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Risks and the financing of PPP: Perspectives from the financiers

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ABSTRACT

Public private partnerships (PPP) are an established model for most governments internationally to provide infrastructure-based services, using private finance. Typically the public authority will sign a contract with a special purpose vehicle (SPV), which, because of the holistic nature of PPP, in turn sub-contracts the finance, design, construction, maintenance and soft services to companies that are often related to its shareholders. Thus there is a considerable network of linked organisations that together procure and provide the PPP project.

While there is an increasing body of research that examines these PPP projects, much of it is interview or case study based so that the evidence is drawn from a small number of interviews or cases in specific sectors. It also focuses on the public sector procurer and the private sector contractor in the network of organisations. Although it has been recognised that the perceptions of the financiers may vary from those of other key PPP players there is much less research that focuses on the financiers.

In this paper we report the results of a postal questionnaire survey, administered to 109 providers of senior debt and equity, from which the response rate was just less than 40%. We supplement these findings with a small number of illustrative quotes from interviewees, where the cited quote represents a commonly held view. We used SPSS and Nvivo to analyse the data.

The findings show that when assessing PPPs financiers perceive a very wide range of risks as important, and that it is important to them that many of these risks are either insured or allocated to sub-contractors. When considering participating in PPPs, financiers agree that working with familiar partners on familiar projects and in familiar sectors is important, which may raise barriers to entry and undermine competitive processes.

1. Introduction

Public private partnerships (PPP) are an established model for governments internationally to provide infrastructure-based services, using private, as opposed to public, finance. Although the involvement of the private sector in public infrastructure projects is not a new phenomenon, the PPP model enables and encourages private sector involvement in the provision of public services and the scale of private finance is unprecedented. Globally, the PPP market reached a record high of $68.6 billion in 2007 (Project Finance, 2008), and although PPP financing continued to be strong throughout 2008, by 2009 the impact of the credit crunch began to take effect so that the market was worth $55.5 billion by the end of 2009 (Project Finance, 2010).

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While other markets are significant in size especially in Europe, and India, where there has been rapid growth (Project Finance, 2008), the UK is recognised as a global leader in the use of PPP. The previous Labour administration used PPP as a means of shifting traditional responsibilities for providing public services from central and public control to private sector companies. Since the inception of the policy in the 1990s, over 900 projects worth over £70 billion have been procured in the UK (PartnershipsUK, 2009). By 2010 when it lost power the Labour administration's spending on PPP represented some 10%–15% of total government investment. While the investment plans of the new coalition government are currently under review and likely to be less expansive, politically both constituent parties are committed to private sector involvement in the provision of public services. The PPP concept is thus important internationally and in the UK.

PPPs involve a clearly defined project financed by the private sector, which shares the associated risks and rewards with the public sector. While PPPs may take a variety of forms, this paper is concerned only with the time and cost specific (English, 2007) long-term contractual arrangements under the UK's Private Finance Initiative (PFI). In these projects the private sector designs, builds, finances and operates infrastructure assets, such as roads, hospitals, and schools, in return for a revenue stream that is used to repay debt, fund construction and operations, and provide a return to investors (Pollock & Price, 2004). This revenue stream takes the form of an annual unitary charge paid by the public sector procurer.

In terms of the contractual arrangements, typically the public authority will sign a contract with a special purpose vehicle (SPV) which is usually formed specifically to undertake the project. The SPV is normally owned by a consortium which, because of the holistic nature of the contracts, will typically include two or three companies with the range of skills necessary to finance, build and operate the required facilities. The SPV, which is usually a shell company, in turn sub-contracts the finance, design, construction, maintenance and soft services to companies that are often related to its shareholders. Thus there is a considerable network of linked organisations that together procure and provide the PFI project.

There is an increasing body of research that examines these projects. While a small number of papers, reviewed below, examine the financiers in this network of organisations, more typically, such work focuses on the public sector procurer and the private sector contractor (see for example, Bing, Akintoye, Edwards, & Hardcastle, 2005a, b; Broadbent & Laughlin, 2002, 2003, 2005; Broadbent, Gill, & Laughlin, 2003, 2004; Demirag, 2004; Demirag, Dubnick, & Khadaroo, 2005; Edwards & Shaoul, 2003a, 2003b, 2004; Edwards, Shaoul, Stafford, & Arblaster, 2004; Froud, 2003; Khadaroo, 2005, 2008; Shaoul, 2005a, 2005b; Shaoul, Stafford, Stapleton, & MacDonald, 2008). The paucity of research focussing on financiers is an important omission because they are one of the more important stakeholder groups and their perceptions may vary from those of other players (Broadbent, Gill, & Laughlin, 2004). In particular, they may have different perceptions of the risks, returns and structures necessary for PFI compared with other stakeholders (Gallimore, Williams, & Woodward, 1997). Attitudes to risk are especially significant because, although PFI was not originally devised as a policy for managing risk, risk has emerged as a key feature that legitimates the shift in public services management (Froud, 2003).

