Public–private partnerships: lessons from the British approach

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Abstract

British governments have for many years sought to move activities from the public to the private sector. For the past decade, this has included the provision of public services not only operated but also financed by the private sector. In 2000, these private finance initiative (PFI) projects were incorporated into a wider programme of public–private partnerships (PPPs). Compared to conventionally financed procurement, the PFI approach has brought both benefits and costs. The balance of advantage is often unclear, and at the strategic level the main drivers appear still to be ideology and accounting. However in its practical application many useful lessons have been drawn and applied.

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1. Introduction

This paper examines the British experience of public–private partnerships (PPPs), looking especially at the most substantial variant—the private financing of public services. It examines and assesses, from a practitioner’s perspective, the technical and political drivers of private financing and its practical implementation. The paper has several aims. The first is to describe the evolution of UK private-financing policy and implementation, and the lessons learnt. This may be of particular interest to those assessing the value of UK experience for application elsewhere. Secondly, it examines in some detail the comparative costing of public and private financing. Thirdly, it offers a critique of current policy.

Most academic literature on PPPs addresses the respective roles of the public and private sectors. This issue is well-covered in the US context in the papers collected in Rosenau (2000a). In her summary, Rosenau (2000b) is cautious about the role of the profit motive in
public service provision, especially where accountability is critical, cost-shifting presents problems, the timeframe is long, or societal normative choices are more important than costs. These concerns are recognisable in UK experience (see IPPR, 2001).

Theoretical models tend to use the incomplete-contract approach. In particular, Hart et al. (1997) suggest that the common emphasis on competition in choosing between private and public provision is misplaced. Instead, they assign a critical role to the residual control rights that cannot be contracted. This approach highlights the distinction between contracting out and competitive tendering in which the public sector supplier also bids. It also helps to explain why contracting out is more suitable for some functions than others. Another contribution to this literature is by Besley and Ghatak (2001), who examine the importance of the extent to which the public sector, and the private firm with which it contracts, care about the public services produced by an asset. They show that, regardless of how much is invested by each of these parties in the production of a service, the party that cares more about the outcome should own the asset. Finally, Bennett and Iossa (2002) analyse the circumstances in which the bundling of construction and operation is desirable, and the optimal allocation of ownership between the public and private sectors. The critical factors in this model are the sign and size of any externality across stages of production, the market value of the facility and the effect of firms’ investments on social benefits.

There are however two other issues recognised within government, which are reviewed in this paper. One is whether off-budget financing *per se* is less of a burden on the economy than public financing. The other, technically more substantial, is how private financing affects the cost of risk.

As background to this very political field, Section 2 describes the evolution of UK private-finance and, subsequently, PPP policy. Section 3 then provides a summary of the practical mechanics, and an analysis of the arguments used to support private financing. Section 4 considers the rationale for private financing. Sections 5 and 6, respectively examine the roles of time preference and risk in the cost of public capital, and then Section 7 compares the costs of public and private financing. Section 8 reviews the empirical evidence, and after a summary, in Section 9, of the lessons that have been learned, Section 10 concludes.

### 2. The evolution of British PPP policy

The election in 1979 of a Conservative government under Margaret Thatcher marked the start of a still-continuing shift of activities away from the UK public sector. In the public services, the initial focus was on contracting out service operations, such as cleaning, catering and refuse collection. This was followed by restructuring within government, to impose more market incentives on public sector managers. Proposals also emerged, mainly from state enterprises and local government, for private *financing* of public sector activities.

Early financing proposals were designed mainly to evade expenditure controls. This led in 1981 to the ‘Ryrie Rules’, prescribing that a project should be privately financed only if this was more cost effective than public financing and that it should still be counted against the public body’s capital budget. However, in 1986 the Government overrode the rules in approving a new Dartford motorway river crossing, and the rules were formally abolished
in 1989. The rules were and remain technically sound, but had become unsustainable in practice. Abolition was popular with financial institutions and construction companies, and it enabled the government to enjoy the presentational benefits of off-budget financing. There was also a growing, new, belief that private financing could increase efficiency, and that public bodies needed the incentive of additional, off-budget finance to consider it.

However, abolishing the Ryrie Rules did not stimulate any new flow of privately financed projects. In 1992, the Government therefore launched the ‘private finance initiative’ (PFI). It established within the Treasury a Private Finance Panel and Executive, whose membership included private sector managers, to encourage line ministries, provide case-specific advice, and produce general guidance documents. In 1994, a ‘universal testing rule’ required that private financing should be considered for every public sector project (see HM Treasury, 1995). These measures led to an increasing flow of PFI contracts, from 2 in 1994, to 11 in 1995, and 39 in 1996.

Two important changes in the law were initiated by the Conservative government and passed after the election of a new Labour government in 1997. UK governments are not restricted by constitutional or other general law from contracting any activity to the private sector. However, legislation was needed to assure private sector financiers that local governments could not later claim that they are not legally bound by a PFI contract, and that contracts signed by public sector Hospital Trusts would be backed by the government, if the Trust were to fail.

