow the house owners to be fully compensated for their economic loss (i.e., if the private cost of using the highway is lower than the social cost), the amount of traffic will be too high from a social perspective.<sup>3</sup>

**Public goods.** Some goods and services are characterised by non-excludability and non-rivalry in consumption; that is, once the good or service is produced, individual consumers cannot be excluded from consuming it and, moreover, consumption by one individual does not reduce consumption possibilities for others. Consequently, the marginal cost of production is zero, as is the socially optimal price. Clearly, no private firm would enter the market and, without public sector intervention, there would be no supply of the public good. A classical example of a public good is law enforcement: jailing criminals benefits the whole society, but a private entrepreneur putting

1 For a more formal discussion, see any intermediate or advanced textbook in microeconomics or public economics. Examples include Varian (1992) and Stiglitz (1988). A concise overview is included in Brealey *et al.* (1997).

2 An alternative way to define a natural monopoly is to require the simultaneous presence of both sunk costs (representing, e.g., the initial investment in a power transmission network) and a subadditive cost function (meaning that it is cheaper to produce any quantity of output from a single source than from two or more separate sources).

3 According to the so-called Coase Theorem, the presence of unambiguous property rights can alleviate market failures due to externalities. Specifically, any externality can in principle be internalised through appropriate price-setting and transfers whereby, e.g., those causing negative externalities compensate those suffering economic loss due to them. To make such an internalisation possible, however, property rights must be clear enough to allow the assignment and payment of the appropriate amount of compensation.

criminals behind the bars would not be able to collect charges from individuals in the society to finance his undertaking.

In all cases mentioned above public sector intervention would aim at improving the economy's efficiency to allocate resources. Public intervention may, however, be justified even when markets generate efficient outcomes. This is the case with so-called merit goods and also on grounds on equity, as opposed to efficiency. Merit goods are defined as goods that individuals do not consume in sufficient quantity to ensure their own welfare. Education and health care are typical examples: individuals may be myopic and therefore acquire too little education or health care.<sup>4</sup> Through compulsory education, for instance, public intervention may increase both individual and social welfare. Education and health care are also areas where public sector intervention has taken place on equity rather than efficiency grounds. It has been perceived socially important that all individuals have equal access to education and health care services, and the public sector has intervened to improve the efficiency of resource distribution (as opposed to allocation) by, among other things, developing schemes to allow all individuals to access these services.

As illustrated in the examples above, market failures are a common feature of infrastructure and public services. Moreover, in many cases there are multiple market failures characterising a specific infrastructure or public service. Consider transport infrastructure: a road can constitute a natural monopoly because of the high fixed costs involved in its construction. The construction and use of roads is associated with externalities (noise, pollution, congestion, changes in the value of adjacent land). Furthermore, to the extent that collecting tolls from road users (i.e., to exclude individual consumers) is an expensive exercise, it is also a quasi-public good.<sup>5</sup> Similarly for education: it has some characteristics of a public good; it generates positive externalities for the society; and it is a merit good with strong equity arguments for public intervention.

Given the close association between infrastructure and market failures, public intervention has traditionally been an intrinsic characteristic of infrastructure provision. This intervention can take different forms, as exemplified below.<sup>6</sup>

*The public sector can use a number of instruments to intervene.*

**Regulation.** To prevent a natural monopolist from abusing his market power to the detriment of society, while allowing him to recuperate his costs, the government can regulate the tariffs the monopolist can charge his clients. Alternatively, the government can regulate the quantity of pollution cars or factories are allowed to emit, thereby alleviating negative externalities. Or the government may regulate the quality of educational services provided by private schools and universities. In all cases, the government needs to be able to monitor compliance and sanction non-compliance for regulation to be effective.

**Taxes and subsidies.** The government can tax activities that cause negative externalities, thereby raising the marginal cost of production to the socially optimal level. Alternatively, the government can ensure the socially optimal provision of public goods or the socially optimal consumption of merit goods by subsidising them. In both cases, the government needs to be able to determine the economically optimal level of taxes or subsidies as well as monitor and sanction their collection and use.

<sup>4</sup> Both education and health care can also generate positive externalities, but that is separate from them being merit goods.

<sup>5</sup> At times of light traffic the use of a road by one driver does not lessen the consumption possibilities of other drivers, but at times of congestion this non-rivalry in consumption no longer applies.

<sup>6</sup> For further examples, see also Brealey *et al.* (1997).

**Public production and ownership.** In many infrastructure and public service sectors governments have chosen to nationalise the entire production and supply of the services concerned. For instance, the public sector owns road and rail networks, schools, hospitals, and prisons, and most, if not all, employees involved in the production of these services are on the public sector's payroll. While ownership can arguably reduce monitoring costs to the public sector, it is associated with a host of other costs related, among other things, to the financing, construction, operation, and maintenance of the underlying assets.

The above discussion on public intervention to rectify market failures suggests two conclusions that seem trivial at the outset but that, in fact, constitute the basis for assessing the economic case for involving the private sector in the provision of goods or services such as infrastructure and public services that are characterised by market failures.

First, public intervention can take many forms. The goal of intervention is to increase the society's welfare by rectifying a market's failure to allocate resources efficiently or to reach a desirable distribution of income. A particular market failure, or multiple market failures in the case of many infrastructure and public service markets, could conceivably be eliminated or alleviated equally effectively by means of more than one instrument for public intervention. Public ownership is just one among several possible instruments, and there is no *ex ante* reason to believe that it is economically superior to other forms of intervention capable of delivering the same improvement in economic efficiency (or equity). Consequently, there is a case for looking beyond the achievement of allocative efficiency when considering how the public sector should intervene.

Second, intervention is costly and distortionary. Public intervention may bring benefits in terms of improved resource allocation or equity in the economy, but these benefits come at a cost. The net benefit of public intervention to the economy depends both on the extent to which a market failure is alleviated and on the costs the chosen form of intervention causes to the economy (distortions) and the public sector. If several instruments of public intervention could be used to eliminate a particular market failure, the optimal instrument is the one associated with lowest overall costs, including distortions.

In other words, when public intervention is justified to correct a market failure, the optimal form of intervention needs to be assessed in terms of the economic costs and benefits the various alternatives can offer. Before we can proceed to an assessment of PPPs from this perspective, we need to specify the relevant characteristics of a PPP that determine its economic costs and benefits.

### **3. Economic characterisation of a PPP**

The aim of this section is to pin down a PPP from an economic perspective. Such partnerships come in a wide variety of types and forms (see Box 1.), and it has therefore proven difficult to come up with a universally agreed and applicable definition of a PPP. Nevertheless, it is possible to suggest a set of fundamental economic features that are shared by most such arrangements to deliver infrastructure and public services.

To be clear, the rationale for spelling out the key economic characteristics of PPPs is to facilitate the analysis of their economic pros and cons, not to produce an exhaustive list of criteria for an arrangement to be classified as a PPP. As such, the set of characteristics should highlight the difference between a PPP and outright privatisation, and it should allow the comparison of PPPs

*Public intervention  
comes with costs as well  
as benefits.*

with traditional public provision. Such a comparison, in turn, will allow the assessment of the optimal form of public intervention, as discussed in the previous section.

