



National Audit Office

Briefing

for the House of Commons
Treasury Select Committee

Review of the VFM assessment process for PFI

OCTOBER 2013

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This report has been prepared in response to the Treasury Committee's request that the National Audit Office examine the value for money (VFM) assessment process and model for the Private Finance Initiative (PFI).

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Foreword

Letter to Andrew Tyrie MP Chairman of the Treasury Committee

Dear Andrew,

The Private Finance Initiative and the role of financial modelling in VFM assessments

Your Committee asked the National Audit Office to undertake an analysis of the VFM assessment process and model for PFI. The assessment process combines a quantitative and qualitative approach to VFM appraisal. Whilst we have considered the whole process in the course of this work, our review has primarily focused on the use of the financial model (the model) in the VFM assessment process.

The model compared the estimated cost of using PFI with a public sector comparator to help determine which delivery and financing route offered best value for money. I enclose a report on our detailed review which I hope will assist your inquiry into PF2. The model was withdrawn in 2012, although the qualitative assessment is still extant. Nevertheless, the lessons from the use of the model remain relevant since public authorities continue to need to justify their choice of contracting approach for new projects. HM Treasury plans to update its existing value for money guidance to help authorities assess a broader range of contracting models, including PF2.

We set out below our key findings, but there is one overarching point we would like to emphasise. The VFM quantitative tool did not answer what we believe is the key question, namely, whether the benefits of private finance outweigh the additional cost of private finance above government borrowing. The Treasury does not agree this is the correct comparison. The Treasury says that the decision on the overall level of public borrowing is a matter for the Government's fiscal strategy and it is that which frames decisions on overall spending and resulting levels of borrowing. The comparison at the individual project level is made on the basis of the opportunity cost which is about the alternative use of resources within a fixed spending envelope. The Treasury intends to write to the Committee to set out its approach to the appraisal of public spending decisions in more detail.

Our more detailed findings are:

The model for assessing PFI was consistent with the Green Book but had features which served to advantage PFI in the comparison with conventional procurement.

In the model PFI costs were spread evenly over the whole life of the contract as the unitary charge was paid. By contrast, the costs of conventional procurement were concentrated in the early years, rather than being spread over time. While this reflects the cash flows of individual public authorities it does not consider the costs from a whole government perspective since government is able to spread out payments over time if it funds investment through public borrowing. Furthermore the model only reflected the incremental cost of private finance above 6.09% rather than the full additional cost of private finance above government borrowing.

Transparency over the choice of modelling approach: The choice of model matters – our review of the model shows that different approaches can lead to materially different results. It is important that all stakeholders are clear both on what question is being asked and how the chosen model answers it.

The evidence gap on the performance of different models: Despite clear guidance to do so, departments have failed to gather the data on project performance that is needed to underpin the main assumptions in the VFM quantitative tool. As the range of contracting models used by government broadens, the need for evidence of their performance in practice will become even greater.

The tendency for project teams to over-rely on the outputs of models: Financial models can be a useful aid to decision-making, for example to help test the sensitivity of costs under different scenarios. But the Treasury and NAO agree that no model can hope to capture all the features of the real world. And along with the Treasury, we would like to see project teams exercise greater use of judgement to match the needs of their project to the most appropriate contracting model, using models to aid decision-making rather than displace the use of judgement.

Some form of quantitative analysis is essential when deciding whether to use public or private finance for a project. We have highlighted the limitations of the model but we believe that quantitative analysis should still be used when financing decisions are made. Financial modelling helps departments compare ways of doing a project. It also provides evidence for the decision made, which supports accountability to parliament. We would like to see departments and Treasury use improved quantitative analysis to assess the merits of using private finance.

I would be happy to ask my team to provide you with further briefing on the report's findings if that would be helpful.

Amyas C E Morse

Summary

1 This report has been prepared in response to the Treasury Committee's request that the National Audit Office examine the value-for-money (VFM) assessment process and model for the Private Finance Initiative (PFI). In its report on the PFI, the Committee recommended:

“The National Audit Office should perform an independent analysis of the VFM assessment process and model for PFI. It should audit all of the assumptions within the model, and report on whether or not these are reasonable. This test of the VFM assessment model should, where possible, be based on representative and up to date samples of data.”¹

2 The VFM assessment process combines a quantitative and qualitative approach to VFM appraisal at three stages – programme, project and procurement level. It involves a quantitative assessment, supported by a standardised spreadsheet-based model, and a qualitative assessment – a set of questions for the authority to consider at each level of the three-stage process, around the viability, desirability and achievability of the project.

3 *The Green Book: Appraisal and Evaluation in Central Government* sets out government's investment appraisal methodology.² The *Value for Money Assessment Guidance* built on these concepts to provide a more detailed methodology and set of tools for applying this general approach to the specifics of PFI transactions.³

4 The VFM quantitative tool (the model) was the financial model used to assess the quantitative value for money of using private finance for government projects. It was a cost-effectiveness analysis which compared the estimated cost of using the PFI with a 'public sector comparator' to help determine which delivery and financing route offered the best value for money.

5 The qualitative assessment requires project teams to answer around 50 questions to confirm that the use of PFI is viable, desirable and achievable for their project. Unlike the quantitative assessment, the qualitative assessment does not require a comparison of PFI with a public sector comparator. Rather, the focus of the qualitative assessment is on whether or not PFI would work well for a specific project, given the particular features of PFI.

¹ House of Commons Treasury Committee, *Private Finance Initiative*, Seventeenth Report of Session 2010–2012, HC 1146, July 2011, paragraph 89.

² HM Treasury, *The Green Book: Appraisal and Evaluation in Central Government*, 2003 (updated July 2011).

³ HM Treasury, *Value for Money Assessment Guidance*, August 2004 (updated November 2006).

6 The VFM assessment process, and its component quantitative and qualitative assessment parts were intended to aid decision-making about whether or not to use PFI for a given project. Despite clear guidance from HM Treasury that the quantitative tool should form just part of the overall VFM judgement, the Treasury has acknowledged that all too often the quantitative tool was interpreted in practice as a pass/fail test with insufficient weight given to qualitative judgements.⁴

7 The Treasury withdrew the VFM quantitative tool on 5 December 2012 when Private Finance 2 (PF2) was introduced. At the same time, the Treasury said it would update the existing VFM assessment guidance to reflect a wider choice of contracting options, including PF2, but this extended guidance is still under development. Although the quantitative tool has been withdrawn, the overall VFM assessment guidance, including the qualitative assessment criteria, remains extant and procuring authorities are required to use it alongside the Green Book when appraising public private partnership projects.

8 Public authorities continue to need to justify their choice of contracting approach for projects. Our findings from reviewing the use of the quantitative and qualitative assessments should help authorities to implement the Green Book, and help the Treasury as it updates its VFM assessment guidance to reflect a broader range of contracting models, including PF2.

The government's approach to the appraisal of spending decisions

9 The Treasury has asked us to include the following text (paragraphs 10 to 14) to make clear its approach to the appraisal of spending decisions.

10 “The government’s approach to appraisal is set out in the Green Book. This provides a common, standard method for comparing all public spending decisions that use central government funding; the approach to appraising potential PFI projects is consistent with this central guidance. The opportunity cost of alternative spending is the government’s approach to measuring the public value of all spending proposals. At the individual project level the appraisal informs individual spending decisions and applies only to decisions about resource allocation within a predetermined budget; the decisions are on whether to spend, or not, on a particular proposal.”

11 “The calculations are not intended to inform a decision on the sale of government debt or the raising of taxation because the fiscal envelope is fixed. These are macroeconomic decisions and the need for sale of government debt is determined by factors which lie outside of the immediate spending decision that the appraisal seeks to inform. The opportunity cost of an individual spending proposal is thus simply the value of alternative spending projects.”

⁴ HM Treasury, *A new approach to public private partnerships*, December 2012.

12 “In addition, the standard approach uses a single, common discount rate – the social time preference rate. This is used simply as a means to adjust alternative options with different patterns of future costs and benefits to allow for social time preference and so facilitating their comparison. The discount rate used attempts to reflect pure preferences for benefit now over benefits postponed until the future, an element of unidentified background risk. Project specific risk is as far as possible built into the costs of the proposal and so for this reason is excluded from the discount rate.”