The Labour government also abolished the universal testing rule, and it introduced the concept of ‘Public Private Partnerships’ (PPPs), which, as explained in the current policy statement (HM Treasury, 2000), includes (a) complete or partial privatisation; (b) contracting out with ‘private finance at risk,’ still described as ‘PFI’ projects; and (c) selling government services in partnership with private sector companies. The previous Panel and Executive was replaced by a similar but temporary Treasury Taskforce (see HM Treasury, 1997b). In 2000, the Taskforce Projects team was transferred to a new kind of organisation, Partnerships UK (PUK), itself a PPP, in which the government has a 49% shareholding. PUK helps with difficult and innovative PPPs and covers its costs from fees and sometimes by equity holdings. The Taskforce Policy team was absorbed into the government’s Office of Government Commerce.

By early 2002, about 500 PFI contracts have been signed, of which about half are operational at time of writing. Privately-financed capital expenditure is now about 15% of all publicly-sponsored gross capital spending each year, and PFI projects are very diverse. Some of the largest are in the Ministry of Defence, which is assessing bids for a contract of about £13,000 million for an air-to-air refuelling tanker programme; receiving bids for a £3,500m contract for airfield support services; and negotiating a £10,000m contract for a military flying training system. More typical are schemes of £10–£100m, for facilities such as educational or civic buildings, police stations, hospital energy management, or street lighting. Larger projects, of more than £100m, include roads, prisons, and hospital buildings.

Ideological differences about the role of government and the presumed competence of public service agencies apply to contracting out in general (and sometimes privatisation) rather than to private financing. However, this controversy is often directed at financing, as PFI projects are now the main instrument for new contracting out. Employment considerations are especially contentious. In the National Health Service (NHS), the government
is now piloting a model under which ancillary staff, in areas such as catering and portering, are managed by the private sector, but remain public employees (HM Treasury, 2001). Union concerns include the belief that public services should be driven by motives of social concern rather than commercial profit (Prentice, 2001). This contrasts with the government view that contracting out is the preferred approach where it is feasible, because it remedies a lack of dynamism in traditional public service delivery. A range of ideological positions is summarised from a British perspective by the IPPR (2001). Similar positions are described in the American literature (e.g. Linder, 2000).

UK popular opinion imposes constraints. The IPPR (2001, pp. 135–136) quotes opinion-poll evidence of public antipathy to profits being made from public services, combined inconsistently with enthusiasm for private sector involvement in these services. There has been a taboo on the private provision of clinical services within the NHS, and the consequent, mixed, story of private finance in the NHS is well set out by Sussex (2001). However, tenders are now being invited from foreign clinical teams for work in NHS hospitals. Also unpopular are privately-provided education services in the public education system. There is less concern about prisons, where the PFI programme continues, albeit with human rights decisions, such as prisoner isolation, still taken by public sector staff.

3. PFI mechanics: financing instruments, accounting and payment

PFI contracts are made between the public sector and a ‘special purpose vehicle’ (SPV), which brings together a group of private sector companies, often including a construction company, a facilities manager and a financier. Financing is typically composed of 90% debt, and 10% equity provided by the member companies.

Bank finance is most common, especially for smaller projects, now often for terms as long as 25 years. For larger projects, there is an increasing use of bonds, often issued with an AAA rating by means of credit enhancement by a monoline insurer, who carries out the due diligence work which would otherwise be undertaken by purchasers, and guarantees the bond. These bonds typically command a yield approaching 2 percentage points above that on government stock, in addition to the insurer’s fee, which is set to recover for the insurer most of the interest cost saving of typically 1 or 2 percentage points.

Initial stages of the tendering address the design, build and operate (DBO) elements. Financing comes later, after selection of a preferred bidder, and so can be separately tendered. Financing was negotiated separately for the refurbishment of the building occupied by HM Treasury, after the project had been on hold for some years, achieving a reported saving of £13m (NAO, 2001a). Significantly, this renegotiation did not consider partial or total public financing.

After a project has been commissioned, banks may be willing to refinance for a longer term at a lower rate. Refinancing increased the expected dividends on one high profile PFI prison project by about £11m, which will all accrue to the shareholders, except for £1m negotiated by the Prison Service (on behalf of the public sector) as compensation for an increase in public sector financial risk. This raised concerns about fairness to the taxpayer, and the National Audit Office (NAO) subsequently recommended that PFI negotiations consider rights to refinancing benefits (NAO, 2000a,b).
There is potential for more imaginative financing packages, for example by the use of partial guarantees as provided by the World Bank, and more mixed public and private funding (Gerrard, 2001). This would allow more sophisticated and efficient allocation of risk and incentive, and possibly lower pre-contract costs. However this is discouraged by the concern to achieve off-budget financing, and by the argument sometimes made, as discussed below, that restructuring cannot reduce the cost of risk.

For most (but not all) PFI proposals the public-procuring body sees it as crucial to keep the capital spending off-budget. In 1997 the Accounting Standards Board (ASB) issued a draft proposal on the application to PFI transactions of a 1994 Financial Reporting Standard (FRS 5) on ‘Reporting the substance of transactions.’ This threatened the off-budget status of many projects and led to ‘differences between the ASB and the Treasury’ (House of Commons Treasury Committee, 2000). Agreement was eventually reached on conventions that increased the pressure to transfer risk to the contractor, if the finance is to be off-budget (see Heald, 2003).

The government’s own expenditure accounting can also influence decisions. Each UK central government department now has a current expenditure budget, including depreciation and interest charges, and a capital budget. Conventional capital thus faces two budgetary hurdles, reflecting private sector practice—one on capital spending, the other on affordability of the capital servicing in later years. However off-budget finance faces only the second hurdle.