### **Box 1. Different types of arrangements labelled ‘public-private partnerships’**

PPPs have assumed a range of different contractual and legal set-ups. The most typical one is a long-term service contract between the public sector and a private partner (a private firm or a special purpose vehicle) whereby the public sector partner commits to paying the private partner for the delivery of an (infrastructure) service (e.g., a motorway) over a long and pre-specified period of time (up to 30 years), with the private partner responsible for financing and producing the service using his own assets and for carrying some of the associated risks. An alternative arrangement, also sometimes dubbed a PPP, is an operating lease or a concession granted by the public sector to a private partner to use a public infrastructure asset (e.g., a tunnel) to provide associated services to the public. Again, the private partner carries some of the risks related to construction and operation, but he may finance his undertaking either by collecting user fees or by a combination of user fees and budgetary support. Finally, joint ventures to produce marketable public services (e.g., air traffic control) are also in some cases called PPPs.

The private partner may be in charge of any of the following main phases or aspects of the project: Design, Build, Develop, Finance, Operate, Maintain, Own (or Lease or Rent), and Transfer. Exaggerating somewhat, it may thus be possible to encounter a PPP on a DBDFOMOT-basis. Normally, the private partner would, however, assume the responsibility and risk for Design, Build, Finance, Operate, and Own aspects of a project.

Sources: Allen (2001), European Commission (2003a) and (2003b), IMF (2004a), Pollitt (2000), PROFIT (2001), United Nations Economic Commission for Europe (2000).

In distinguishing a PPP from other forms of infrastructure or public service provision, its characterisation must relate to the economic rationale for the involvement of both public and private sector partners in the service provision. As argued in the previous section, the rationale for public sector involvement must arise from the presence of a market failure. Consequently, a PPP would seek to alleviate a market failure inherent in the provision of infrastructure or public services exactly the same way as traditional public provision does. In addition, the role of the private sector partner must add some value in its own right for a PPP to be economically superior to traditional public provision, and it must not give rise to costs that would exceed the associated benefit.

The way private involvement could conceivably add value is by improving the productive, or technical, efficiency in the production and supply of the service. It has been suggested that such efficiency gains could arise from three specific sources in the context of PPPs, namely from the specific ownership structure of the assets needed to produce and provide the service in question; from the bundling together of the different phases of service production and provision; and from the appropriate sharing of risks and associated rewards inherent in the production and provision of the service.<sup>7</sup>

*In a PPP, the public sector safeguards allocative efficiency and the private sector productive efficiency.*

<sup>7</sup> See, among others, Allan (1999), Allen (2001), Debande (2002), De Fraja (2002), European Commission (2003a) and (2003b), Grout (1997), Grout and Stevens (2003), Hart (2003), HM Treasury (2000) and (2003), IMF (2004a), Jenkinson (2003), Lundsgaard (2002), Pollitt (2000), PROFIT (2001), Schleifer (1998), and United Nations Economic Commission for Europe (2000).

***A PPP is distinctly different from both traditional public provision and privatisation.***

Consequently, the following list should represent something of a consensus view of the key economic features that tend to characterise arrangements labelled PPPs: (i) a PPP serves a public policy objective, such as the provision of infrastructure and public services characterised by market failures; (ii) in a PPP, the public sector enters a long-term arrangement with a private sector partner to ensure the supply of services (output); (iii) the private sector partner supplying the services finances and, in many cases, owns the associated (often specific) asset to produce such services (input), with the different phases of asset construction and operation and even service provision bundled together; and (iv) each risk is transferred to the party best able to manage or bear it.

Based on these characteristics, how does a PPP differ from traditional public and private provision, respectively? Traditional public provision would not encompass private ownership of the assets required to produce the service in question, nor would it involve the kind of long-term risk-sharing that a PPP does. While traditional public provision may involve some risk-sharing—for instance, a (local) government may contract out the construction of a school to a private building firm, with the firm carrying the risks associated with the construction phase—such risk-sharing does not cover the supply phase and is therefore not inherent to the provision of the service (output) in question.

Similarly, while private provision would be characterised by private ownership of the input assets, it would not fulfil any other criteria above. Most importantly, privatised activities are not expected to serve a public policy function and do not involve the kind of long-term risk-sharing that a PPP does.

The list above can also be used to identify arrangements that would in general not qualify as PPPs. In particular, whenever either the public or the private sector partner carries all of the risks related to production and supply, there would be no partnership in the current sense of the word. Contracting out the construction of an infrastructure asset or outsourcing the provision of auxiliary services to the private sector (such as food supply or cleaning services in schools, hospitals, or prisons) would not qualify as a PPP as long as the public sector owns the assets and carries the risks of producing and supplying the public service in question. Similarly, a concession agreement whereby the private sector partner owns and runs a tunnel or a toll road and where the public sector carries no risk at all would also not be a PPP. Finally, even when all criteria above appear to be fulfilled, risk-sharing may be watered down by a government guarantee on the private borrowing to finance the construction of the asset to produce the infrastructure or public service; after all, a guarantee implies that the public sector is the ultimate risk-carrier in the project.

We have so far asserted conceptually what might make a PPP economically superior to traditional public provision, but it remains to be assessed how and under what conditions such superiority could arise. This will be the topic of the following section.

#### **4. Incentives and productive efficiency**

The conclusion so far is that, to be economically sensible, a PPP has to generate a combination of allocative efficiency and productive efficiency that is superior to traditional public provision, bearing in mind that the public sector may be prepared to trade off some allocative efficiency to obtain higher productive efficiency. In the context of PPPs the term customarily used to describe productive efficiency is 'value for money'.<sup>8</sup> Hence, the creation of additional value for money as

<sup>8</sup> The definition and measurement of value for money is discussed in detail by Grout (this volume).



compared with traditional public provision—while not unduly compromising allocative efficiency—would justify the involvement of the private sector in the partnership.

It was suggested in the previous section that three key sources of value for money creation in a PPP relate to asset ownership, bundling, and risk-sharing. After a brief survey of why productive efficiency can differ between the public and the private sectors in the first place, this section seeks to clarify why and when ownership, bundling and risk-sharing can affect productive efficiency.

#### 4.1 Ownership and incentives

Both in the public and private sector, the production process is plagued by incentive problems due to different objectives of and asymmetric information between the ‘principal’ (the government and the shareholders of the private firm) and the ‘agent’ (the head of the public agency and the manager of the private firm).<sup>9</sup> However, as summarised by Brealey *et al.* (1997), there are a number of reasons to believe that it is easier for the private firm to deal with such incentive problems (also called agency problems) and that it will therefore lose less than the public agency in terms of productive efficiency. Notably, the public sector principal tends to be more heterogeneous and dispersed; have more ambiguous objectives, with no clear measure against which to assess his performance; and is more likely to face soft budget constraints.

For all these reasons, the private sector tends to exhibit higher productive efficiency than the public sector. However, even if one gives the public sector the benefit of the doubt and assumes that both sectors face equal agency problems and that both are equally able to deal with them, the case will be made in this section that the private sector can still be superior in terms of productive efficiency and, moreover, that the private sector’s superior productive efficiency can be—under certain conditions—successfully combined with public intervention to safeguard allocative efficiency.

As a starting point, let us separate the provision of a service from the good (asset) needed to produce that service. Virtually all markets for infrastructure and public services (power transmission, transport, law enforcement, etc.) are, indeed, markets for services, where government intervention is deemed necessary to ensure the provision of the socially desirable quantity and quality. Most of such services require the existence of productive assets (power transmission network, motorway, prison, etc.) that are specific to the production of the service in question; that is, they cannot be readily used for other purposes.