Risk has been defined as 'the probability that a particular adverse event occurs during a stated period of time or results from a particular challenge' (Royal Society, 1983, p.22), but it also involves an activity or decision where either the outcome or consequence is less than certain, and at times both of these are uncertain (McKim, 1992). Although PFI may rest on a conceptual conflation of risk and uncertainty (Froud, 2003), HM Treasury (1997, p.36) does acknowledge this distinction describing risk as 'referring to the likelihood of something going wrong', and uncertainty as occurring when 'the outcome of a course of action is indeterminate or subject to doubt'. While there is little agreement on what these two terms mean, the distinction is centrally concerned with 'calculable probabilities' (Froud, 2003, p.569). Where there is no possibility of placing a numerical probability on whether an event will occur or not, the unclear future state is referred to as an 'uncertainty', whereas risk involves the possibility of placing some 'calculable probability' on a future event occurring (Broadbent, Gill, & Laughlin, 2008). However, Helliar, Lonie, Power, and Sinclair (2001) argue that managers tend to ignore probabilities and do not calculate expected values for different decision outcomes. Instead, they argue, managers focus on the size of any possible loss; they exhibit loss, rather than risk, aversion.Furthermore, in practice uncertainties may be buried deep in the PFI contracts rather than being explicitly considered as part of decision-making in either the public or private sectors (Broadbent et al., 2008).

This paper focuses on the financiers and contributes to the literature by focussing on the factors that cause them to participate in a PFI project, their perceptions about the risks in PFI, and the ways in which they limit those risks. The multiplication of the notion of risk in hybrid organisational forms identified by Miller, Kurunmaki, and O'Leary (2008) is especially true of PFI. Early categorisations provided by the NAO (1999) and HM Treasury (1999) include risks associated with: design and construction; commissioning and operating; demand; residual value; technology/obsolescence; regulation; project finance; contractor default; and political/business. Recently, despite the claims that IFRS reporting standards would remove the possibility of off balance sheet accounting for PFI, Asenova and Beck (2010) identify availability and demand risk together with residual value risks as being most important in the context of PFI because they are most likely to affect the goal of off balance sheet project treatment. To the early categorisations of risk Grimsey and Lewis (2002) added *force majeure* and environmental risks. Our study focuses on the 21 specific categories of risks in PFI projects identified by HM Treasury (2003a), which include risks of an economic, technological, political, legislative and financing nature, each of which may vary in their significance over the project's life cycle.

The rest of the paper is organised into four further sections as follows. In the next (second) section we briefly review relevant literature and in the third section describe our research methods. Section four presents the empirical evidence and the final section offers a discussion and some concluding remarks.

2. The role of financiers and their management of risks in PFI projects

In this section we briefly review literature discussing the role of the financiers in PFI in relation to risk allocation, risk management by financiers, and the changed nature of these risks because of the financial crisis that began in 2007.

2.1. Role of the financiers in PFI

In PFI risks may rest with the public or private partners or may be shared, although there is some evidence that no real consideration is given to shared risks in decision making (Broadbent and Laughlin, 2005). Asenova and Hood (2006) argue that, according to the key principles of PFI, financial risks ought to be transferred entirely to the private sector, although HM Treasury's official position is that risks should be held by the party best able to manage them (HM Treasury, 2003a). However, de Palma, Leruth, and Prunier (2009) extend this concept. They argue that risks should be held by the players that have most information about the risk, or, in the case of symmetric information, risks should be shared between principles and agents depending on their relative risk-aversion or on their portfolio of activities.

While it has been argued that PFI is underpinned by the transfer of most risks from the public to the private sector, leaving only those few risks with the client that they are well equipped to handle (Akintoye & Chinyio, 2005), the financial structure of the typical PFI deal is relevant to understanding how risk is held in practice. Prior to the credit crunch, the norm in the industry was that projects were usually funded as 10% 'equity' and 90% senior debt. However, 'equity' was usually provided by way of very little pure equity, approximately 1%; the majority of equity was in fact subordinated debt. While the impact of the credit crunch has been to increase the proportion of 'equity', the majority of PFI financing remains senior debt from bankers, who are more risk-averse than equity (HM Treasury, 2003a,b).

