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Value-for-money measurements in public-private partnerships

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ABSTRACT

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

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Value-for-money measurement in public-private partnerships

1. Introduction

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

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

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

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

2. Conceptual issues

2.1 Introduction

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



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

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

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

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

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

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

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

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

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

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

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

2.2 Candidate value-for-money tests

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

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

Test 1: performing a full cost-benefit analysis

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

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

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

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

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

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

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

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

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

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

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

² This is without accounting for real options possibly embedded in the project.

Test 3: comparing private alternatives

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

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

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

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

Test 4: confirming the viability of the chosen project

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

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

If the private sector has been chosen, the test is

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

2.4.1 Background

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

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

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

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

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

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

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

2.4.2 Specific risk

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

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

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

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

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

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

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

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

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

2.4.3 Systematic risk⁶

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

⁷ This is shown in Grout (2003, reprinted 2005).

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

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

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

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

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

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

3. Value-for-money tests in practice

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

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

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

3.1 The UK approach to value-for-money tests

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

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

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

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

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

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

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

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

Partnerships Victoria, Australia

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

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

British Columbia, Canada

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

Ireland

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

Netherlands

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

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

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

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

3.2 The experience of PFIs in the United Kingdom

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

3.2.1 The Libra project – a complete failure

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

3.2.3 London Underground – value for money uncertain

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

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

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

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

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

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

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

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

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

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

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

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

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

3.2.6 Common themes

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

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

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

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

3.2.7 Lesson from outsourcing in the private sector

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

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

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

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

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

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

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

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

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

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

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

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

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

4. Assessment

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

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

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

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

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

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

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

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

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

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