**Specific assets are needed to produce infrastructure and public services.**

Governments’ role in these markets has traditionally encompassed both the provision of the service in question and the ownership of the underlying asset. But is this the optimal form of intervention? While it is clear that the markets for most of the services mentioned above are plagued by various failures, it is by no means clear that alleviating of those failures would always require government ownership of the underlying asset. Therefore, there is a case for considering whether government intervention in the provision of a service to improve allocative efficiency could be combined with the promotion of productive efficiency through private ownership and operation of the asset.

As a benchmark, let us first establish the conditions under which the ownership of the asset does not make any difference. Consider the commissioning of the operation and maintenance of a pre-existing tunnel by the public sector to an agent, be it a public agency or a private firm. For the time being, ignore

<sup>9</sup> See, e.g., Laffont and Martimort (2002) on principal-agent models more generally.



the question of who originally constructed, financed, and owned the tunnel—let it just be there. The public sector is interested in providing the society with tunnel services of a certain quality (output), not in the tunnel itself (input), so it wishes to set up a contract covering the long-term delivery of tunnel services alone. Assume that agency problems are equally severe in the public and private sectors. Assume also that the public sector is able to contract out the project in a way that allows it to exactly specify, monitor, and enforce the quality of tunnel services to be provided under all circumstances and that transaction costs relating to contracting are independent of the agent. Under these assumptions, the public sector principal is able to secure the same level of both allocative efficiency (due to same service quality) and productive efficiency (due to same agency problems) regardless of whether the agent is a public sector agency or a private firm.

**PPPs are prone  
to contractual  
incompleteness.**

However, the public sector principal can seldom specify and verify the output sufficiently well in order to make the agent provide the desired service quality under all possible circumstances. Instead, the principal will need to enter an incomplete contract with the agent, which specifies the provision of a service only to an incomplete extent because of informational and monitoring problems as well as genuine uncertainty about the future. This is particularly the case with PPPs, as they are set up to provide services, which are often hard to measure and monitor, and as they have long contract periods, which makes them susceptible to a great deal of uncertainty.

To illustrate contractual incompleteness, consider the example of the tunnel: the principal can ask the agent to provide uninterrupted tunnel services with certain safety standards (e.g., lighting and emergency exits), and he can monitor the condition of the tunnel and compliance with the safety standards, but he cannot specify how the agent should respond to all possible events that may have a bearing on service quality, i.e., on the output that the initial contract focusses on. Unanticipated future developments, such as technical innovation in the area of tunnel safety, could improve service quality if the agent invested in it. On the other hand, investment reducing production costs, for instance investment in cheaper methods of monitoring the condition of the tunnel, would improve productive efficiency, but might also have a detrimental impact on service quality (i.e., allocative efficiency).

How asset ownership affects the agent's incentives to make investments that have a bearing on allocative efficiency (service quality) and productive efficiency, and what asset ownership structure is therefore desirable from the society's perspective are clearly key issues in assessing the economic pros and cons of PPPs. These questions will therefore be considered below in some detail. The exposition emphasises contractual incompleteness as a possible source of inefficiency, with references made to another branch of literature that focusses on asymmetric information rather than contractual incompleteness.

To start with, it can be shown that when contracts are incomplete, incentives to promote productive efficiency do depend on asset ownership, and that private ownership can be superior in terms of productive efficiency. This conclusion was articulated by Hart *et al.* (1997) and Schleifer (1998), drawing on earlier work by Grossman and Hart (1986), Hart and Moore (1990), and Hart (1995). The fundamental insight paving the way to this conclusion is that the owner of the asset has the right to control its usage under all circumstances (i.e., he has 'residual control rights'), and any changes in this respect require the owner's consent. This is especially important when contracts are incomplete because ownership embeds bargaining power in non-contractible situations. If the owner wishes to make a new investment that would cut production costs without affecting service quality, he can

do so without renegotiating the contract, which only covers service provision (output). However, if an operator who is not the owner of the asset wishes to make the same investment, he needs the owner's consent, which, in turn, calls for a renegotiation of the contract. Therefore, the owner-operator has stronger incentives to enhance productive efficiency.

Consequently, if the above tunnel were owned and operated by a private firm, the latter would have the incentives to invest in improving the efficiency of supplying tunnel services as it could pocket the gain without the public sector's consent. On the other hand, if the tunnel were owned by the public sector, the latter would demand to approve any such investment in cost reduction. In this case, both a private tunnel operator and a public agency running the service would need to renegotiate the service delivery contract in order to implement the cost reduction; moreover, the public sector owner would extract its own share of the gain in the renegotiation process. This would weaken the incentives to improve productive efficiency.<sup>10</sup>

The need to seek the owner's consent for any efficiency-enhancing investment also implies that the public sector cannot set up a contract for the manager of a public agency that would generate the same level of productive efficiency as private ownership. The manager would need to negotiate every such investment with his principal, thereby losing at least part of the gains from the investment. How much the public sector principal-owner extracts from such gains depends on his ability to replace the manager of the public agency. If the manager is fully replaceable, the principal can extract the entire gain by replacing the manager with one assigned to implement the efficiency-enhancing investment. In this case the incumbent manager has no incentives at all to undertake such investment, since it would only lead to his replacement. Conversely, if the manager is irreplaceable, he can pocket the gain, but he will still need to get his principal's agreement for the investment.

The interaction between investment in productive efficiency (cost-cutting) and service quality (innovation) may weaken the case for private ownership. If the contract concerning service quality is incomplete because it cannot be unambiguously measured and monitored, and if the agent's investment in cost-cutting has a detrimental impact on the quality of output, the agent will invest too much in cutting his costs from the social perspective.<sup>11</sup> A classic example is prison services, as illustrated by Hart *et al.* (1997). Their quality is difficult to measure and may fall below a socially acceptable level if the agent's incentive to cut costs cannot be controlled. In the context of the tunnel example, the private owner-operator's efforts to cut costs by employing cheaper methods to monitor the condition of the tunnel may also have a negative impact on service quality since deterioration may go unnoticed, thus reducing service quality either directly or indirectly through an increase in the risk of tunnel usage. Note, however, that the desired service quality can always be achieved under public ownership as the public sector can choose not to agree to any investment in cost-cutting that would reduce service quality. The price for safeguarding service quality in this case is, obviously, lower productive efficiency; in other words, under public ownership there is too little investment in productive efficiency, while under private ownership there is too much.

***The private sector's quest for productive efficiency may compromise service quality.***

10 This reflects the more general problem of hold-up in relation-specific investment under incomplete contracts. To the extent that an operator expects the owner to renegotiate the contract after the operator has made some relation-specific investment, he will invest suboptimally little so as to lessen his own loss from the renegotiation. As discussed in the main body of the text, ownership transfer to the operator can alleviate the hold-up problem. See, e.g. Hart and Moore (1990).

11 Hart *et al.* (1997) point out that even if effort to cut costs did not reduce service quality, it could have an indirect negative impact by raising the marginal cost of effort to invest in quality improvement (the so-called effort substitution problem). In other words, the profitability of cost-cutting may induce the private partner to focus too much on it and too little on quality improvement.