13 “For these reasons the Treasury does not agree with the reworked modelling that the NAO has undertaken on the sample projects to reflect in the conventionally funded and delivered comparator a cost of government borrowing, the rescheduling of payments to reflect the timing of payments under a PFI arrangement or alternative discount rates.”

14 “The Treasury intends to write to the Committee to set out its approach to the appraisal of public spending decisions in more detail.”

Our approach

15 Our analysis focused on the use of the VFM assessment process for six projects approved in 2010. Five of the six project teams chose to use PFI, and those five represent half of the PFI projects approved in 2010.

16 Our review has been carried out to draw conclusions on the VFM assessment process for PFI and should not be interpreted as drawing conclusions about the value for money of the individual projects we have examined. Our main focus has been the cost-effectiveness analysis carried out to assess the value for money of PFI. We do not draw conclusions on HM Treasury’s overall approach to investment appraisal. This review has primarily focused on the use of the model but we also comment briefly on the qualitative assessment (paragraphs 3.45 to 3.49).

Key findings on the financial model

17 **Quantitative analysis plays an important role in government’s investment decisions and the approaches set out in the Green Book help government departments to do this.** The Green Book sets out government’s appraisal methodology which is used by departments to make investment decisions. The analysis helps departments answer important questions about the relative costs and benefits of different options (paragraphs 3.7 and 3.8).

18 The cost-effectiveness analysis performed for PFI projects, which was consistent with the Green Book, did not evaluate the value for money of PFI compared to government borrowing. The PFI assessment process assumed the government has already set its expected levels of government borrowing and agreed spending limits for individual procuring authorities as part of the spending review and annual budgeting process. The Treasury's model did not reflect the cost of government borrowing when judging the value for money of individual PFI projects. Instead, the assessment process indicated whether PFI offered better value for money than using an authority's existing budget allocation to pay for the project, taking into account the benefits of private finance. This approach had two implications – both of which favoured the use of PFI:

- **The model reflected the advantage to public authorities that PFI brings of allowing them to spread the costs over time.** The model set out the timing of PFI cash flows on a financing basis (reflecting the payment schedule when unitary charges are due to be paid). By contrast, the model reflected the cash flows for conventional procurement when construction activity was paid for, which tends to be early in a project's life. Individual public authorities cannot spread out payments over time in the same way the government can do if it funds investment through public borrowing. This spreading out of PFI payments, but front-loading of conventional procurement costs, meant the present value cost of construction under PFI was reduced relative to that of conventional procurement (paragraphs 3.12 and 3.13).
- **The model only measures the cost of private finance above the social time preference rate.** Consistent with HM Treasury's guidance set out in the Green Book, the model used the social time preference rate⁵ as its discount rate rather than the government's current cost of borrowing. Since 2003, the social time preference rate has been fixed at 3.5 per cent real, which is 6.09 per cent with inflation. Because the PFI costs were spread over time, the application of this discount rate meant that it cancelled out the financing costs that were below an effective interest rate of 6.09 per cent (paragraphs 3.14 to 3.16).

19 To assess whether it would be cheaper to use government borrowing rather than PFI on individual projects would require structural change to the model.

We reworked six instances of the model using a) the rate of government borrowing, and b) the repayment profile of government borrowing, while keeping all other assumptions the same. Using either approach, PFI came out looking more expensive than conventional procurement for five of the six projects we examined. The Treasury does not agree with the methodology of these approaches and says that including the cost of government borrowing is inconsistent with the Green Book (paragraphs 3.17 to 3.22).

⁵ The social time preference rate is a tool of economic analysis that reflects social attitudes to spending now as opposed to the future.

20 More accurate models, known as ‘shadow bid models’, are used by teams for other purposes and generate significantly higher estimates of the cost of PFI than the VFM quantitative tool. Shadow bid models are generally prepared by a project team’s advisers on the same sort of basis as bidders prepare their own bids. Project teams told us that they found shadow bid models very useful in helping them understand their project and assess and challenge bids. Shadow bid models produced higher estimates for the cost of PFI in the three cases we examined where a shadow bid model was available, and these differences were due to the method of calculation rather than variances in the inputs (paragraphs 3.24 to 3.26).

21 Key assumptions in the model were not supported by empirical evidence. The post full business case optimism bias adjustment had a significant impact on the output of the model and its value should have been derived from historic data about project performance to time and cost. (HM Treasury published guidance in 2004 requiring departments to collect evidence to support key assumptions in the model, including optimism bias).⁶ In the absence of data on the delivery to cost and time of non-PFI projects, project teams resorted to estimating the likelihood that costs would rise above initial estimates and used this as a proxy for the optimism bias adjustment. As such, the adjustment was highly dependent on the expertise and judgement of each project team and its advisers, and is difficult to substantiate or scrutinise. Other assumptions in the model relating to tax and flexibility also lacked an empirical basis (paragraphs 3.30 to 3.38).

22 The Treasury’s guidance on assessing PFI has evolved as PFI itself has developed. The history of the VFM assessment process shows that the Treasury recognises the risks inherent in asking project teams to create bespoke models for projects that they wish to see proceed. The Treasury has also been very clear that the models should not be a ‘pass or fail’ test, and has regularly updated its guidance to emphasise this point to procuring teams. And it has been willing to review its approach, most notably in 2010 when it suspended the use of PFI for new projects while it undertook a review of the value for money of PFI (paragraphs 1.1 to 1.7).

6 See footnote 3.

23 Quantitative analysis is an essential part of decision-making, but project teams over-relied on the model in their decision-making. The introduction of the model did away with the need for expensive, bespoke models for each project. The financial model helped teams to better understand project needs, risks, costs and sensitivities. However, like any financial model, it could not capture all the features of a real-world decision. It was based on simplifying assumptions which can be highly subjective and often lack an empirical basis (such as the optimism bias adjustment) and so should not have been relied upon to provide a conclusive answer. However, despite Treasury guidance that the model should not be a 'pass or fail' test, many project teams did not provide sufficient explanation of the underlying rationale for their choice of contracting approach (paragraphs 3.39 to 3.44).

Finding on the qualitative assessment

24 The qualitative assessment provides a useful checklist to help project teams consider whether PFI will meet the intended outcomes of the project and is a suitable delivery methodology. The qualitative assessment, unlike the quantitative assessment, does not require project teams to compare PFI to a public sector comparator. All the questions in the qualitative assessment are focused on whether or not PFI will work well for a given project rather than assessing whether it offers the best value for money in comparison to other approaches (paragraphs 3.45 to 3.49).

Part One

History of the VFM assessment process

1.1 The VFM assessment process has developed over a number of years to guide procuring authorities in their assessment of whether or not private finance offered better value for money for their project than 'conventional procurement'.

1.2 Prior to 2004, procuring authorities used *The Green Book: Appraisal and Evaluation in Central Government*⁷ and Treasury Taskforce Technical Note 5⁸ to conduct their appraisal of projects. While there have been changes in appraisal guidance over time, the overall basis of the quantitative assessment has always been the same: a present value, risk-adjusted, discounted cash flow analysis of the cost of a privately financed public private partnership compared to a conventionally financed and delivered alternative.

1.3 In 2004, the *Value for Money Assessment Guidance* was published, replacing the Treasury Taskforce Technical Note 5.⁹ The need for new guidance had arisen due to changes in the government's approach to investment appraisal set out in the revised Green Book (April 2003) and the reforms to investment appraisal for PFI set out in PFI: Meeting the Investment Challenge (July 2003).¹⁰ The revised Green Book set out a broad methodology for investment appraisal. The VFM assessment guidance built on these concepts to provide a more detailed methodology and a set of tools for applying this general approach to the specifics of PFI transactions.

1.4 The VFM assessment process, in place since 2004, appraises PFI projects through a combination of quantitative and qualitative analysis, and is based on a three-stage approach – for programme, project and procurement level assessments. There are two elements to inform the decision-making process: the quantitative assessment, supported by a standardised financial model ('the model'), and a qualitative assessment – a set of questions for the authority to consider at each level of the three-stage process, around the viability, desirability and achievability of the project. In its 2004 guidance, HM Treasury stressed that the model should not be a 'pass or fail' test and that the qualitative case should also be considered when determining whether or not to use PFI.¹¹ In March 2007, HM Treasury updated the guidance to further emphasise the importance of the qualitative assessment alongside the model.