One key to success is the financial incentives faced by PFI contractors. Three examples illustrate how ideas have developed, so as to reward contractors for what they can control and avoid penalising them for what they cannot control.

PFI contracts are now the norm for new prisons and other secure accommodation. However this practice was delayed for years because of private sector reluctance to commit capital against payment for the use of facilities, over which the contractor had almost no control. Payments are therefore made for availability of facilities to the required standard (Home Office, 1996).

A similar situation might have arisen with tolled water crossings. However in the 1980s, the financiers proposed that the total toll revenue should be fixed (in real present value), rather than tied to uncertain traffic flows. This was welcomed by the Treasury. Contracts for tolled water crossings thus have a concession period that ends when the toll revenue amounts to a specified present value. This approach was subsequently recreated in Chile (Engel et al., 1997a,b). The contractor also needs an incentive to keep the facility open. In UK, this is achieved by monitored requirements about maintenance and the condition of the crossing on its eventual handover, and a maximum concession period. There is also ‘reputational’ pressure on the contractor from users.

A third example is the use and structure of ‘shadow tolls’ paid by the government for privately-financed inland roads. Even the earliest contracts protected the contractor from most traffic risk. Under more recent contracts, payment is made only for availability and for the effect of heavy traffic on road maintenance (Roden and Shaw, 2000). Light vehicle traffic has no effect on the payments.

1 The government is not legally bound by these Standards, but accepts them as good practice.
4. The rationale for private financing of public services

Assuming that, where a competitively tendered service is politically and technically practicable, it is generally preferable to monopoly supply, why should private financing be preferred to contracting out with public financing? We examine five seemingly unsatisfactory arguments, before considering three others, less often made, which may provide a better case.

(i) Easing macroeconomic constraints

In political and popular debate—in the UK as elsewhere—the fact that privately financed capital spending is off-budget is often the main reason advanced for private financing. It is a politically attractive argument. However, there is no substance to this argument unless there are constraints on public financing which do not apply to private financing.

The government constrains its borrowing because of concerns about future taxation, demand in the economy, effects on the cost of borrowing, and the need for flexibility to respond to shocks. There could be a macroeconomic case for off-budget financing if it avoided any of these constraints. In a rare discussion of this issue, the IPPR (2001), following an earlier summary by Robinson (2000), dismisses any claim of lasting macroeconomic gain as ‘bogus,’ because liabilities to service PFI contracts are as binding as the servicing of conventional government debt. The IPPR concedes that, while the PFI market matures and the capital market adjusts to understanding these new liabilities, the markets may be more relaxed about government financing through PFI than other means; but this is at best a short-term deception of the markets.

An argument related to this deception emerged in the context of PFI proposals for the infrastructure of London Underground Limited (LUL). A review of the proposal by Deloitte & Touche (2001) reported that the interest cost advantage of public financing had been largely cancelled out by adoption of the concept of ‘reputational externality.’ The cost of this externality, calculated according to Treasury advice at the time, appeared to be around £700 million. The externality was presented by the UK government as ‘an adjustment . . . to capture the impact additional public sector borrowing would have on the government’s reputation for prudence and therefore on the risk premium demanded on sterling-denominated securities’ (Hansard, 2001). Applying this adjustment to conventional debt but not to PFI liabilities implied that, by putting liabilities off-budget, the UK was enhancing its reputation for financial prudence. However this argument, with its uncomfortable resonance with Enron and WorldCom, appears have been subsequently reconsidered and withdrawn.

2 The present Government’s first policy statement, (HM Treasury, 1997b) recorded that ‘the PFI is not about borrowing money from the private sector (but) all about . . . improved value for money.’ However the responsible Treasury Minister said later that, in contrast, the ‘PFI is really about . . . enabling investment in key areas to take place that otherwise would not’ (HM Treasury, 1998). The Ministerial Foreword to the current policy statement (HM Treasury, 2000) opens with references to private capital ‘leveraged’ in by the PFI and a comment that PPPs ‘are providing a major boost for the construction industry.’ The main text says that private finance ‘can relieve the pressure on public finances.’
In a developing or transition economy external finance can be vital for public investments with high social returns. In a developed economy no such argument applies. The case for private financing depends on its contribution to micro-efficiency.

(ii) **Bypassing controls on public service investment**

Public sector managers sometimes claim that the government has underfunded investment in their field, and media references to ‘decades of neglect’ are common. If it were so, then undermining normal expenditure controls with off-budget finance might be in the public interest. The existence or otherwise of bias appears never to have been systematically examined. History suggests some over-investment in the UK (e.g. the Millennium Dome) and under-investment (e.g. aspects of railways). In services such as hospitals and schools there is little systematic evidence either way. However, if there were a bias against investment, off-budget finance would be an inefficient remedy. Accrual accounting and budgeting provide ready means to rectify it without distorting the budgeting system.

(iii) **Evading formal constraints on borrowing or spending**

The present UK government imposes on itself two formal borrowing constraints. The ‘golden rule’ requires that, over the economic cycle, the government will borrow only for investment. A ‘sustainable investment rule’ requires that the ratio of net public sector debt to GDP should not exceed a ‘stable and prudent’ level, defined as 40%. Liabilities to repay PFI suppliers should strictly be included in this measure of debt. However, even if the government wished to use private finance to understate its true liabilities, there has been no need. The sum of private finance and conventional debt still lies within the 40% limit (IPPR, 2001, Table 4.1).