What about the incentives to invest in enhancing service quality, for instance by adopting technical innovation? Given that the contract is on service provision, any change with respect to service quality would necessitate its renegotiation, regardless of who owns the asset. Therefore, a private contractor would always receive the same payoff from renegotiating the contract and implementing the quality-enhancing investment regardless of whether he owns the asset or not. That he would need to share the gain from the investment with the public sector reduces his incentives to invest in better service quality; hence, there will be suboptimally little investment in service quality. A public agent would have even weaker incentives to invest in improving service quality, as the public sector principal can replace him by another one who makes the quality-enhancing investment while leaving the entire payoff with the principal.

To sum up broadly the results so far, it would seem that contracting out a public service to a private owner-operator is economically justified when the quality of the output is readily contractible or when improvement in productive efficiency does not impair service quality, and when the absorption of technical innovation to improve productive efficiency is important (i.e., in sectors where technical progress is rapid). Under these conditions, the promotion of productive efficiency through private ownership and operation of the asset can be combined with safeguarding allocative efficiency (service quality). On the other hand, public ownership of the underlying asset would appear desirable when the quality of output is difficult to contract on and cost-reduction can have a detrimental impact on the quality; and when the adoption of technical innovation is unimportant. Then the attainment of the desired level of allocative efficiency requires sacrificing some productive efficiency.

## 4.2 Bundling and incentives

So far, the discussion focussed on the issue of who owns the asset needed to produce a public service, without considering the construction of that asset or any possible interaction between asset construction and service provision. **However, the essence of a PPP lies in the public sector's decision to purchase a service rather than an asset and to leave asset construction and service provision to a private partner.** Therefore, it needs to be considered what difference the bundling of asset construction and service provision can make, as compared to more traditional public service provision ('unbundling') whereby the public sector purchases an asset from one agent and contracts out service provision using that asset with another agent. The analysis below is based on Hart (2003).

***Bundling different phases of a project may reduce life-cycle costs.***

Take the earlier tunnel example, but consider now the difference between contracting out the construction and maintenance of the tunnel either separately or bundled together. To the extent that the same firm undertakes both the construction of a tunnel and its subsequent long-term operation, it may be able to make investments in the construction phase that will allow it to reduce maintenance costs in the operation phase and thereby enhance productive efficiency. In contrast, if two separate firms undertake the construction and operation phases, such investments will not be made in the construction phase and, consequently, productive efficiency will be lower.

To illustrate, let us consider two types of investment at the construction phase that improve productive efficiency, one with a negative and the other with a positive effect on service quality. In the tunnel context, the former could be the installation of durable but unsuitable lighting, and the

latter could be the installation of ‘cats eyes’ (reflective, uneven sidelines) that reduce maintenance costs while increasing tunnel safety.

When the construction and operation phases are bundled, the private partner will choose the optimal level of the quality-improving investment—after all, it will reduce his costs—but too much of the quality-shading investment, especially if the public sector principal cannot monitor service quality precisely. Unbundling, in contrast, will not lead to excessive quality-shading investment, as the construction firm ignores subsequent maintenance costs altogether and simply aims at fulfilling the construction contract. For the same reason, unbundling will yield too little quality-improving investment.

In other words, whenever there are positive externalities between the production and provision phases, whole-life-cycle contracting will enable their internalisation and thereby improve productive efficiency.<sup>12</sup> Bundling the phases together encourages up-front investment that will contribute to cost reduction over the asset’s life cycle. However, as cost reduction may have a detrimental impact on the quality of the service to be supplied, bundling is superior to unbundling only when the quality of the service can be sufficiently specified and verified—or at least more so than the quality of the asset needed to produce the service. This is arguably the case with a tunnel, where it is relatively speaking easier to contract on the service than on the underlying asset. On the other hand, this might not be the case with prison services, where the asset (a prison building) is relatively easy to contract on while the service itself (quality of prison services) is not.<sup>13</sup>

### 4.3 Risk transfer and incentives

It has been noted above that the long contract period and the difficulty of measuring and monitoring some infrastructure and public services to be supplied by PPPs make them particularly susceptible to uncertainty and risks. **Moreover, the transfer of at least some such risks to the private sector partner is one of the key characteristics of a PPP.** This section aims therefore to survey the link between risk transfer and the incentives to promote productive efficiency (for a more detailed analysis of this topic, see Dewatripont and Legros in this volume). But before doing so, let us specify what is meant by risk and risk transfer in the present context, and what types of risks there are to be transferred.

In the present context, transferable risk refers to an uncertain but quantifiable outcome in terms of some of the project’s costs or benefits. That outcome may refer to the production of the underlying asset (timely and on-budget completion of the construction of a tunnel); to the provision of related services (uninterrupted availability of the tunnel); or to the financial viability of the project (demand for the services provided and the project’s profitability). For any of these, or other, risks to be transferable from the public to the private sector, there must be a way to quantify the uncertain outcome in terms of its magnitude, timing, and probability of occurrence. This will allow the pricing of the risk by the private sector partner and by the project’s financiers, which is a precondition for the transfer to be sensible in the first place.

***Risk must be quantified to be transferable and priceable.***

12 The same argument for bundling applies naturally to other phases of the project cycle as well. A fully-fledged PPP would be expected to generate efficiency gains from the bundling of the design, build, finance, operate, and maintain phases of the project’s life cycle, for instance.

13 Bentz *et al.* (2001) focus on asymmetric information rather than contractual incompleteness as a source of incentive problems, and they suggest that bundling is better at resolving the incentive problems when the cost of building and operating the asset is low.

When talking about risk transfer in a concession-type PPP, one usually refers to the division of the risks associated with a project rather than to the sharing of them, as pointed out in PROFIT (2001). Once all project risks have been identified by the partners, an agreement is reached as to which partner carries each of the identified risks; that is, some of the identified risks are transferred to be carried by the private partner while others are carried by the public sector partner. Risk-sharing, in contrast, is more common in joint ventures where all risks are collectively shared between the partners in proportion to the share capital that they have contributed to the enterprise.

There are many ways of classifying the numerous risks that can be present in infrastructure or public service provision. At the most general level, von Hirschhausen (2001) distinguishes between technical, economic, and political risks. From the perspective of risk transfer, de Lemos *et al.* (2001) and PROFIT (2001) divide the risks into external risks to the project (global risks)—including political and economic risks—and internal risks to the project (elemental risks).<sup>14</sup> Following Eurostat's (2004) risk classification for national income accounting purposes, elemental risks can be further divided into risks related to the construction of the underlying asset; to the availability of that asset for service provision; and to the demand for the service in question. Additional elemental risk categories, identified in their own right by, e.g., Allan (1999) and IMF (2004a), include design risks; technology or obsolescence risks; financial risks; and risks related to the residual value of the asset at the end of the project period.

**Risk transfer can affect cost efficiency through risk assessment and management.**

Risk transfer improves productive efficiency to the extent that it improves the assessment and management of the project's risks. When a partner has to carry a risk, he will attempt to minimise any negative impact the risk could have on the project.<sup>15</sup> To the extent that his risk assessment and risk management capability reduce the project's costs, value for money is being created. An obvious precondition for the management of a risk is that it is manageable; that is, every risk should be allocated to the partner who is in the best position to affect the risky outcome and minimise any negative impact of the underlying uncertainty on the project. If none of the partners can control and hence manage a risk, the issue is to find the partner who can best bear the risk. Should more than one partner be in the position to control and manage a risk, productive efficiency is maximised by allocating the risk to the partner who can manage it most cost-effectively.

