

Riess, Armin

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Is the PPP model applicable across sectors?

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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. Vällilä (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.¹

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

¹ 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.

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

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.

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 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 Vällilä (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.² 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-degrees 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.³ 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-degrees 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.

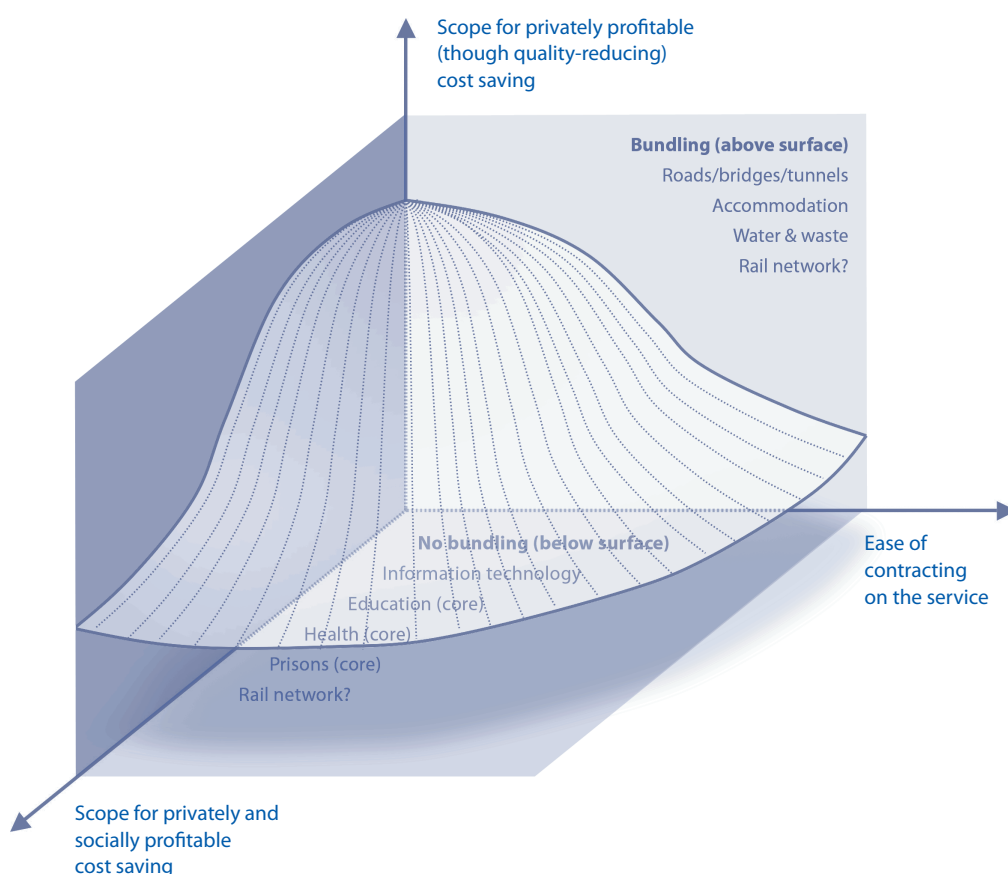
If building and operating the infrastructure asset are bundled, the builder-operator – who will later enjoy lower operating cost – will carry out this welfare-enhancing investment.⁴ By contrast, if the government contracts separately with a builder and an operator, the builder will not invest in life-cycle 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.

⁴ 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.⁵

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.

⁵ 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 Iossa this depends – among other things – on the size of the increase in operating cost and the importance of the improvement in service quality resulting from type-3 investment. They show that 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 Iossa 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.