The government imposed upon itself a more serious constraint before the 1997 general election, to maintain the previous government’s published expenditure plans for the 3 years to April 2000. Privately-financed capital did offer some relief, perhaps to the national advantage, from this temporary electoral commitment.

The only significant external constraint in recent years has been the Maastricht convergence criteria, followed by the current Stability and Growth Pact for Euro countries, requiring that government deficits should generally not exceed 3% of GDP. For economic consistency, this deficit should also include public sector commitments to repay project-specific finance. It does not; but these criteria have not been a constraint on the UK.

(iv) **Semi-privatisation of self-financing projects**

Self-financing and private financing enjoy some synergies. It is easier to increase charges to meet a contract with a private operator than by voting in local or national government. Private financiers may regard income from users as a less risky source of revenue. However, these are not adequate reasons for such schemes being necessarily privately financed. The diversion of road toll revenue to a private financier, instead of to government, is no less a burden on the taxpayer than government payments to the operator of a privately-financed, untolled, road. Furthermore, distortions can arise if charging creates system externalities. For example charging on some roads will generate congestion on untolled roads in the network. Nonetheless, there is no requirement in the UK even to consider public finance for a self-financing project.
(v) **Capital rationing as an instrument for change**

Although private financing provides no extra resources at the national level, it is extra capital for individual spending units. The Minister for Finance in the Northern Ireland Assembly Executive has commented that ‘the PPP approach ... offers the potential ... to improve our infrastructure more rapidly than if we relied solely on public capital finance’ (Durkan, 2001). The Minister’s capital budget might be less than the socially optimal level because the UK budgeting system is inefficient. However it is more likely that his budget was set on the presumption of additional, off-budget financing, because of a belief that contracting out with private finance provides more cost-effective delivery. This may be satisfactory as a device to kick-start a new approach, as in the early days of the PFI. However, 10 years later, it is at best a blunt instrument. It distorts choices in favour of off-budget options, relative to others that may provide better value.

More persuasive arguments for private financing include the following.

(i) **More effective monitoring by private financiers**

The monitoring pressures that contractors face from private financiers may be stronger than those from the public sector clients under conventional contracts (see IPPR, 2001, pp. 85–86). For example, the high failure rate of PFI IT projects may be in part because of the absence of such monitoring—although this may simply be confirmation of the belief of banks (who will not finance these projects) that IT investment is inherently very high risk. There is actually little evidence on the importance of monitoring by financiers. In the Arthur Andersen report, discussed later, of 18 suggested drivers of value for money in PFI projects, “involvement of third party finance” was given by far the lowest weight by the public sector respondents, though a survey of contractors might have given a more positive view. However this monitoring role, if it is important, might be replicated with public financing, whether by reformed public monitoring procedures, or contracting out some project management functions. This appears not to have been explored.

(ii) **The contractual benefits of long-term capital at risk**

Perhaps the most persuasive case for private financing is that it ties the contractor into a long-term commitment. Without capital at risk a contractor can walk away, if the cash flow is insufficient, with little redress. Although, in principle, contracts might prevent this, in practice it is difficult or impossible to design and enforce comprehensive penalty clauses extending over very long periods. This argument appears to have been made only by Gerrard (2001). It is an aspect of PPP practice that may merit research.

(iii) **Enforcement of whole life costing**

Private financing, as now applied in the UK, forces both client and contractor to consider the interaction of design changes at the construction stage with long-term performance. Government departments are regularly urged to do this in any case, but the direct commercial and financial incentives provide by the PFI structure may be more effective than exhortation within government. Nonetheless, there does not appear to have been any empirical analysis of this effect of PFI contracting.

Do these many arguments provide a sound case for private financing of public services? Palmer (2001) argues that, for most services that are now subject to PFI contracts, all the
savings could be achieved using DBO which, since cheaper and quicker, would lead to even larger savings than DBFO. However, suitable data are not available to assess this argument.

5. Time preference and the cost of public capital

The UK Treasury’s Guide on Appraisal and Evaluation (HM Treasury, 1997a, Annex G) draws a distinction between the cost of capital and the rate of social time preference. It would probably be unmanageable for any government to administer different general rates for these two quantities. It would be computationally complicated, and generate endless confusion. However, the distinction between them is essential to understanding of the economics of public sector costing.

The Treasury’s derivation of social time preference follows the mainstream welfare economics rationale for giving less weight to marginal consumption in the long-term than the short-term. It suggests that a plausible range is 4–6% per year in real terms, and the rate specified for practical use, since 1989, is 6%. However, most economists favour numbers around the lower end of this range (e.g. Weitzman, 2001) and a new draft guide (HM Treasury, 2002) proposes 3.5%. Time preference is the appropriate discount rate for most government applications.

The appropriate public cost of capital for most practical purposes is the sum of the tax-exclusive real interest cost of government debt, the typical quantum of tax paid on marginal returns to private sector capital, and a factor for ‘systematic risk.’ The tax component is conceptually uncontentious, but estimation is complex. The treatment of systematic risk is disputed, as discussed later. Current Treasury guidance, originally drafted when real interest rates were much higher than today’s, suggests that this cost of capital falls within the same range of plausibility (4–6%) as social time preference. However, the adjustment for UK tax, combined with the adjustment for risk, cannot easily justify adding more than about 1 percentage point to the cost of indexed gilts, which in early 2002 is 2–2.5%.