Starting with the global project risks, it seems obvious that the public sector partner is in a better position to influence events in the political, legal, economic and regulatory environment and should therefore assume the associated risks. Some global risks are outside the control of both parties (e.g., risks related to *force majeure* events), and they may therefore be either allocated to the party best able to bear them (presumably the public sector partner) or, alternatively, they may be shared between the partners.

Turning to the elemental risks, a key characteristic of a PPP is that the public sector partner acts as a purchaser of services, not the underlying assets, which are constructed and operated by the private partner. According to Lewis (2001) for instance, this implies that the risks associated with the asset itself—including design, construction, technology, operation (i.e., asset availability), maintenance, and residual value risks—should be primarily carried by the private partner. As the private partner also finances the construction and operation of the asset, financial risks would rest with the private partner and third-party investors.<sup>16</sup>

<sup>14</sup> See also the discussion by Grout (this volume) on specific and systematic risk.

<sup>15</sup> For simplicity, the discussion refers to 'the private sector partner', although a PPP normally consists of a consortium of private firms, organised as a special purpose vehicle to execute the project. Each of such firms will have its own advantages in terms of risk management, so there will be further risk transfer within the consortium.

<sup>16</sup> For a detailed analysis of the individual risks and their allocation between the partners, see for instance Lewis (2001) or Debande (2002).

A special mention is in place regarding the allocation of the demand risk, which can be influenced and hence managed only to a limited extent by either one of the partners. On the one hand, it can be argued that the public sector should assume the demand risk because demand is relatively more influenced by factors under the public sector's control, such as general economic policies or sector-specific policy measures. In other words, the public sector principal's actions can determine whether or not the project is financially viable and, consequently, whether or not any private agent is interested in participating in it (known in the microeconomic literature as the agent's 'participation constraint'). On the other hand, it can also be argued that the private sector partner should carry the demand risk, as it is the ultimate way to ensure that the private partner has the right incentives to act in the principal's interest and promote efficiency ('incentive compatibility constraint').

To satisfy both the participation constraint and the incentive compatibility constraint, one possible method to deal with demand risk is to agree on a formula to share it. For instance, the parties can agree on a rule whereby the public sector guarantees a minimum level of revenues to the private partner, thus satisfying the participation constraint. For the sake of symmetry, the principal might also choose to tax away any revenues exceeding a pre-specified ceiling. Within this band, the agent carries the demand risk, which serves to satisfy the incentive compatibility constraint. Outside the band, the principal carries the demand risk, thereby reducing revenue risk to the agent.

The distinction between demand and revenue risks is key to understanding how risk transfer can influence allocative efficiency, as opposed to productive efficiency discussed above. Consider first the polar case where the agent carries the demand risk alone: in this case, the revenues and profitability of the project are market-determined and cannot be directly used by the principal to influence the agent's incentives. Consider then the case where the agent provides the public with services paid for by the principal on availability basis either in full or in part: in this case, the agent faces no or limited demand risk, but faces revenue risk to the extent that the principal makes his payment for the services provided they are delivered in agreed quantity and quality and over an agreed period in time. In other words, the principal can translate some or all of the demand risk into revenue risk facing the agent, thereby gaining an instrument to safeguard allocative efficiency. This obviously requires that the service output is contractible in the sense discussed in the section above.

*Transfer of demand risk can influence both productive and allocative efficiency.*

#### **4.4 The case for public-private partnerships: taking stock**

Having examined the economic rationale for public sector participation in a PPP in Section 2 and for private sector participation in this section, it is time to put the pieces together and draw some conclusions about why and when a PPP may be economically sensible.

Starting with the 'why', recall that Section 2 concluded that the economic rationale for public sector intervention is the mitigation of a market failure, and that such intervention may take different forms, each of which is associated with its own costs. The design of public intervention will therefore need to aim at mitigating the market failure (maximising allocative efficiency) at the lowest possible cost. Whether or not private sector participation can then serve to lower that cost by improving productive efficiency beyond what can be achieved in traditional public provision—while not unduly compromising allocative efficiency—is the litmus test of whether a PPP is economically sensible or not.

This section has identified three possible sources of higher productive efficiency in a PPP than in traditional public provision. The first source is private ownership of the assets needed to produce infrastructure or public services, which can improve the incentives to undertake cost-reducing investments in those assets. This source can be particularly important over the whole life cycle of the project if there are gains from bundling (second source) due to positive externalities between

the different phases of the project. The third source is the division of risks associated with the provision of the services in question between the partners, which can improve the incentives to assess and manage those risks and thereby reduce costs.

All in all, it is conceivable that a PPP can be more efficient than the public sector alone in delivering the desired level of allocative efficiency. The ultimate source of such efficiency gains is the change of the instrument the public sector uses to mitigate a market failure, with the original instrument of public ownership and service provision being given up and replaced by private ownership and service provision.

*As an instrument for public intervention, PPP boils down to a subsidy to the private sector.*

What is then the intervention instrument that the public sector uses in a PPP? Essentially, by assuming some of the risks associated with the production and provision of a service by the private partner, the public sector extends a subsidy to the private partner, on the condition that the private partner delivers the desired level of allocative efficiency. The fundamental role of this subsidy is to satisfy both the private partner's participation constraint as well as the incentive compatibility constraint in a market characterised by failures: in the absence of the subsidy, the private partner would not enter the market in the first place or if he entered he would produce a socially suboptimal quantity or quality of the service in question.

Risk assumption by the public sector can also be thought of as a hedge extended by the public sector to the private partner free of charge, provided that the private partner satisfies the public sector's quest for allocative efficiency. If the public sector assumes all demand risk, it is effectively providing the private partner with a forward contract for free, guaranteeing a certain level of revenues for the provision of the service. Alternatively, if the public sector assumes the downside demand risk by guaranteeing a minimum level of revenues to the private partner, it is effectively providing the private partner with a put option for free, allowing the private partner to sell the service either at the market price or at the price stipulated by the option. In either case, the value of the instrument reflects the private partner's participation constraint.

To think of a PPP in terms of a subsidy or a free hedge provided by the public sector to the private partner through the partial assumption of project risks highlights that a PPP hinges upon appropriate risk transfer, formalised in the long-term contract between the parties. Any failure in risk transfer or contract design will undermine the efficiency gains that could potentially be achieved through PPPs.

To conclude, let us address the question 'when' can a PPP be economically sensible. Private asset ownership, construction, and operation were found to be conducive to efficiency when service quality is readily contractible; efforts to improve productive efficiency through cost-cutting do not significantly impair service quality; adoption of technical innovation is important for productive efficiency; when there are positive externalities between the construction and operation phases, and when it is relatively easier to contract on the service than the asset. To what extent these conditions are met in various infrastructure and public service sectors is discussed in detail by Riess (this volume).

Having seen why and when a PPP can be superior to traditional public procurement in terms of productive efficiency, the cost of the higher productive efficiency still needs to be examined. After all, the creation of value for money through a PPP is not a 'free lunch'—if it were, one would not expect to observe any traditional public provision at all. The cost of higher productive efficiency is the topic of the next section.