7 HM Treasury, *The Green Book: Appraisal and Evaluation in Central Government*, 2003 (updated July 2011).

8 Treasury Taskforce Technical Note 5, *How to construct a public sector comparator*, 1999.

9 HM Treasury, *Value for Money Assessment Guidance*, August 2004 (updated November 2006).

10 HM Treasury, *PFI: meeting the investment challenge*, July 2003.

11 See footnote 9.

1.5 Also in 2004, HM Treasury introduced, for the first time, a standardised VFM quantitative tool which was a spreadsheet-based model. This was partly in response to National Audit Office and Committee of Public Accounts criticisms of the complex and expensive bespoke models previously used to compare the cost of PFI to conventional procurement. HM Treasury acknowledged the need for a quantitative-based assessment but also recognised the inherent limitations of modelling, and sought to develop a model that was simple, practical and easy to use. HM Treasury's overall objectives for the standardised model were to:

- ensure a simple approach reflecting the early point at which the analysis took place;
- focus authorities' minds on the underlying assumptions and the interplay with qualitative judgement, and move the analysis away from a single pass/fail point estimate;
- reduce costs and ensure ownership of decisions lay with the authority and not their advisers; and
- introduce consistency across the public sector and improve the underlying evidence base.

The VFM quantitative tool was unique to PFI; government does not currently have any similar standard model for comparing contractual approaches.

1.6 On 5 December 2012, when Private Finance 2 (PF2) was introduced, the Treasury withdrew the VFM quantitative tool. At the same time, the Treasury said it would update the existing VFM assessment guidance to cover a wider choice of contracting options, including PF2, but this extended guidance is still under development. Although the quantitative model has been withdrawn, the qualitative assessment remains extant.

Note on most recent PFI projects

1.7 The most recent PFI projects to use the VFM assessment process were those approved in 2010. In our July 2010 report on financing PFI projects in the credit crisis, we noted that the cost of private finance has risen considerably relative to the cost of public borrowing since the start of the financial crisis in 2008.¹² We concluded that, up to the end of 2009, the extra finance costs of the projects financed were value for money. We took this view because the overarching policy priority to provide economic stimulus severely limited the scope for the Treasury to do more than they did to protect public value, while ensuring that the programme of PFI projects was moved forward. However, we also noted that for later projects PFI was less likely to be value for money unless there were substantial and credible savings to offset higher financing costs. The projects we looked at for this current report were approved between 2009 and June 2010. The Treasury did re-review the value for money of these projects in the second half of 2010, but it did so without reference to the differential between the cost of private finance and government borrowing.

¹² National Audit Office, *Financing PFI projects in the credit crisis and the Treasury's response*, HC 287, 2010-11, July 2010.

Part Two

Overview of the model

2.1 The VFM quantitative tool was a spreadsheet into which a number of assumptions about the costs and timings of cash flows of both a PFI and conventional procurement approach were input. **Figure 1** lists some of the key inputs for both approaches. The tool supported a cost-effectiveness analysis in which costs were discounted to produce an estimate of the difference in cost between doing the project using PFI and doing it using 'conventional procurement' (the public sector comparator). This was expressed as the difference in present value¹³ of the whole life cost of the project.

2.2 To make this calculation, the model compared the cash flows of the unitary charge (the payment to the contractor under PFI) and the resource costs of the public sector comparator.¹⁴ An illustration of the typical cash flows in the model is set out in **Figure 2** on page 16. The model spread the capital cost of the PFI option over time whereas the public sector comparator's capital costs were frontloaded. The 'optimism bias adjustment'¹⁵ increased the costs of the public sector comparator to take account of the tendency for costs and time to be underestimated in conventionally-funded projects.

¹³ Present value is the current worth of a future sum of money or stream of cash flows given a specific rate of return.

¹⁴ The resource costs include construction, lifecycle, maintenance and operating costs.

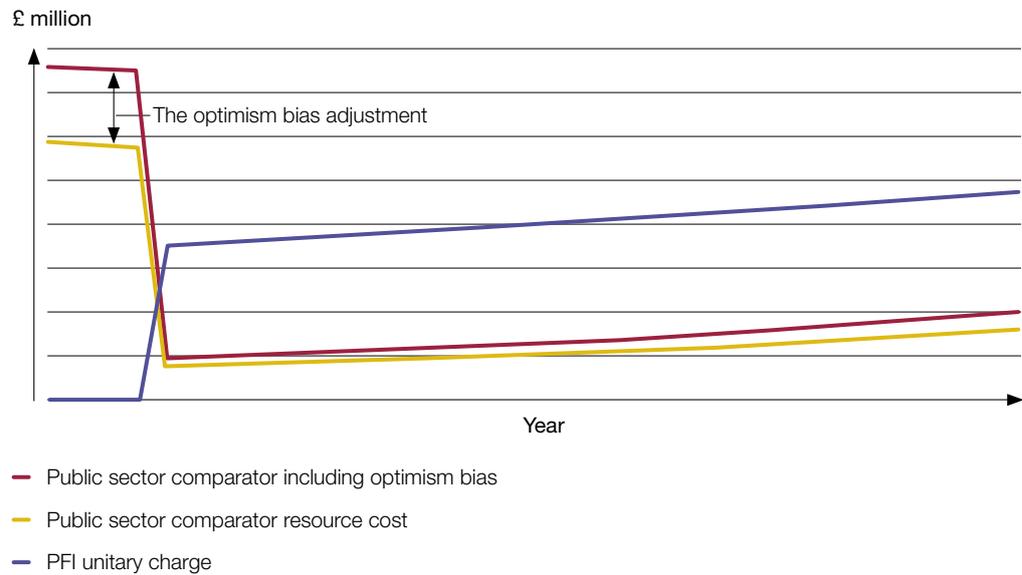
¹⁵ Specifically, the 'post-full business case optimism bias'.

Figure 1
Key inputs within the model

Area	Public sector comparator (PSC)	Private Finance Initiative (PFI)
Initial capital cost of construction	Charged when incurred – usually in early years of the project.	Included in the annual unitary charge paid to the contractor, and thereby spread over the whole life of the contract.
Cost of maintaining the asset over the life of the contract	Charged when incurred.	Included in the annual unitary charge paid to the contractor, and thereby spread over the whole life of the contract.
Cost of operating the asset		
Cost of finance and time value for money	Actual cost of public debt not reflected. All costs discounted at the social time preference rate.	Cost of finance included in the annual unitary charge paid to the contractor. However, because all costs were discounted at the social time preference rate, only financing costs above 6.09 per cent were recognised.
Optimism bias (risk of increases in cost up to contract signature)	Included.	Included.
Optimism bias (risk of increases after the contract is signed)	An estimate was added to represent the tendency of public sector contracts to overrun in time and cost.	Not included as the PFI cost is fixed by this point.
Tax charge	An estimate was added to reflect the tax that would be charged on the PFI option. It was added to the PSC rather than the PFI option in order to allow the PFI option to be compared to actual bids as they were received.	
Public sector transaction costs	Same value for both options.	
Flexibility charge	Some projects included an estimate for the likelihood that contractual changes would be required mid-contract. This was included in both options but the adjustment to the PFI option was usually higher than the adjustment to the PSC to reflect the premium the contractor would charge to make the change.	
Residual costs	If the maintenance and lifecycle costs of the public sector comparator were lower than those of the PFI option, then residual repair costs were added to the PSC to reflect the cost of bringing the asset up to the PFI standard of repair at the end of the project.	

Source: National Audit Office analysis of the VFM quantitative tool

Figure 2
Illustrative cash flows in the model



Note

1 These illustrative cash flows show how the PFI payments are spread over time, compared to the resource costs of the public sector comparator which is increased by the optimism bias adjustment.