6. Risk and the cost of public capital

It is often argued, following the ‘perfect capital markets’ (PCM) framework of many financial textbooks (e.g. Brealey and Myers, 2000), that the apparently lower cost of public finance is an illusion: the cost of capital in a privately-financed contract reveals the cost of risk inherent in producing that output. If this were true, it would simplify PFI policy and implementation, but it appears to be based on unduly restricted views of how institutions and markets work in practice.

To untangle the arguments, a first step is to distinguish between risk in the sense of optimistic bias and risk in the sense of variability. The financial economics literature on risk

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3 There are three main reasons. As future populations are likely to enjoy higher consumption, the utility they gain from an extra dollar will be less. A probably smaller effect is that most people, while caring about future populations, have some preference for marginal utility for earlier populations than for those more distant in time. Third, and perhaps smaller still, is the fact that the future faces natural and man-made downside risks, over and above those which would usually be considered in appraising specific projects, which could wipe out the prospective future costs or benefits. The first two of these effects are well covered in the introduction to Layard (1972).
is almost exclusively concerned with variability around an expected value. Practical risk analysis of PFI projects is almost exclusively concerned with optimism about the expected value itself.

The adjustments made to offset potential optimism are conceptually straightforward. For a privately financed PPP, some of the risk of shortfalls will be reflected in the cost of bank or bond finance. Other shortfall risks foreseen by the contractor will also increase the contract price. With conventional public financing there is no corresponding increase in the cost of debt or equity to reflect foreseeable optimistic bias. However, a dominant feature in the comparison of publicly- and privately-financed options in the UK is the explicit assessment of such risks. This increases the projected costs with public finance.4

Variability risk raises more complex issues. The perfect capital markets (PCM) position maintains that, given adequate competition, institutional structure can have no effect on the nature or costs of the variability risks of producing a given physical output. Practitioners, in contrast, find that private financing can affect the distribution of risks and their cost, and can introduce new risks. The classic paper on variability risk in the public sector is Arrow and Lind (1970), which concluded that the cost is generally negligible, because it is spread so widely and hence thinly across the population. Currie (2000), using the arguments discussed below, criticises the application of the Arrow and Lind conclusion (A&L) to the public sector. Grout (1997) sees A&L as equally applicable to private sector costs, but also argues that public sector benefits should be discounted at the same risky rate as in the private sector. The three most common criticisms of A&L relate to correlation with income, risk spreading, and implications for public ownership.

(i) Some risks are correlated with income

The financial values of many public-sector costs and benefits, such as the salary bill for MPs or the value of environmental improvements, are correlated with national income. In this case, the cost of variability does not approach zero as it is more widely spread. This was noted by Arrow and Lind. The question is how much it matters in practice.

In most practical situations, people’s valuation of risk is influenced by many complex factors, such as fairness and blame. However, small uncertainties in future aggregate public spending or taxation are one of the few cases where simple expected utility analysis appears to be justified. A richer population gains or loses less utility than a poorer population from a marginal $1, the rate at which the marginal utility of money declines as income increases usually being expressed as the elasticity of marginal utility of consumption (or the index of relative risk aversion).5 The equations below apply it to aggregate income and utility.

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4 It is sometimes suggested that PFI contracts have a further optimistic bias because they lock the public sector into long-term payments for services which may later not be needed (e.g. Heald, 2003). This is not a well-researched issue. However the public sector is no less locked into a publicly financed asset and it seems unlikely that, given a well designed contract, the extra costs of compensating a PFI contractor need to be substantial.

5 A value of 2 for this index implies that a given percentage increase gives twice as much utility to someone with half the initial income. The consensus value in academic debate appears now to be around 1.0–1.5 (Arrow et al., 1996). A good review of this quantity has been published by the UK Office of Fair Trading (Cowell and Gardiner, 2000).
The absolute amount, $\delta$, by which the certainty-equivalent value of a cost or benefit, of financial value $C$, is reduced by its covariance with income $Y$, provided that $C \ll Y$, is given by a standard equation, as derived for example by Layard and Walters (1978). Let $b$ denote relative risk aversion ($-YU''(Y)/U'(Y)$), where $U(Y)$ is utility. Then

$$\delta = \frac{b \text{cov}(C, Y)}{Y}$$

(1)

This effect can be significant. Layard and Walters, and Arrow and Lind, both quote the example of an irrigation scheme. If poor farmers’ incomes are increased by more in bad years than good years, the welfare gain may be much more than that from a financially-equivalent constant increase in annual income. However, significant effects of this kind are rare in a developed economy. To illustrate this, it is more convenient to express Eq. (1) in terms of the standard deviations and correlation coefficient of $C$ and $Y$, and to express each of the deviations in proportionate terms. This gives

$$\delta = b \rho \frac{\sigma_C}{\sigma_Y}$$

(2)

where $\rho$: correlation coefficient of $C$ and $Y$; and $\sigma_C$, $\sigma_Y$: proportional standard deviations of $C$ and $Y$ (so that $\sigma_C$ is the standard deviation of $C$, divided by $C$, and $\sigma_Y$ is the standard deviation of $Y$, divided by $Y$).