## 5. Transaction costs

The establishment and management of a PPP is associated with high transaction costs that undermine the gross efficiency gains, both directly and indirectly by limiting *ex ante* competition through high entry (bidding) costs, as elaborated below. Nevertheless, one should emphasise that little rigorous analysis has been devoted to transaction costs in PPPs, and it is ultimately up to future empirical research to establish whether or not transaction costs can wipe out the gross benefits of otherwise economically sensible partnerships.

The main sources of higher transaction costs in PPPs as compared to traditional public procurement and service provision are their long-term character, ownership and financing structures, and risk-sharing features. For all these reasons the search (tendering and bidding), contracting, and monitoring processes become more resource-consuming than in traditional short-term contracting aimed at supplying the public sector with assets rather than services. Negotiating the contract is especially costly, not least due to the high cost of advisory services, (see Box 2. for some anecdotal evidence from the UK), and such costs are not limited to the pre-delivery phase, as renegotiation is almost inevitable in contracts that stretch over decades.

***PPPs are prone to higher transaction costs than traditional public procurement.***

There is little systematic information about search and contracting costs in PPPs. In the UK, a project size of at least GBP 20 million is regarded as a minimum for a partnership to be viable according to HM Treasury (2003), exactly because of the high costs associated with tendering and contracting. According to Allen (2001), bidding costs to all potential contractors have reached as much as 3 percent of expected total project costs, regardless of project size, which is 3 times higher than in traditional public procurement.

The high cost of bidding is obviously a hurdle preventing potential bidders from entering the bidding process. This, in turn, undermines the power of *ex ante* competition—that is, competition for the market as opposed to competition in the market—which in many infrastructure and public service sectors is the only possible form of competition. The inability to harness the power of *ex ante* competition to support the quest for productive efficiency will, in turn, deter the creation of value for money through a PPP. Besides, as auction theory demonstrates,<sup>17</sup> designing the bidding process so as to avoid inefficiencies due to collusion or opportunistic behaviour is difficult as such, and all the more in the case of long-term contracts.

Besides, that a PPP is established for service provision using privately owned assets might entail higher monitoring costs than in-house provision of the same service. The provision of most services is relatively difficult to measure and monitor, especially in terms of quality. While in-house provision, too, necessitates quality control, it can be argued in view of the interaction between productive efficiency and service quality discussed earlier that private asset ownership implies higher monitoring costs for the public sector. After all, if the asset were in public ownership the public sector could always ensure the desired service quality, while private ownership can jeopardise service quality due to excessive investment in productive efficiency. It is therefore more costly to maintain the desired service quality under private asset ownership.

Some empirical evidence to this effect has been provided in the United States (US), as reported by Torres and Pina (2001). It has been reported that the monitoring of the performance of the

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<sup>17</sup> See Klemperer (1999) for an overview.

## Box 2. Transaction costs in PPPs

### The cost of negotiating deals

"PFI deals remain very costly to negotiate and these costs need to be factored into the assessment. At the outset of a deal departments need to set realistic budgets for their own administrative costs, to monitor these costs and seek to keep them under control. They must also be mindful of the costs to bidders. Imposing excessive costs on bidders is likely to result in higher charges in the long run and might deter firms from bidding." (*UK National Audit Office, Delivering better value for money from the Private Finance Initiative, June 2003.*)

"The procurement of PFI deals is inherently more complex than the procurement of conventional deals and can involve departments and bidders in heavy administrative costs. For example, on the Newcastle Estate deal (19<sup>th</sup> Report, Session 1999-2000), the cost of the procurement to the Department of Social Security rose from an initial estimate of £ 0.4 million to £ 4.4 million [about 2 percent of the discounted contract value], an eleven-fold increase, reflecting the complexity of this type of procurement and the Department's inability to undertake many of the tasks required to negotiate the deal. On the Prime deal to transfer the Department of Social Security estate to the private sector (41<sup>st</sup> Report, Session 1998-99), the Department's costs totalled £ 10.9 million, compared with an initial budget of £ 1.7 million, and the final three bidders spent around £ 27 million in preparing their bids." (*UK National Audit Office, Delivering better value for money from the Private Finance Initiative, June 2003.*)

"London Underground had always understood that it would be expensive to negotiate such large and complex deals and in February 1999 budgeted to spend £ 150 million. The outturn was £ 180 million (£ 170 million in 1999 prices). In addition, having decided to reimburse bidders' costs, London Underground agreed to add £ 57 million to the total deal to cover bidders' costs up to the point of selecting preferred bidders. London Underground required the preferred bidders to disclose the level of bid costs they intended to recover from the service charge. After prolonged negotiations the accepted level amounted to a further £ 218 million of bidders' costs and fees. In total 275 million of bidders' costs are reimbursed...As they were based mainly on output specifications rather than inputs, the costs of the programme could only be known when firm bids came in. It was then that the Department came to realise that the total costs falling on the taxpayer were far more than those considered affordable. There followed a review

private sector partner in PPP type of arrangements entails extra costs anywhere between 3 and 25 percent of the contract value. As a consequence, it has been recommended in the US context that monitoring costs of 10 percent of the contract value be budgeted in such arrangements.

### **Long contract periods give rise to a host of costs.**

Apart from the direct costs related to tendering, contract negotiation, and monitoring, Domberger and Jensen (1997) emphasise that the long contract period also gives rise to economic costs indirectly. As noted above, the enforcement of a long-term contract can be difficult because contract termination can only be used as a threat if the public sector commits to buy the asset at fair value in case of termination; otherwise, expropriation risk would need to be factored into project costs. This cost is obviously the less important the smaller and less specific is the initial investment in the underlying asset. In addition, a long contract period lessens the disciplining power of *ex ante* competition, and increases the likelihood of costly contract renegotiation.

of the specification to reduce the total cost of the programme. The review and the subsequent re-bidding added some five months to the process therefore increasing costs." (UK National Audit Office, *London Underground PPP: Were they good deals?* June 2004.)

### The cost of advisers

"Large amounts are being spent on advisory costs in taking forward NHS PFI deals despite there being considerable similarity between the deals. Over £ 70 million of taxpayers' money has been spent on NHS PFI advisory costs. The costs vary between 1 and 8 percent of the capital value of the projects with the average being 3.7 percent. This average is broadly consistent with the range of costs which the Ministry of Defence told us previously it expected to incur on major projects based on costs as a proportion of total contract value. In addition, the private sector is also incurring substantial costs on PFI deals which, it says, generally represent between 2 and 2.5 percent of the capital cost of each deal, with the costs being 10 percent of the capital costs of smaller projects. It is inevitable that these costs will be reflected in the pricing of PFI deals. In taking forward a series of PFI hospital deals the NHS seems to be paying repeatedly for the costs of similar advice." (House of Commons, *Public Accounts Committee, 19<sup>th</sup> Report, Session 2002-03.*)

"The cost of employing advisers also remains very high and in many cases continues to exceed budgets by a substantial margin. A fall in advisers' costs should have resulted from growing experience of doing deals. Departments need to drive down advisers' costs and ensure that sensible budgets are set and adhered to." (UK National Audit Office, *Delivering better value for money from the Private Finance Initiative, June 2003.*)

"Advisers' costs in PFI deals can exceed budgets by significant margins. For example, on the Newcastle Estate deal (19<sup>th</sup> Report, Session 1999-2000), the cost of legal advice increased from an initial estimate of £ 70,000 to an outturn of £ 2.3 million. On the Dartford and Gravesham Hospital deal (12<sup>th</sup> Report, Session 1999-2000) the Trust incurred advisers' costs of £2.4 million, which exceeded the initial estimates by almost 700%. After a series of hospital PFI deals, the Trust spent £ 2.3 million on advisers on the West Middlesex Hospital deal (19<sup>th</sup> Report, Session 2002-03), virtually the same amount as at Dartford and Gravesham four years earlier." (UK National Audit Office, *Delivering better value for money from the Private Finance Initiative, June 2003.*)

While it would thus seem clear that a PPP is associated with higher transaction costs than traditional public procurement and service provision, it is conceivable that such transaction costs decline over time. Both public and private partners undergo a learning process that will allow them to lower search and contracting costs and to establish a reputation that will reduce monitoring costs. A concrete example of how to lower contracting costs as a result of learning is the standardisation of PPP contracts that has started in the UK.