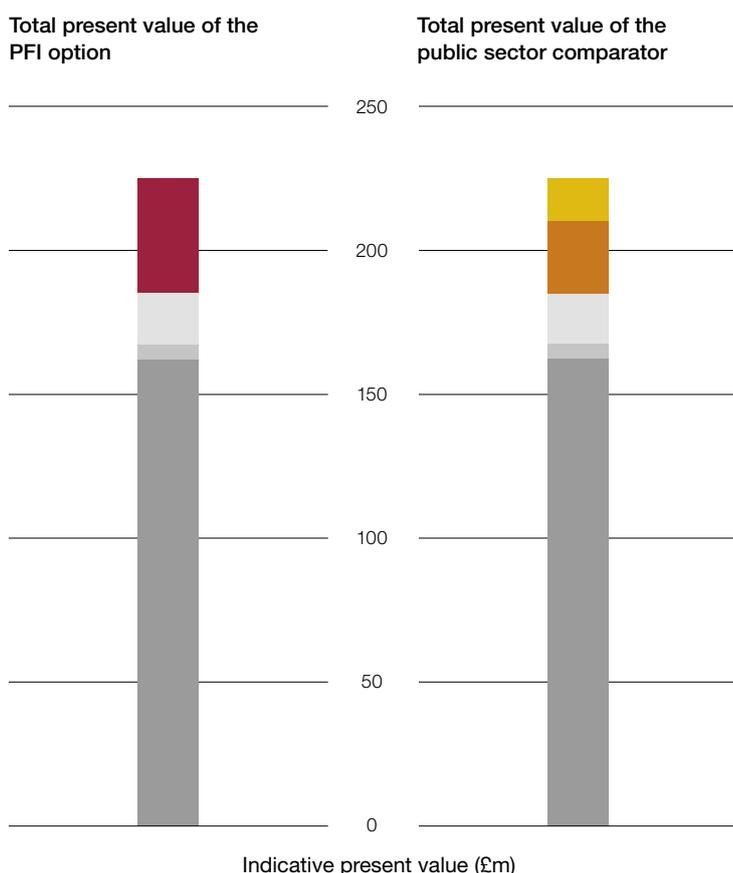
Source: National Audit Office analysis of the VFM quantitative tool

2.3 Figure 3 illustrates the components of the model. The most important variables in determining the output of the model were generally the optimism bias adjustment and those variables affecting the estimate of the cost of private finance.¹⁶

16 Such as the swap rate and the margin on the swap rate.

Figure 3

Key components of the VFM quantitative tool

Components of the PFI option and public sector comparator**The key elements affecting the output of the model**

The main elements which determine whether the model shows PFI is cheaper or more expensive than the public sector comparator are: the estimates of the cost of private finance; the post-full business case optimism bias adjustment; and the tax adjustment.

- **The cost of using private finance** – This represents the cost of using private finance to schedule the payments over time. As all costs are given as present values, the extra cost of private finance captured by the model is only that above the government's discount rate (6.09 per cent nominal).
- **The post-full business case optimism bias adjustment** represents the expected change in project costs after award of the contract as a result of the tendency of public sector projects to experience time or cost overruns. The PFI costs are fixed, so it is only applied to the public sector comparator.
- **Tax adjustment** – In order to include only the net impact on the exchequer, the tax that will be charged on the private finance needs to be captured by the model. A tax adjustment is added to the conventionally procured option so that the PFI option can be compared to the actual bids as they are received.

Other factors with no or minimal effect on the output

- **The pre-full business case optimism bias** represents the expected change in the project costs up to the point the contracts are signed. It is the same percentage increase in resource costs for both options.
- **Public sector transaction costs** up to the point of contract agreement. It is the same value in both options.
- **Resource costs** – This is the estimated basic costs of delivering the specification, including: construction cost (spread over the construction period); cost of maintaining the physical assets over the life of the contract (known as lifecycle costs); and cost of operating the assets. These values are approximately the same in both options.

Notes

- 1 Additional factors not reflected above are the flexibility allowance and the residual value (see paragraphs 3.36 to 3.38). These factors are not included in every instance of the model. The flexibility allowance is optional and the residual value adjustment is only used if the maintenance and lifecycle costs of the public sector comparator are lower than the PFI option.
- 2 The values in this figure are purely illustrative.

Source: National Audit Office

Part Three

Findings from our review of the model

3.1 We looked at the use of the model in six projects approved in 2010. Five of the six project teams chose to use PFI, and those five represent half of the PFI projects approved in 2010.¹⁷

3.2 We reviewed the use of the model for all six projects to understand the different components of the model and how they interacted. We also considered the evidential basis for some of the key assumptions used in the model. We produced three variants of the VFM quantitative tool to demonstrate how the outputs change if the comparison between PFI and the public sector comparator were modelled differently. We also reviewed the use of the qualitative assessment for the five PFI projects in our sample.

3.3 The outputs of the model for two of the six projects showed PFI to be more expensive than the public sector comparator. One of these projects used the result of the model as part of its justification for using an alternative to PFI. The business case for the other project noted that revenue was expected to be created by the public private partnership arrangements. The model was not designed to capture revenue, so in this case the project team felt that the result of the model did not fully reflect the benefits of using PFI. The team concluded in the business case, that the income from the project made up for the small net cost of using PFI shown by the model.

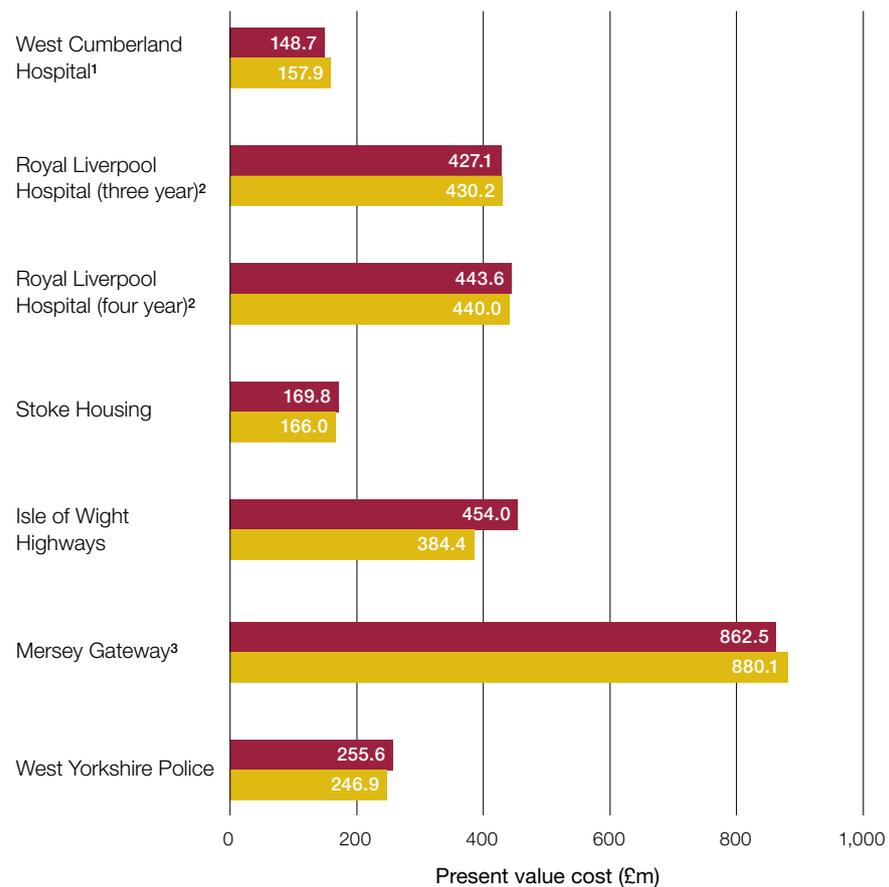
The output of the model can be very marginal

3.4 In all but one of the six cases we looked at, the result of the model was a marginal difference between PFI and the public sector comparator (**Figure 4**). In cases such as these, small changes in the input variables can change the overall conclusion of the model (that is, which option the model indicates is cheaper).

¹⁷ All projects were reviewed by the procuring authority, sponsor department and HM Treasury (three of the six projects were local authority delivered, PFI credit funded projects which were reviewed by the Treasury-chaired cross-Whitehall Project Review Group). As these projects were approved in 2010 they were subject to two reviews by HM Treasury as the incoming government asked for all large projects to be re-reviewed.