For the UK, somewhat high values for the right hand side of Eq. (2) are $b = 2$, $\rho = 1$ (i.e. variability of the costs and benefits is proportional to variability in national income), and $\sigma_C = \sigma_Y = 0.08$ over 10 years, or 0.12 over 15 years. For this degree of variance and correlation, Eq. (2) suggests that monetary changes 10–15 years into the future would have 1 or 2% less impact on utility than would monetary changes that are invariant with income. The corresponding discount rate premium is trivial.

Moreover, the adjustment implied by Eq. (2) does not apply to valuations of impacts such as changes in leisure time, or risk of injury, or some environmental impacts, as they are usually handled in the UK. Such impacts are typically close to pure utility impacts, so that they have a higher financial value as incomes increase. For such an impact, Eq. (2) might therefore apply to the expected financial value of the valuations of all possible physical outturns. However the usual UK convention in practice is to put predominant weight on the financial valuation of the expected physical outturn itself. Adjustment for risk aversion would in this case be needed only if the marginal utility of the impact (as opposed to the utility of a marginal $1$) declined significantly with income, which seems unlikely.

(ii) Some risks cannot be widely spread

Foldes and Rees (1977) record three circumstances where public sector risks are not widely spread. One is public goods such as national defence or many environmental benefits. However, it is rare for such goods to be valued in monetary terms. Even where

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6 These values for $\sigma_Y$ are based on UK GDP data over the past 50 years. The standard deviations reflect the errors which would have occurred had 10 or 15 year projections been set equal to the same average growth rate as the preceding 10 or 15 years, with no additional information used to improve this crude forecast. The assumptions of $\rho = 1$ and $\sigma_C = \sigma_Y$ may be fairly accurate for some costs and benefits, but high for most procurement costs.
they are valued, this is usually as a utility impact, as described above, in which case risk aversion is immaterial.

The second circumstance is when the scale of a project would increase in proportion to the size of the economy. This could apply to a new technology in the whole of some national infrastructure. However A&L depends only upon spreading to the point at which variabilities are very small relative to household income. There is no clear example of such a ‘scaled’ investment in the UK which has faced users or taxpayers with large variabilities of income (despite the fact that the total welfare loss from a large overspend or performance shortfall can be substantial).  

The third circumstance is when the costs or benefits of a project are heavily concentrated, e.g. where some individuals face the possibility of substantial losses, for example from proposed new infrastructure. Then more complex risk perception issues come into play, and A&L does not apply. Yet this rarely, if ever, affects comparisons between public and private financing, because impacts of this kind are unrelated to the method of financing. Concentration of risks on financiers does however have an impact on private financing, as discussed below.

(iii) Arrow and Lind seems to imply nationalisation

A further, common argument against A&L is that, if it were correct, “we would expect the government to invest in high risk projects that are currently the preserve of the private sector. In a market economy, this would appear to be an absurd proposition” (Currie, 2000). It would be absurd, but because public investment requires a different incentive structure, which would be less satisfactory for most current private sector activities. The cost of capital is one factor in decisions about structure, but not the only one.

Overall, as a working assumption, the Arrow and Lind conclusion seems robust.

7. The comparative cost of public and private financing

Financiers are averse to variability risk, perhaps because the manager, or team, responsible for the financing may be rewarded asymmetrically. If the project exceeds expectations they will receive a relatively small additional reward, but if the project falls short they will be more than proportionately penalised. Arrow and Lind commented that for corporate managers variations in the outcome of some corporate actions will impose very real costs. This was so, they noted, even when from the stockholder’s point of view risk should be ignored. PFI structures can also create new variability risks. If for example the revenues from a privately-financed road depended in part upon traffic flows, the uncertainty would impose a cost. With public financing there is still uncertainty about traffic flows, but

Gardner (1979) rightly criticises Arrow and Lind’s original presentation for being in terms of spreading over a population which approaches infinity. The basis of A&L is that the impact on individuals is small relative to their incomes, and this ratio would not be reduced by increasing the population without also increasing national income. However, Gardner supports Arrow and Lind’s practical conclusion, concluding that uncertainty associated with public investment can be safely ignored when it is risk is inherently small, where this means small relative to income.
there is no material cost to taxpayers or users analogous to the cost of this PFI revenue risk.

The cost of senior debt to PFI projects is now typically 2 or 3 percentage points above the cost of government debt (including the cost of insurance to achieve AAA rating). Systematic, equity market risk adds to the return required by PFI bidders on their equity. However, the average equity risk premium is itself controversial (Spackman, 1997). The PCM view is that it has historically been over 5%. The alternative view that equity markets fluctuate around a smoother long-run trend (arising from fluctuations in the real world, such as wars and oil prices, and from fluctuations in sentiment), combined with plausible expectations of the risk free rate, suggests a premium of perhaps 2–3%. Either way, the premium is much higher than the cost of systematic risk to publicly financed projects. This is often described as the “equity premium puzzle”, although simple expected utility theory should not be expected to capture people’s aversion to fluctuations in equity markets.