**Transaction costs  
may decrease with  
experience.**

## 6. PPP financing and macroeconomic impact

The discussion above has focussed on economic efficiency in the operational, or 'real economy' sphere of PPPs. However, the financing arrangements for such partnerships give rise to a host of

issues related to economic efficiency as well. The financing arrangements can also affect the design and conduct of fiscal policy, which suggests there is a macroeconomic dimension to PPPs as well.

The financial and macroeconomic aspects of PPPs are discussed under three separate headings below. The first concerns the cost of capital to the public and private sectors, and the key issue there is what difference, if any, does it make for economic efficiency who finances the investment. The second set of issues relates to the fiscal policy dimension of PPPs. By transforming the public sector from a service producer and provider into a service purchaser, a public-private partnership changes the composition and time profile of public spending. To what extent that change has a real macroeconomic impact is assessed below. Finally, the link between microeconomic efficiency and growth at the aggregate level is reviewed to assess whether or not PPPs have a broader macroeconomic impact.

To start with the cost of capital, there is no denying that the public sector can in general raise funds at a lower cost than the private sector. This being the case, why should the dearer private financing be considered in the first place?

As shown in Grout (1997), it does not make any difference for the population in terms of utility or risk who finances, produces, and provides the service. The only difference between the public and private alternatives is that risk is explicitly accounted for in the private sector's cost of capital, while it is not in the case of the public sector. As it is obvious that the risk is there in both cases, it appears puzzling why the public sector can still borrow at a lower cost.

The public sector's ability to tax makes it possible to separate the risks related to the project outcome and the repayment of the credit used to finance the initial investment. The former will be borne by the users of the infrastructure or public service, while the latter will be spread across taxpayers. The public sector is therefore able to transfer and spread risks more extensively than the private sector, allowing it to raise seemingly cheaper financing without, however, eliminating them. The risks will be there, they will just be borne by others, none of whom is actually compensated for bearing them. Hence the seemingly lower cost of capital.

***Explicit pricing of risk  
is beneficial.***

While the difference in the cost of capital between the public and private sectors is therefore more apparent than real, there are nevertheless some important differences between public and private sector financing of one and the same project. The fact that investors are explicitly and directly compensated for the credit risk they assume in the case of private sector financing improves project selection in the economy and allocative efficiency. Note that this also applies when the transfer of project risks is suboptimal, i.e., when the private sector partner has to carry risks it cannot manage or bear. In this case, the suboptimal risk transfer translates directly into higher cost of capital, as discussed by Grout (this volume). In addition, the explicit recognition and pricing of risk encourages better risk management and contributes to higher productive efficiency.

Turning to the link between PPPs and fiscal policy, let us first review their accounting treatment to see how exactly they can affect the measured fiscal position. To start with, the accounting treatment in national accounts statistics is based on the principle that any economic unit, including a PPP, can only be recorded in national accounts statistics in one institutional sector (Eurostat 1995). That is, a PPP can only be a public sector entity or a private sector entity. Even when a PPP is a joint venture with shared equity participation by the public and private sector partners, it cannot be split between the institutional sectors.

Whether a PPP is included in the public or private sector makes all the difference for the measured fiscal position. If the partnership is part of the public sector (general government), the financing and acquisition of the underlying assets appear on the public sector's balance sheet, directly affecting the measured fiscal deficit and public debt. If, on the other hand, the partnership is recorded as a private sector entity it has only a limited short-term impact on the fiscal accounts. The financing and acquisition of the underlying assets appear on the private sector's balance sheet, and the public sector only incurs current expenditure for paying for the service itself once its supply starts.

The practices for recording PPPs have varied across countries. Some countries have recorded all of them on the public sector's balance sheet, others have recorded at least some of them off the public sector's balance sheet. To harmonise the varying recording practices, Eurostat (2004) contains a decision on the treatment of PPPs in the national accounts.<sup>18</sup> It is based on an assessment of the distribution of risks between the partners, and it stipulates that a partnership should be recorded off the public sector's balance sheet if the private partner carries the construction risk and either the availability or the demand risk for the project in question. In other words, the partnership will be recorded as a private entity and thereby outside the public sector's deficit and debt calculation provided the private partner carries at least one of the major long-term risks, in addition to the shorter-term construction risk. Otherwise, the partnership will be recorded on the public sector's balance sheet.

The either-or treatment of PPPs in national accounts statistics has an unfortunate impact on the public sector's incentives to use them as a vehicle for infrastructure and public service provision. The recording of investment through partnerships on the public sector's balance sheet alone can introduce an unwarranted bias against them as this would exaggerate their impact on public deficits and debt. On the other hand, IMF (2004b) suggests that the recording of investment through partnerships on the private sector's balance sheet alone can introduce an unwarranted bias in their favour as it would belittle their impact on public deficits and debt. This, in turn, could appear as a relaxation of the public-sector's short term budget constraint. As such a 'relaxation' does not interfere with the supply of infrastructure and public services to the population, a PPP may seem appealing even when it does not yield any microeconomic efficiency gains. It is, however, important to recognise that a PPP—even when recorded off the public sector's balance sheet—generates a future liability for the public sector as it commits itself to purchasing the service.

***Statistical treatment of PPPs affects incentives to use them.***

The relaxation of the public sector's budget constraint is indeed more apparent than real even from a short-term macroeconomic perspective. As an instrument for short to medium-term macroeconomic stabilisation policy, fiscal policy should be calibrated to the prevailing cyclical situation, and the level of public spending should be neither too high to induce overheating and inflationary pressure, nor too low to unduly contract economic activity. The mere shifting of investment projects in terms of accounting from the public to the private sector does not create any fiscal leeway—it just reallocates a given level of economic activity between institutional sectors in national accounting. If some investment through PPPs has been reallocated from the public to the private sector, and if the public sector increases spending by the same amount, it increases aggregate demand in the economy. If the initial fiscal stance, with the investment projects on-budget, were optimal from the cyclical perspective, the new stance, with the investment outside the budget but with an unchanged amount of total expenditure, would be too expansionary. In other words, PPPs do not create any fiscal leeway, they just create a false impression of such a leeway.

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<sup>18</sup> Donaghue (2002) and IMF (2004a) review the details of the fiscal accounting of different types of PPPs.