Figure 4

The results of the VFM quantitative tool, showing the present value cost of PFI and the public sector comparator for six projects



■ Public sector comparator

■ PFI

Notes

- 1 This project chose not to use PFI.
- 2 This project forecast a construction period of three and a half years. It used the average result of three and four year construction period models. It is the most marginal of the cases here.
- 3 This project used PFI because the authority considered there to be an additional benefit to net from the cost of the PFI option.

Source: National Audit Office analysis of the VFM quantitative models

3.5 For this reason the Treasury guidance required authorities to test the results of their model using indifference points to see how changes in the inputs to the model affected the outcome, as well as considering the outcome of the qualitative assessment before deciding which route offered best value for money. The models we reviewed used this sensitivity analysis to consider the impact of movements in variables such as the operational expenditure and the cost of private finance. It is difficult to see what impact this had on the decision given that none of the project teams changed their procurement approach following the analysis.

The model does not compare PFI with financing through government borrowing

3.6 The 2011 Treasury Committee report on PFI concluded that the merits of using private finance should be assessed by considering whether the benefits of using private finance outweigh the additional cost of private finance above government borrowing.¹⁸ This is similar to the approach that the National Audit Office set out in its summary report on private finance projects to the House of Lords Economic Affairs Committee in 2009.¹⁹ However, the HM Treasury VFM assessment process for PFI projects did not enable the cost of private finance to be compared to that of government borrowing.

3.7 HM Treasury's approach to the VFM assessment of PFI (and hence the construction of the model) is consistent with *The Green Book*.²⁰ The Green Book sets out HM Treasury's common methodology for comparing all public spending decisions. The approach uses the opportunity cost of alternative spending as the yardstick for measuring the public value of all spending proposals.

3.8 The Treasury chose this yardstick because of the broader context of spending decisions. Individual organisations, such as central government departments, NHS trusts or local authorities, cannot influence the level of government borrowing. Therefore, the Treasury believes the relevant issue for departments when deciding how to do a particular project is not whether borrowing money or using private finance offers better value for carrying out their project. Rather, the decision departments have to make is about whether using some of their allocated budget on the project is better or worse value than using private finance for the project.

18 House of Commons Treasury Committee, *Private Finance Initiative*, Seventeenth Report of Session 2010–2012, HC 1146, July 2011.

19 National Audit Office, *Private finance projects: a paper for the House of Lords Economic Affairs Committee*, October 2009.

20 HM Treasury, *The Green Book: Appraisal and Evaluation in Central Government*, 2003 (updated July 2011).

3.9 Therefore, under the Green Book approach, government borrowing costs or the cost of raising taxation do not feature in project appraisal, because the fiscal envelope is fixed. Individual project appraisals focus on decisions about resource allocation within the authority's pre-determined budget – that is, whether or not to spend the authority's allocation of capital expenditure on a particular proposal or to use private finance and pay the unitary charge using its resource expenditure. The Treasury's logic is explained further in **Figure 5**.

3.10 While we recognise the logic of these arguments, we are concerned that these points have not been widely communicated. As a result, the modelling process is widely thought to answer the question "Is private finance better value for money than conventional procurement financed by government borrowing?", which in fact it does not. The model actually helped procuring authorities compare the cost of PFI with using their existing budget allocation to finance a project – a useful but altogether different comparison.

Figure 5

HM Treasury's logic for key features of the model for assessing the VFM of PFI

1 Overall approach: The model was a cost-effectiveness analysis and not a full economic model. The model assumed that both the PFI and public sector comparator would lead to the same outcomes and social welfare, and that it was reasonable therefore to focus solely on the different cost to the exchequer of the two routes. Because the model excluded social welfare effects it was not necessary to measure when the asset was built or maintained, but only when payments were made.

2 The comparison: The decision about how much the government should borrow is a decision for the Treasury rather than departments. And procuring authorities' budgets are set during the spending review process. Therefore, procuring authorities do not need to consider the cost of government borrowing when deciding how to procure a project – they just need to decide whether it is better value for money to use their existing funding or PFI for their project. The model was designed to help with this comparison – it helped procuring authorities compare the cost of using PFI to the cost of using their existing budget allocation to finance a project, taking into account the benefits of private finance. The cost of government borrowing did not feature in the model.

3 No alternative sources of finance: The model assumed that the procuring authority would not use any other financing arrangement under the public sector comparator, such as prudential borrowing. The payments under PFI, including the financing arrangements, were compared to the payments under the public sector comparator with no financing. The net cost to the procuring authority of using PFI within existing budgets could therefore be measured by comparing the two schedules of payments.

4 Capturing tax receipts: The net cost to the procuring authority needed to be converted to the net cost to the exchequer by capturing any difference in tax receipts.

Source: Conversations with HM Treasury officials

3.11 Adopting this approach to comparing PFI with the public sector comparator, had two impacts on the model, both of which favour the use of PFI:

- The costs of private finance were spread over time but most of the cost of conventional procurement was not (paragraphs 3.6 and 3.7).
- The model used a discount rate which was higher than the cost of government borrowing and this had the impact of overstating the cost of conventional procurement (paragraphs 3.8 to 3.10).

The model spread the cost of PFI over time but did not spread the cost of the public sector comparator

3.12 The model reflected when cash payments would be made by the public authority in question. This meant that the PFI cash flows reflected the payment schedule of unitary charges that were due to be paid by the public authority to the contractor, while the payments for the conventional procurement route were concentrated in the early years of the contract. As a result, the present value cost of construction under PFI was significantly reduced relative to that of conventional procurement in the model.

3.13 While this modelling reflects the cash flow position of the public authority it does not consider the position of the government as a whole. If the government had chosen to borrow to fund the capital investment it would have been able to spread out the costs of the conventional procurement over time, just as PFI payments are spread over time. But the Treasury's model approached decision-making from the authority's perspective rather than the overall exchequer perspective, and so did not reflect the cost of government borrowing or the cost of raising taxation. The Treasury's approach is in line with the Green Book, which appraises projects at an individual project level rather than capturing cash flows for the government as a whole.

Difference between the model's discount rate and the rate of government borrowing

3.14 Since the Treasury believes departments do not need to take into account the government's actual cost of borrowing, the model used the social time preference rate²¹ rather than the cost of government borrowing as the rate for discounting the estimated cost of the PFI and conventional options back to their comparable present values.²²

21 The social time preference rate reflects social attitudes to spending now as opposed to the future. It is an accepted method for appraising investments since it provides a standard rate that takes into account the cost of both public borrowing and taxation. HM Treasury's Green Book explains why the government uses 3.5 per cent real (6.09 per cent nominal) for the social time preference rate. The rate is based on a number of variables which are inherently uncertain, so the value is an approximation. The rate is changed relatively infrequently.

22 Present value: the current worth of a future sum of money or stream of cash flows given a specific rate of return.

3.15 The value of the social time preference rate, as set out in the Green Book, has been 3.5 per cent real (6.09 per cent nominal) since 2003. The application of this discount rate to the PFI costs that were spread over time meant that the additional cost of private finance in the model was only measured to the extent that its implicit interest rate was above 6.09 per cent.

3.16 The cost of public borrowing has been below 6.09 per cent for over a decade and has fallen significantly since the financial crisis – in 2012-13 the average cost of public borrowing was 2.09 per cent.²³ Because the model both charged the majority of the conventional procurement costs upfront and used the standard discount rate that is well above the cost of public borrowing, the model understated the additional cost of using private finance compared to government borrowing.

Alternative ways to model the comparison

3.17 Setting aside departmental budget allocations and decisions about the overall level of government borrowing, it seems reasonable that any decision about whether to use PFI for a given project ought to consider whether PFI is the cheapest way to the exchequer of doing that project.

3.18 To assess whether PFI or government borrowing is cheaper would require a different way of modelling the comparison between PFI and the public sector comparator.