It seems plausible that in a mature PFI market the typical ex post cost of capital will be fairly close to the private sector average. (PFI contracts, once signed, are relatively protected from competition and cyclical variation, but more subject to long-term contractual difficulties and political intervention.) The compound pre-tax return to the UK (and US) equity markets through the 20th century was close to 6% in real terms, with no evidence of a rising or falling trend in this value over time (Siegel, 1994). Debt is generally cheaper. It thus seems plausible that the ex post cost of capital for competitive, competently-negotiated PFI contracts made in a mature market should be no more than about 6% in real terms.

HM Treasury (2000) suggests that private capital costs an extra 1–3 percentage points. However this is taken from the Executive Summary of the Arthur Andersen report, discussed below. The main text of that report says that, while senior debt finance will be not more than between 1 and 3 percentage points above the public sector borrowing rate, higher returns will be demanded for junior debt and equity finance. The authors also comment that that they did not looked closely at financing rates and that this should be the subject of further study. However, there is very little data on returns to PFI equity, and it appears that no such study has taken place.

The current real interest cost of UK public debt is 2–2.5%, to which, for comparison with the cost of private capital, around 1 percentage point should be added to compensate for taxation and systematic risk. Comparison with a cost of private capital of a little under 6% suggests that the extra cost of capital incurred by a well-negotiated PFI contract might be typically 2 or 3 percentage points.

For most comparisons of PFI financing with public sector comparators (PSCs) current UK guidance recommends a simple, approximate procedure. The cash flows with public and private financing, including tax paid by the contractor, are discounted at the standard rate, currently 6%, and the present values then compared. The procedure is equivalent to assuming that the cost of public sector capital is 6%. This is workable and sensible, except insofar as 6% is much higher than the evidence now supports for the cost of public capital. Some cases need to be analysed in more depth, for example where the tax treatment is very untypical, or where a proposal is large enough to justify analysis from first principles. In this more thorough analysis the tax exclusive capital charges, over the accounting life of the asset, should in principle be projected for both public and private financing, and both then discounted at the time preference rate.
8. Private finance and value for money—the empirical evidence

Private financing of public services has produced clearer objectives, new ideas, better planning, and the incentives of wider competitive tendering. It has also absorbed extra senior staff time, consultancy and legal fees, tendering costs, risk premia for financiers, and central support structures, and distorted some expenditure allocation. However, as Rosenau (2000b) records of US experience, not much is known about the success and failure of PPPs, partly because of resistance to conducting systematic policy evaluation. This is as true in the UK.

The PFI study most often quoted by UK government sources is the ‘Arthur Andersen Report’ (Arthur Andersen and Enterprise LSE, 2000). This is widely quoted for its key finding that the average percentage estimated saving against the PSC in its sample was 17%, suggesting that the PFI offers excellent value for money. There are, however, several reasons to question this assessment.

One reason is recorded in the body of the report. This is that project managers have enormous incentives to ensure that they produce the ‘right’ outcome. In all but a few cases the project would proceed only if the figures showed that the PFI option gave better value. Public service managers, in making the case for what they see as badly needed investment, must be expected to interpret and present data in ways which help to achieve their objectives, and the anecdotal evidence of bias towards PFI options is substantial (e.g. Heald, 2003).

A second source of bias is that, with all projects, there is more scope for bad surprises than good surprises. The authors of the report note that ‘the jury is still out’ on how far PFI projects will deliver the promised benefits promised. Subsequent work by the National Audit Office (2001b), found that, in a sample of about 100 PFI projects, most of those that were rated ‘excellent’ at time of contracting, and a third of those rated ‘good’, fell below expectations in their early years, and none exceeded expectations (expectations of those rated ‘satisfactory’ or ‘marginal’ were on average fulfilled). Thus, initial comparisons of PFI options with the more familiar publicly-financed options may be optimistic.

A third likely source of bias is the costs and benefits falling outside the formal comparisons. Some of these favour PFI options. The choice a PFI option may widen experience for the public and private sectors, generating new ideas about the service and improving the cost effectiveness of future PFI projects. On the other hand, the demands on high-value staff time for such tenders and contracts are considerable, for both client and contractors. The report records that suppliers complain that too much senior management time is taken up by the PFI process. Moreover, the costs to unsuccessful bidders (to the extent that these are higher for PFI bids) are excluded. Also excluded are the pre-contract costs of advisers’ fees to the public sector. Most of these are sunk costs by the time the PSC comparison is made, and correctly omitted at that stage. The authors note that pre-contract costs should nonetheless be included in comparing the overall costs of conventional and PFI procurement, but, for lack of data, they did not do this.

A fourth reason for bias is that the authors do not fully examine the economics of public and private financing. They note that the time preference rate specified by the Treasury is based on social time preference, that this is higher than the government borrowing rate, and that this difference is explained by there being other reasons for the government to

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8 However, it has also been argued that PSCs are biased in favour of public financing (e.g. Stone, 2001).
restrict its liabilities. However, they do not consider whether these constraints apply also to liabilities to PFI contractors. Nor do they clearly recognise the distinction between the time preference rate (which has very little effect on the PFI/PSC comparison) and the cost of capital to the government, which has a much bigger effect. Nor do they consider the realism of the figure of 6%. All these omissions understate the relative cost of private financing.