**Choice of a PPP should  
not rest on fiscal policy  
considerations.**

The apparent relaxation of the public sector's budget constraint may have a particularly strong incentive impact in the presence of fiscal rules such as the Stability and Growth Pact, which sets an implicit ceiling on overall public spending.<sup>19</sup> In the worst of cases, political economy considerations prompt the government to resort to PPPs to deliver infrastructure and public services in order to create budgetary room for increasing unproductive fiscal spending. If the government's economic policy is not determined by economic considerations alone, as is often the case, PPPs can be introduced where traditional public service provision would have been more efficient, for the purpose of increasing unproductive public spending while satisfying a fiscal rule.

For these reasons, a PPP should not be regarded at all as a fiscal policy instrument and, consequently, its apparent fiscal impact should not be the tail wagging the dog. The decision to undertake an investment project through a PPP should be solely based on the microeconomic merits of such an arrangement in terms of economic efficiency, with no role for fiscal policy considerations in the decision-making process.

Having said that, the fiscal and macroeconomic consequences of PPPs need to be explicitly recognised, recorded, and reported. The current rules and practices for recording them, as reviewed above, remain unsatisfactory. Not only do they hamper the macroeconomic analysis of PPPs, but they also create incentives for policymakers to use partnerships when not economically sensible or reject partnerships that would be economically sensible. The development of an incentive-neutral fiscal recording system based on the actual and contingent costs and benefits arising from the distribution of risks and rewards between the partners seems therefore like a high-priority measure to exploit PPPs' economic potential while containing the economic abuse of their political potential.

To conclude with brief remarks on PPPs and economic growth, it has been argued that a PPP may under certain circumstances be associated with higher productive efficiency than traditional public financing and service provision. It is, however, important to acknowledge that an improvement in productive efficiency does not automatically translate into higher economic growth at the aggregate level. Higher productive efficiency just implies that a smaller share of the economy's total savings is required to finance the project in question. However, there is no guarantee *ex ante* that the savings thus freed for other purposes will be used productively. In principle, anything is possible: they can be used to finance productive investment, but they can equally well be used to finance unproductive investment. This being the case, one cannot unambiguously conclude whether the choice of a PPP structure in the context of an individual project will have a positive, negative, or no impact on aggregate growth.

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<sup>19</sup> Apart from creating incentives to use PPPs to shift public investment off the public sector's balance sheet, such rules have been criticised more broadly for failing to recognise the long-term character of public investment and therefore introducing a bias against it. Proposed solutions to this failure include the introduction of a 'golden rule' that excludes public investment from the calculation of the fiscal deficit and debt measure to which the fiscal rule is applied. Going one step further, Blanchard and Giavazzi (2004) propose the establishment of a separate public investment agency that would be responsible for managing all public investment and that could issue public debt for the financing of net investment. However, such proposals have met criticism as they allegedly introduce a bias in favour of physical and against human capital investment; as they fail to recognise the fiscal sustainability concerns that underlie the fiscal rules in the first place; and as measurement problems related to depreciation make them difficult to implement in practice. See European Commission (2003b).

## 7. Conclusions

This paper has reviewed the economic pros and cons of undertaking investment in infrastructure and public services through PPPs. The broad conclusion that arises from the analysis above is – perhaps unsurprisingly for an economics paper—that PPPs can offer benefits over traditional public provision in terms of economic efficiency, but that such benefits come with costs, which may or may not outweigh the benefits.

A PPP can be seen as an alternative instrument for public sector intervention to alleviate a market failure and safeguard allocative efficiency in the economy. In contrast to the more traditional way of supplying infrastructure and public services whereby the public sector finances and owns the assets needed to produce them, a PPP is based on the notion that the public sector can safeguard allocative efficiency even when the assets are financed and owned by the private sector, who also provides the final services to the population. The public sector retains control over allocative efficiency by means of a long-term contract with the private sector partner that stipulates the quantity and quality of the service to be supplied.

*A PPP can offer microeconomic benefits.*

The private sector partner, as the owner of the assets, decides on the best way to supply the service in order to fulfil the contract. The private partner, being profit-driven, will seek to maximise the efficiency with which the service is produced and supplied. Private asset ownership may therefore improve productive efficiency beyond the level that can be achieved with traditional public service provision. Such efficiency gains could, in principle, be reinforced through market liberalisation. In practice, however, competition is unlikely to become a significant source of efficiency gains in many markets for infrastructure and public services.

The essence of the partnership lies in the division of risks and returns associated with the project. The assumption by the public sector of some of the risks may be a necessary precondition for the private sector partner to get involved in the project in the first place. This highlights the fundamental character of a PPP as a subsidy vehicle: by assuming some of the risks free of charge, the public sector extends an implicit subsidy to the private sector partner so as to make the partnership economically attractive. This subsidy replaces the traditional service provision as the policy instrument that the public sector uses to safeguard allocative efficiency.

However, these potential strengths of a partnership can turn into weaknesses. The pursuit of productive efficiency may jeopardise allocative efficiency, as cost-cutting may lead to quality-cutting. The division of risks, in turn, can become a source of productive inefficiency if it fails to allocate each risk to the partner in the best position to manage or bear it. And, finally, the fact that the partnership requires the establishment of a long-term contract with a high degree of incompleteness imposes a significant cost on it.

Indeed, the high transaction costs are perhaps the worst, and least studied, drawback of PPPs. The need to find the right private sector partner, and to negotiate, monitor and renegotiate a long-term contract giving him the right incentives to strive for service quality while containing costs makes a PPP dearer to set up and follow up than in-house public sector service production and provision. Furthermore, the high search costs (tendering and bidding) serve to limit the power of *ex ante* competition in creating the right incentives to promote productive efficiency.

Higher transaction costs, along with higher credit risk, also raise the financing costs for a PPP above those of the public sector. While the higher financing costs make it more difficult to attain the



project's hurdle rate of return, the economic rate of return and allocative efficiency might well be higher under private financing as risk is explicitly recognised and priced, and as risk assumption by investors is rewarded.

If the circumstances are such that private financing (and service production and provision) is superior to public financing (and service production and provision), it would appear that public finances receive a windfall. It is easy to grasp how political economy considerations suggest that there will be a rush to seize the room for manoeuvre in public finances that is seen to emerge. Moreover, it is easy to grasp how similar considerations suggest that the creation of such leeway becomes an argument in its own right for using PPPs for supplying infrastructure and public services.

***There is no  
macroeconomic case  
for or against PPPs.***

However, fiscal policy should be a non-issue in deciding how to produce and provide services. The shifting of investment between public and private sector books does not create any leeway in public finances or in the economy more broadly. In other words, there is no macroeconomic case for—or against—PPPs.

There is a case, though, against the current accounting treatment of PPPs in the national accounts as it does not recognise the real costs and benefits to the respective partners based on the agreed division of risks and returns. The fact that a partnership is either not at all or fully included in public sector and fiscal statistics makes the public sector either love or despise it. This further skews the public sector's incentives to establish partnerships, increasing the risk that their use is driven by political and accounting considerations rather than by economic efficiency considerations.

Despite all these caveats, there is an economic case for a PPP if it can deliver a combination of allocative efficiency and productive efficiency, at non-prohibitive transaction costs, that is superior to traditional public provision of an infrastructure or public service. Under such circumstances a PPP is the optimal instrument for public sector intervention.

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