3.19 In the US, the Office for Budgetary Management (part of The White House) requires US public bodies to use a discount rate of 7 per cent real in most cost-benefit analysis. Seven per cent is used as an approximation of the pre-tax rate of return on investment in the private sector and is intended to reflect the opportunity cost of the project. However, for lease arrangements and cost-effectiveness analysis (that is, analysis similar to that which the UK undertakes for PFI projects), the Office for Budgetary Management requires US public bodies to use its forecast nominal market interest rates (that is, the cost of government borrowing) as the discount rate.²⁴ These rates are currently between -1.4 and +1.1 per cent real, depending on the term of the project.²⁵ This modified approach is used for cost-effectiveness analysis because the benefits of different options are assumed to be the same and it is only the amount and timing of payments that require modelling. Using the government's cost of borrowing ensures that the model assesses which option would be the cheapest to the US taxpayer.

23 UK Debt Management Office, *DMO Annual Review 2012-13*, August 2013, p. 49, Table B1.

24 OMB Circular A-94, *Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs*, Office of Management and Budget, 29 October 1992.

25 M-13-04, *2013 Discount Rates for OMB Circular No. A-94*, Office of Management and Budget, 24 January 2013.

3.20 We reworked HM Treasury’s model using two alternative approaches to compare private finance with government borrowing (see paragraphs 3.21 and 3.22). Both approaches indicated that PFI was more expensive than using public borrowing for the projects we assessed. HM Treasury does not agree with these modelling approaches because it says they are inconsistent with the government’s overall approach to investment appraisal as set out in the Green Book (see Figure 5).

Remodelling based on the rate of government borrowing

3.21 One way to rework the model to take account of government borrowing is to use the government’s cost of borrowing as the discount rate (rather than the social time preference rate).²⁶ We reworked all six instances of the model we looked at using a discount rate²⁷ of 4.5 per cent, which is close to the 25-year gilt rate at the time the models were produced. Taking this approach we found that, keeping all the other assumptions the same, five of the six models that had previously shown PFI was cheaper changed to indicate that PFI was more expensive than the public sector comparator – in some cases this was by a substantial amount (orange bars in **Figure 6**). The Treasury does not agree with the methodology of this approach, pointing out it is not consistent with the Green Book.

Remodelling based on government borrowing cash flows

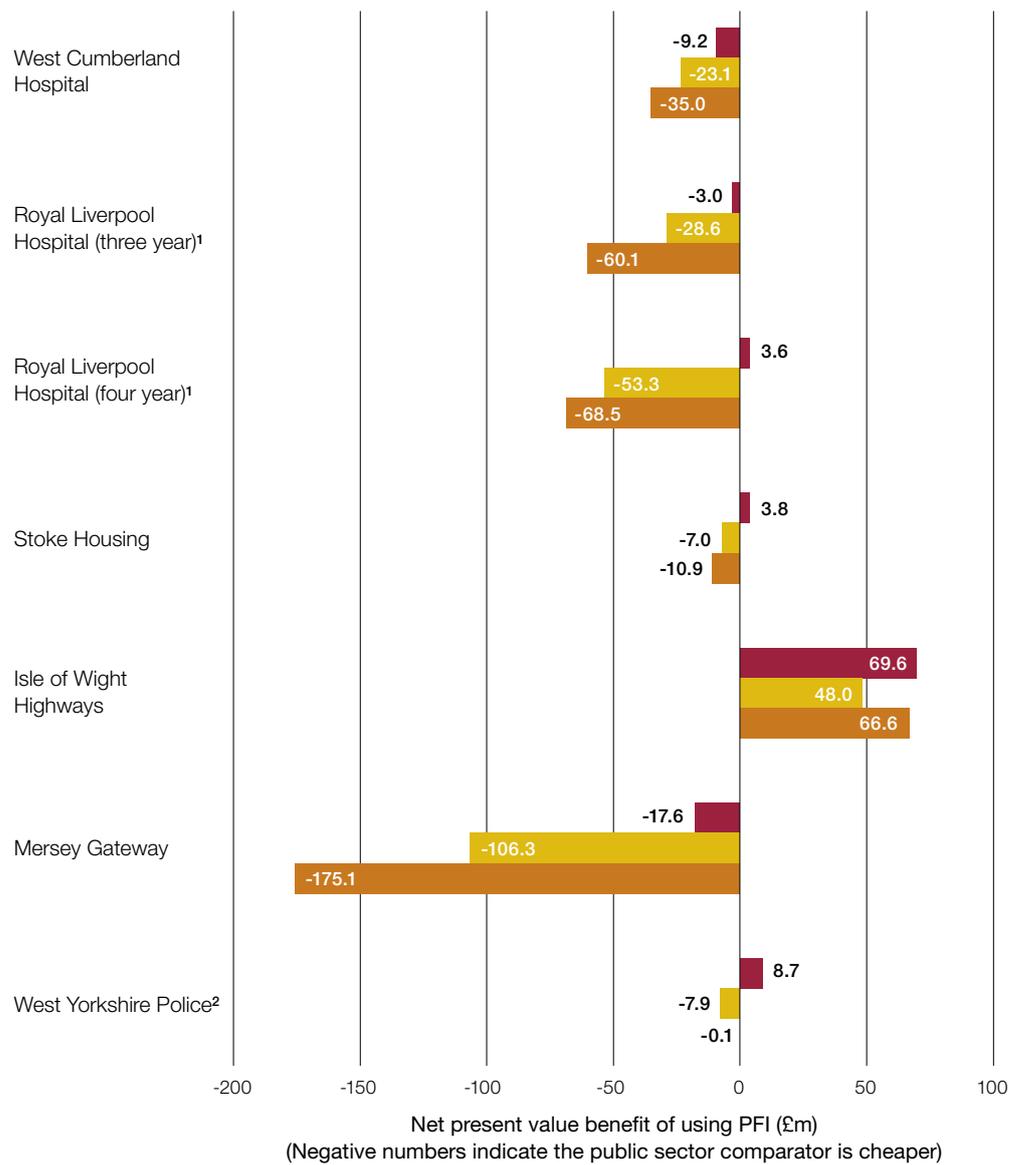
3.22 We also reworked the model so the public sector comparator cash flows were spread over time as they would be if they were financed by government borrowing. We discounted costs at 6.09 per cent nominal to maintain comparability with other investment appraisals prepared under the Green Book. Just as before, and keeping all other assumptions the same, we found that the same five models (of the six we looked at) which had previously shown PFI was cheaper changed to indicate that PFI was more expensive than the public sector comparator (yellow bars in Figure 6). Although we believe this to be compatible with the Green Book, the Treasury does not agree with the methodology of this approach for the reasons outlined above (paragraphs 3.7 to 3.9 and Figure 5).

26 This social time preference rate is a measure of social attitudes to spending now rather than in the future (see paragraphs 23 and 24).

27 Discount rate: the percentage rate applied to cash flows to enable comparisons to be made between payments made at different times. The rate quantifies the extent to which a sum of money is worth more to the government today than the same amount in a year’s time.

Figure 6

Results of the model after reworking it to account for the cost and profile of government borrowing



- VFM quantitative tool
- Using a public sector comparator with borrowing
- Using a discount rate of 4.5 per cent

Notes

- 1 This project forecast a construction period of three and a half years. It used the average result of three- and four-year construction period models.
- 2 No orange bar shows because the value is a very small negative value, not visible on this graph.

Source: National Audit Office modelling

3.23 While the two methods set out above give an indication of whether or not PFI is cheaper than using government borrowing, the comparisons are on a financial basis so neither method takes into account social attitudes to spending now as opposed to the future. To make a comparison on an economic basis (so as to reflect social attitudes to spending) would require the private finance cash flows to be modelled on an economic basis. This would be highly technically challenging.

Shadow bid models

3.24 The model used a simplified calculation of the cost of private finance which excludes some costs associated with using PFI.²⁸ Alongside the Treasury model, project teams tended to commission their advisers to produce another more detailed financial model – known as the ‘shadow bid model’ – which was based on standard templates similar to those used by contractors to price their bids. Shadow bid models were more complex than the VFM quantitative model and included additional costs that the quantitative model excluded. The shadow bid model therefore gave a more sophisticated estimate of the expected PFI unitary charge and teams used it to help them assess the affordability of their project and the reasonableness of contractors’ bids.