The National Audit Office (NAO) has undertaken a wide range of PFI studies, in particular National Audit Office (1997, 1998, 1999, 2000a, 2001b). The NAO by convention does not comment on policy and also agrees the text of its reports with bodies on which it is reporting. Thus it will generally not make subjective estimates—such as the future public revenue lost by closing a monopoly public ferry to provide traffic for a PFI bridge—which cannot be agreed with the relevant government department. However, these reports have the distinction of being analytically sound and objective.

The NAO report on ‘Managing the relationship to secure a successful partnership in PFI projects’ (National Audit Office, 2001b) draws lessons from 121 projects with contracts let before 2000. It also records for 98 projects the public authority’s perception of value for money, at the time of the survey. 6% of these recorded a perception of excellent value for money, 46% good, 29% satisfactory, 15% marginal and 4% poor. This is not a strong endorsement of the policy, although it confirms that the PFI route can in some circumstances be a great success. NAO reports on about 20 specific, mostly high-profile, projects and concludes that more often than not the projects gave good value for money, relative to politically feasible alternatives.

The PFI political debate is often conducted in the terms of “public bad, private good,” or vice versa, on the basis of selective evidence. Is evidence potentially available to support such generalised conclusions, for example that privately-financed projects will be systematically cheaper, by some given average margin? This is unlikely, even if such an exercise could be politically neutral, because there are too many dimensions for any realistic sample size. There are examples of major construction overspends in both sectors. Some can be attributed to specifically public sector failure—such as the politically driven choice of unproven nuclear technology at Dungeness in the 1960s, or the more recent failures of management of construction of the British Library. However in practice, in both sectors, construction projects are typically completed broadly to budget. Recent work commissioned by HM Treasury (MacDonald, 2002) implies large overspends in publicly-financed projects, but this excludes the risk contingencies often added by public authorities to project cost estimates. It also does not clearly identify or quantify the impact of the maverick projects such as the widely quoted extension of the Jubilee Underground line (where a major contribution to the overspend was a tunnel collapse in a private sector project associated with the same, novel equipment). Comparisons need to be made at a much more disaggregated level, as is the practice of the NAO and of the successive bodies charged with central promotion of the PFI.

9. Lessons on private financing

Much has been learnt about the conditions for more and less successful private financing of individual projects. In particular the present government’s first PFI policy statement (HM
Treasury, 1997b) set out a useful list of favourable preconditions:

- clear boundaries and measurable output performance;
- scope for innovation, to design away risks and bring new ideas;
- substantial operating content;
- scope for alternative use of the asset provided;
- surplus assets intrinsic to the project included in the package;
- risks transferred to the service provider which are all commercial in nature and controllable.

The current policy statement (HM Treasury, 2000) places more emphasis on the style of public sector management, once the decision to use the PFI route has been made. This is also the current emphasis of the NAO (2001b). The key message is that PFI projects involve long-term relationships. Success can be achieved only if the public authority and the contractor approach the project in a spirit of partnership, with understanding of each other’s business and a common vision of how best they can work together.

Central administration of PPP policy has also provided important lessons. Private financing developed very slowly until a strong central administration was established to promote and steer it. This administration has included substantial private expertise, as well as civil servants, and its role has changed over time as the policy has developed. New ideas have been developed and successfully applied across many areas of contracting, with large quantities of good-quality, updated, central technical guidance. As an exercise in implementation of a radically new and complex policy it has been an administrative and political success.

The record is less satisfactory at the level of central strategy. A major driver for private financing is still that it is off-budget. There is no evidence of political interest in establishing a level playing field between public and private financing. This undermines the budgeting system, distorts decisions about investment priorities and means of implementation and restricts the development of procurement policy. The benefits of private financing are generally claimed to arise from practices that could in principle be achieved with conventional financing—such as whole life planning, clear output-based specifications and efficient allocation of risks. The success of the policy is often presented, misleadingly, in terms numbers of privately financed deals signed or expenditure committed.

There are several areas of study which could help to integrate private financing into a well-balanced public procurement policy. However, while central policy continues to be driven mainly by ideology and accounting there is little scope for ideas which might imply any stronger public sector role, and little incentive for applying lessons to conventionally financed procurement.

10. Conclusion

The UK concept of public–private partnerships has extended widely since the late 1990s, to include complete or partial privatisations and joint ventures, as well as contracting out of public services with private financing. However, privately financed projects, still described as PFI projects, are the main mechanism for extending the role of the private sector in the supply of public services. Private financing has produced better-defined contracts, better
contract management, and design innovation. At the strategic level, it broadens the horizons of public procurement, and effectively commits contractors to long-term contacts. It also incurs extra costs, in senior staff time, consultancy and legal fees, tendering costs, new risks, higher costs from concentration of existing risks, central support structures, and some distortion of priorities in expenditure allocation. Where the balance between these benefits and costs lies, to date, will never be known.

At the level of individual contracts, private financing is better suited to some kinds of service than to others, depending mainly on the contractibility of the service and political constraints, both of which may vary between countries. Good financial incentives are essential, and PFI contracts are now generally well designed. However a key characteristic of successful PFI projects is a trusting relationship between the parties, based on a shared vision.

At the level of central administration, a strong central structure, using private-sector expertise, has been needed to promote and guide the policy implementation. This has been provided successfully. However, the benefits, and the imaginative development of policy, are weakened by the continuing policy drivers of ideology and off-budget finance. There is little evidence of a political will to seek a level playing field in the choice between sources of finance.

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