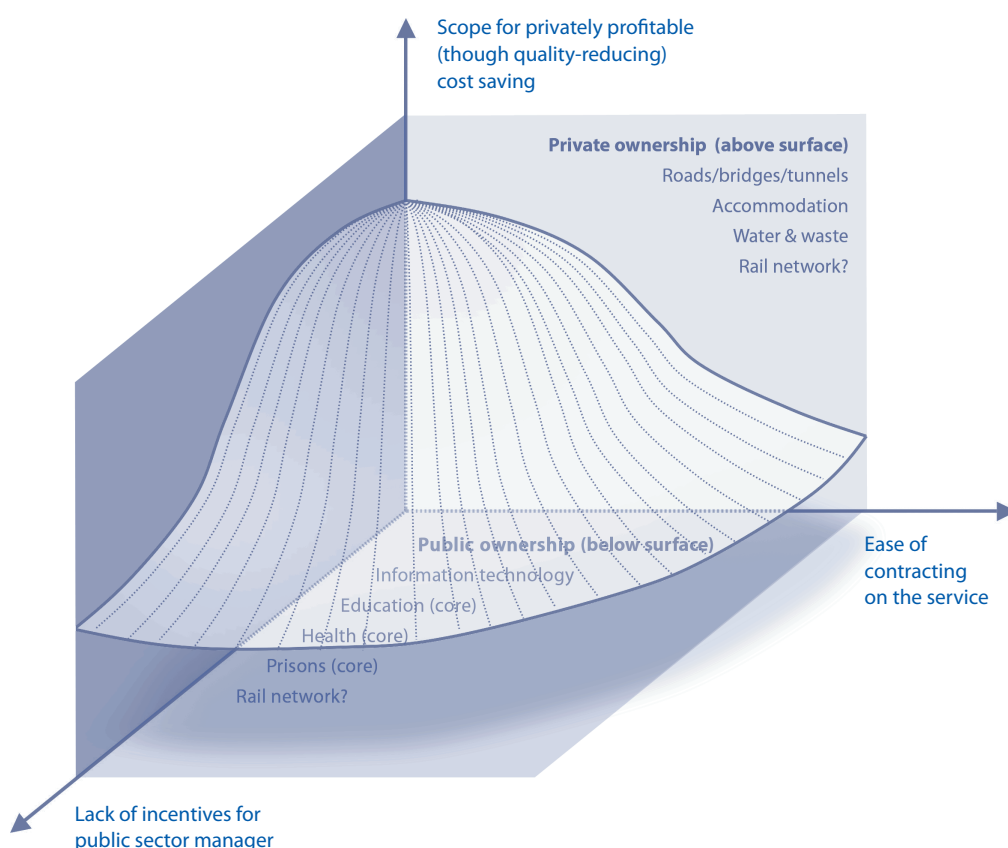
Figure 2 illustrates how the variables discussed combine in favouring either private or public ownership and it indicates for which services public ownership seems more suitable than private ownership – and *vice versa*. There is obviously a similarity between Figure 2 and Figure 1.

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*.⁶ 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.⁷ 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.

⁷ 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.⁸ 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.

⁸ 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.

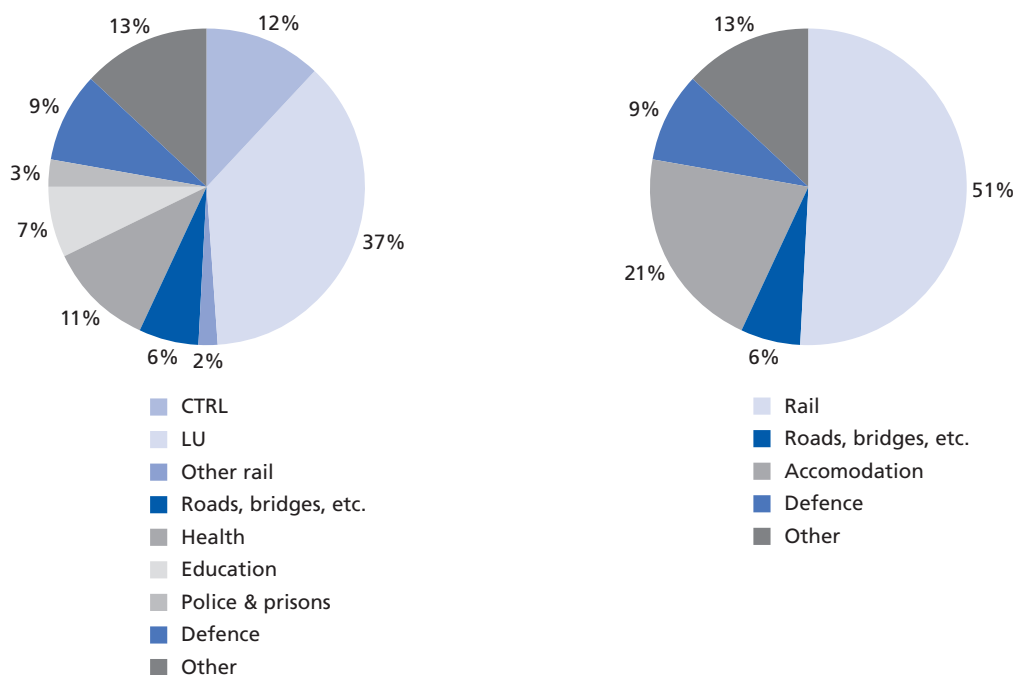
The aggregation relates to railway sector PPPs (accounting for 51 percent of the total value of PPP contracts), which are dominated by the three London Underground PPPs (37 percent) and the Channel Tunnel Rail Link (12 percent). We thus find most UK PPPs (by value) in activities where economic reasoning 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.⁹ 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

⁹ 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.

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