3.25 Shadow bid models were available for three of the five PFI projects we examined. In all three shadow bid models: a) the estimated cost of private finance was greater, and b) the estimated corporation tax was lower²⁹ than the comparable estimates in the VFM quantitative tool (see **Figure 7** and **Figure 8**). These differences arise from the different calculation methods used in the VFM quantitative model and the shadow bid model, and not from different input values.

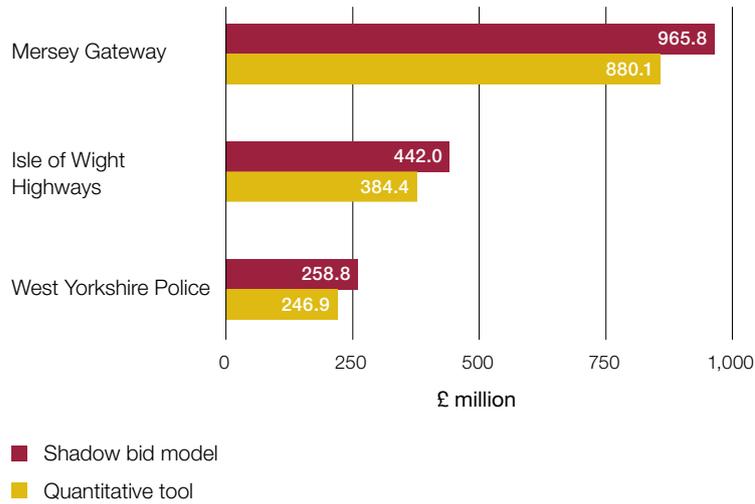
3.26 Treasury guidance required project teams to reconcile differences where they emerged from the use of a shadow bid model. However, we saw no evidence that teams had reconciled the differences in the cost of PFI under the quantitative tool model and the shadow bid model. And we conclude that department and Treasury reviewers did not challenge this failure to comply with the guidance since the business cases we looked at were approved by the department and the Treasury without such reconciliations being done.

²⁸ For example, it excludes equity bridges, quarterly payments and reserve accounts.

²⁹ Because of the way the VFM quantitative model deals with tax, a lower corporation tax value makes the PFI option more expensive relative to the public sector comparator (see paragraph 3.19).

Figure 7

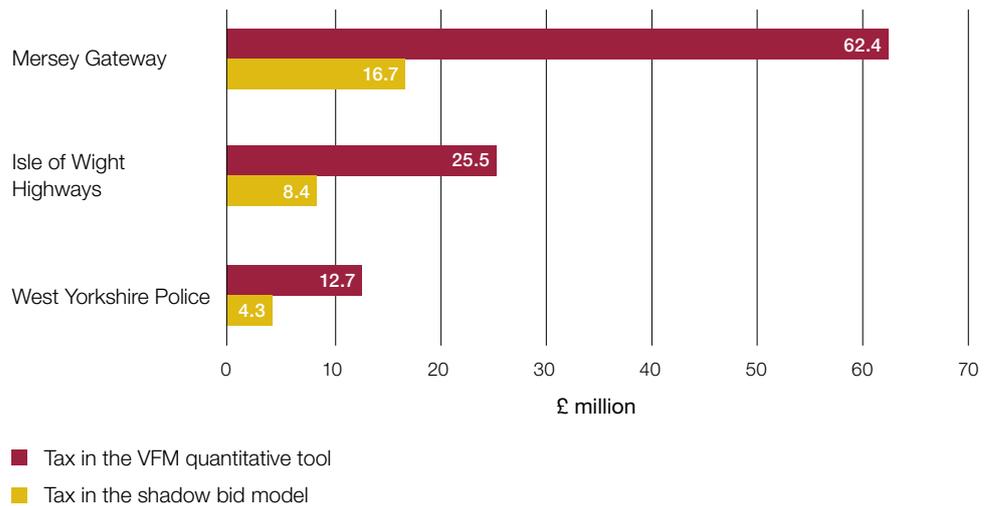
Comparison of the estimated present value of payments under PFI



Source: National Audit Office analysis

Figure 8

Comparison of present value of corporation tax adjustments in the VFM quantitative tool and the shadow bid model



Source: National Audit Office analysis

Reworking the model using shadow bid figures for the cost of PFI and tax

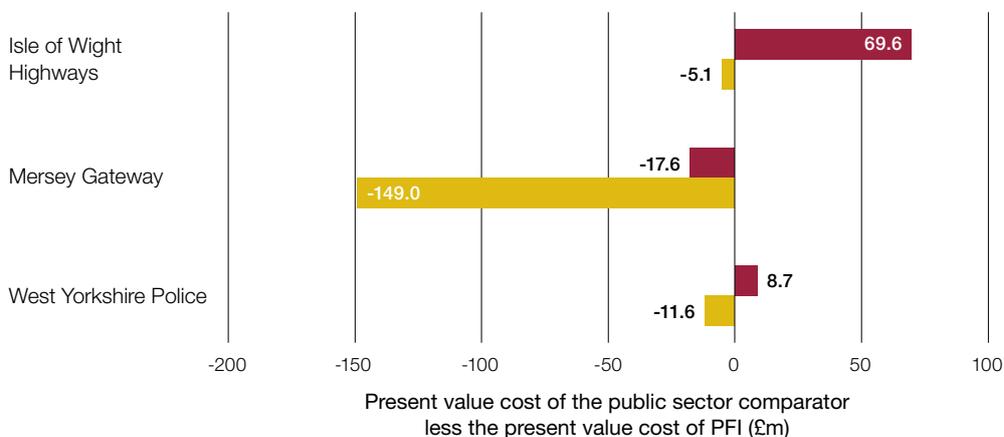
3.27 When we reworked the VFM quantitative tool using the more accurate estimates of the cost of private finance and corporation tax taken from the shadow bid models, we found that, of the three projects examined, the two that had previously shown PFI was cheaper changed to indicate it was more expensive. The one that had shown the public sector comparator to be cheaper originally showed it to be cheaper by an increased margin (**Figure 9**).

The choice of modelling approach matters

3.28 Our conclusion from reworking the model in these three ways is that the choice of modelling approach has the potential to make a material difference to the outcome of the model. It is therefore essential that the chosen modelling approach is one that has the confidence of stakeholders that it will support sound decision-making.

Figure 9

The net benefit (cost) of PFI relative to public sector comparator in a) the VFM quantitative tool and b) the shadow bid model



- Net benefit of PFI using the VFM quantitative model cost of private finance and corporation tax
- Net benefit of PFI using the shadow bid model cost of private finance and corporation tax

Note

1 A negative value on the graph indicates the public sector comparator is cheaper than the PFI option.

Source: National Audit Office modelling

3.29 There are a variety of ways to model the quantitative comparison between PFI and a public sector comparator. HM Treasury adopts one approach that uses the social time preference rate and is in accordance with the Green Book. However in certain circumstances it may be appropriate to use different approaches. We have presented three more here, and other reasonable approaches also exist. The Treasury do not agree with these methodologies, but we are aware that the Treasury has used or encouraged the use of discount rates other than the social time preference rate for some recent commercial transactions and asset sales where it concluded that a different approach to appraisal was merited. In light of the fact that the choice of approach can have such a material impact on the result of the model, we believe the Treasury's choice of modelling approach to carrying out cost-effectiveness analysis for PF2 is a topic worthy of further exploration by the Committee.

Lack of evidence supporting key assumptions

Optimism bias adjustment

3.30 As discussed in paragraph 2.2, an optimism bias adjustment³⁰ is added to the cost of the public sector comparator to represent the tendency of conventionally-financed projects to increase in price and overrun in time after the project is approved.

3.31 Guidance from the Treasury in 2004 stated that departments should collate databases of projects' performance so that they could measure the tendency of non-PFI projects to overrun on cost and time. However, none of the departments involved in these six projects systematically compile the necessary performance data on both publicly and privately financed projects which would enable them to produce such benchmarks. In the past, officials have told us this was due to the lack of comparable non-PFI projects to provide such evidence.

3.32 In the absence of data on project performance to cost and time, project teams and their consultants working on all of the projects we looked at conducted workshops at which they estimated the likelihood that costs would rise above the levels envisaged at the early stages of the project. To do so, they drew on their experience and understanding of the project to predict the likelihood of certain risks occurring and the impact on the project. This acted as a proxy for optimism bias. This was a reasonable approach in principle, but it lacked an empirical basis and created uncertainty about a key variable of the model. This approach also made the adjustment difficult to scrutinise and challenge, since it was entirely based on the experience and understanding of the project team and their consultants.

³⁰ The post full business case optimism bias adjustment.

3.33 We do not believe that it would be difficult to systematically collect evidence of project performance to time and cost. In practice, PFI has not had a monopoly on capital procurement in any sector and although no two projects are the same, there are often similarities between projects which would enable comparisons to be made. If government is to make sound, evidence-based decisions, the need to collate reference-class data will become increasingly important as the range of contracting models in use grows.

Shadow price of tax

3.34 To ensure that only net costs to the Exchequer were considered, the model had to take into account any tax that would be collected under PFI but not conventional procurement.³¹ To allow the estimate of the cost of PFI in the model to be compared to the finally approved deal it was stated gross of tax, and then, in order to ensure the two options were comparable, the tax on the PFI was added to the public sector comparator. This adjustment was known as the shadow price of tax.

3.35 HM Treasury commissioned financial advisers to develop generic benchmarks for this shadow price of tax, to make it simpler for project teams to estimate. All the projects we looked at added either 6 or 8 per cent of the resource costs to the public sector comparator to reflect the corporation tax expected to be paid by the private sector under a PFI project. As the Committee of Public Accounts found,³² HM Treasury has not been able to verify whether these generic benchmarks reflected actual tax receipts across the programme. The more accurate estimates of the tax adjustment in the shadow bid models used by three of the projects we looked at suggests that, as an assumption, 6 per cent is on the high side (see paragraph 3.27 and Figure 8).

Flexibility

3.36 Flexibility has been an ongoing issue for PFI. Project teams were able to make an adjustment to the model if they believed a significant change to the contract might be required during the project's lifetime. In the projects we looked at, these adjustments were not based on a historic record of changes and flexibility across the PFI programme. Instead they were based on the project team's necessarily rough estimates of the likelihood of the need to make a one-off change some time in the future and the potential cost of such a change.

³¹ The model also had to take into account any tax that would be collected under conventional procurement but not PFI.

³² House of Commons Committee of Public Accounts, *Lessons from PFI and other projects*, Forty-fourth Report of Session 2010–2012, HC 1201, July 2011.

3.37 For instance, one model we looked at estimated that it was 50 per cent likely to need to alter the contract by a value equivalent to 50 per cent of the project's capital cost in the tenth year of the project. An adjustment based on these estimates was added to both the PFI option and the public sector comparator, but the adjustment to the PFI option was 10 per cent higher than the adjustment to the public sector comparator to reflect the premium the contractor would require in order to make the change.

Residual value

3.38 If the major maintenance and life cycle costs of the public sector comparator were lower than those of the PFI option then residual repair costs were added to the public sector comparator to reflect the cost of bringing the asset up to the PFI standard of repair at the end of the project. These residual repair costs could be very large. In the one instance where we saw them used, the repair costs were three times the original cost of construction once cumulative inflation over the lifetime of the contract was taken into account. The Treasury told us the objective behind this adjustment was to reflect the lower spend on life cycle and maintenance costs under the conventional option compared to the PFI option.³³ The adjustment made a material difference to the result of the model. PFI requires a relatively high standard of maintenance and repair throughout the project³⁴ on the principle that this will keep the overall whole life costs down. However, departments have not collected the evidence to show how much of this additional cost of maintenance actually prevents costly dilapidation of the assets rather than simply being cosmetic or otherwise unnecessary.

Teams over-rely on the model

3.39 Despite Treasury guidance to the contrary we found that, for all six projects we looked at, the project teams placed considerable emphasis on the output of the model in the business case submitted to their own department and to the Treasury for approval; the project teams appeared to treat the model as a 'must pass' test. In one case, we saw correspondence showing the department advising the local body that the model would need to show PFI was cheaper if the project was to receive funding. This emphasis on procuring authorities justifying the use of PFI almost exclusively by reference to the model aligns with our previous experience in auditing PFI projects. The Treasury also acknowledges that all too often the quantitative tool has been interpreted in practice as a pass/fail test with insufficient weight given to qualitative judgements.³⁵

³³ The net present value of the residual costs was £36 million, even though these costs are heavily discounted because they occur relatively far into the future.

³⁴ See, for example, the maintenance costs of hospitals that we set out in *The performance and management of hospital PFI contracts*, HC 68, June 2010.

³⁵ HM Treasury, *A new approach to public private partnerships*, December 2012.

3.40 Treasury guidance is clear that financial models such as the VFM quantitative tool are not robust enough to be relied upon, on their own, to demonstrate value for money. Like many financial models the quantitative tool was based on simplifying assumptions, which can be highly subjective. Forecasts often look 30 or so years into the future – well beyond the time frame in which anything can be predicted with certainty. And models are prone to error, including user error.

3.41 While the model compared PFI to ‘conventional procurement’, it did not enable the comparison of other contracting approaches with PFI. For the six projects we looked at it was not always clear what was meant by conventional procurement. In two of those cases ‘conventional procurement’ was not considered by the project team to be the next best alternative, so in those cases the model could not indicate whether or not PFI was the cheapest approach available. The Treasury recognises that in some instances where the model was used, the conventional option to which PFI was compared was in fact undeliverable.³⁶ We believe that an appraisal approach which enables decision makers to compare multiple quantitative analyses and a range of possible approaches is most likely to lead to sound decision-making.

3.42 Project teams’ ability to gain additional benefit from using the model was hindered by the lack of visibility of the model’s workings. Many of the assumptions were hard-wired into the model and most of the workings were hidden. While this made it easier for those reviewing the use of the model, it also meant project teams were less able to explore the way their assumptions and estimates interacted and affected the project. Treasury guidance did, however, emphasise the evaluation of the sensitivity of the different variables within the model through the indifference point analysis.

3.43 Along with the Treasury, we would like to see modelling used more intelligently. This requires models to be designed in such a way that they aid a project team’s understanding of their project and allow the team to explore the relationships between the project’s various elements. The shadow bid model served these functions well but was only used in three of the six projects we looked at.

3.44 In accordance with Treasury guidance, we would like to see project teams treat models as just one element, set alongside other factors, which informs their judgement about which contracting approach offers best value for money.

³⁶ See footnote 35.

The qualitative assessment

3.45 Our analysis has focused on the role of modelling within the overall VFM assessment. But it is important to recognise that modelling is only one component of the assessment. In particular, Treasury guidance requires project teams to carry out a qualitative assessment of all projects where the use of PFI is proposed.

3.46 The qualitative assessment poses around 50 questions to inform an overall assessment about whether PFI is viable, desirable and achievable for the project in hand. The qualitative assessment, unlike the quantitative assessment, does not require project teams to compare PFI to the public sector comparator. Instead, all the questions in the qualitative assessment are focused on whether or not PFI will meet the intended outcomes of the project and is a suitable delivery methodology.

3.47 Under the desirability section, the accounting officer is asked: “overall, is the accounting officer satisfied that PFI would bring sufficient benefits that would outweigh the higher costs of capital and any other disadvantages?” The underlying assessment questions do not discuss the higher cost of capital or seek to prompt a detailed exploration of the benefits and disadvantages of PFI. It is therefore unclear how the accounting officer can give an informed response to this question.

3.48 Almost all of the assertions in the qualitative assessments we reviewed lacked a reference to any supporting evidence. And some of the statements, for example that PFI encourages innovation, directly contradicted evidence heard and reported by the Treasury Committee in its 2011 inquiry on PFI.³⁷ We rarely saw a response that referred to a specific example of a previous project. Instead, when references were made they tended to be generic to PFI, sometimes drawing on HM Treasury guidance.

3.49 The qualitative assessment is a useful checklist for procuring authorities to help them consider whether PFI is appropriate for their project. It also encourages authorities to consider issues such as timescale, innovation and risk management. However, it does not enable project teams to assess whether or not PFI is value for money either in comparison to a public sector comparator or to any other alternative procurement route.

³⁷ House of Commons Treasury Committee, *Private Finance Initiative*, Seventeenth Report of Session 2010–2012, HC 1146, July 2011, paragraph 46.



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