Whereas risk-return is a utility driven economic model predicting that all rational decision-makers will seek to minimise risk and maximise returns, literature shows that the dependence of PFI projects on risk- averse debt holders affects both the allocation of risk between the public procurer and the SPV, and the allocation of risk within the SPV's network of sub-contracting companies. Firstly, Dixon, Pottinger, and Jordan (2005) posit that, in order to ensure that their criteria for funding can be met, financiers should be involved at the early stages of PFI projects. But one impact of such involvement is that some risks revert to the public sector through government guarantees to senior debt holders in respect of contractor obligations or liabilities (Alonso-Conde, Brown, & Rojo-Suarez, 2007; Hood & McGarvey, 2002). While it is a key principle of PFI that the state should not guarantee PFI loans, this principle has been undermined on more than one occasion (Asenova & Hood, 2006). Secondly, the risk borne by the private sector may be reduced by 'material adverse event' clauses in the concession agreement, which can increase the concession period (Brown, 2005), or by letters of comfort provided to financiers (Asenova & Hood, 2006; Edwards et al., 2004). From their case study of a transport project Alonso-Conde et al. (2007) conclude that while such guarantees may reduce uncertainty when estimating project cash flows, the cost and implications of such guarantees seem neither transparent nor well understood by the PFI stakeholders, including the financiers.

Thirdly, the high proportion of debt compared to equity, even during the credit crunch, is inherently risky for senior debt holders so that there has been from the outset an onus on the contractor to invest equity in PFI projects (Asenova, 2009; Ezulike, Perry, & Hawwash, 1997), as this reduces the risks of the senior debt providers. In interviews conducted at nine construction companies Ezulike et al. found that PFI was creating a number of barriers to entry for contractors, including the need for new skills, credibility and contacts in the marketplace but in particular the demand for equity was excluding small contractors whose Balance Sheets were insufficiently strong to sustain such investment. That is, the risk management strategies of the debt financers created barriers to entry for small contractors. Furthermore, these authors found the PFI model was influencing the sorts of projects that medium and large contractors would bid for, causing them to be selective in their bidding. Together the nature of PFI and the demands of the debt providers may reduce competition in an industry that was prior to PFI described as having 'low barriers to entry and cut-throat price- based competition' (Ezulike et al., 1997).

Fourthly, because the risks facing financiers are closely aligned with the risks of the borrower there is a direct relationship between PFI project risks assumed by the SPV and its cost of finance (Dixon et al., 2005). But because the SPV has limited risk carrying capacity due to its dependence on debt finance (Demirag, Khadaroo, Stapleton, & Stevenson, 2010) one of its main objectives is to minimise risks in order to minimise the costs of finance. One banker interviewed by Asenova and Beck (2010) noted that this may be achieved by the SPV passing risks to its sub-contractors, and this tendency was confirmed by Keating (2004) although without providing any evidence.

Risk minimisation needs to be understood in the context of the nature of the large scale public works projects which are typical of PFI. These projects tend to be more risky than other business activities (Shen, Platten, & Deng, 2006), especially if the infrastructure is user specific, for example, a road or hospital (Rodney & Gallimore, 2002). Their riskiness is compounded by the involvement of multiple stakeholders, whose objectives and interests are different (Demirag & Khadaroo, 2008, 2010, 2011), and they are particularly subject to risks associated with fluctuations in demand, sudden changes in the costs of production factors, setbacks in completion time, and the risk of competing programmes (de Palma et al., 2009). That is, while the PFI policy assumes that private sector financiers are well placed to take on some of the risks of public sector procurement, the financial structure of PFI projects with its heavy reliance on debt means that risk- averse debt holders are financing projects that by their nature are typically more risky than other business activities. Thus the way in which these financiers manage risk is important.

2.2. Risk management by financiers

As Miller et al. (2008) argue, risk management is the practice of a particular type of rationality – a way of making the future manageable. Following a technicist approach to the concept of risk as opposed to post-modern or radical approaches (Froud, 2003), risk management may be defined as the process of identifying, measuring and responding to the risk associated with exposure to loss (Akintoye & Chinyio, 2005). That is, managing risk means developing the tools or technologies to allow intervention and to avoid and repair the effects of risk (Miller et al., 2008). The literature shows that risk analysis exercises of PFIs focus on 'fairly foreseeable and generally manageable environmental changes such as interest rates, exchange rates, and inflation…' (Asenova & Hood, 2006: 29), and that a technicist approach is evident in PFI risk management by financiers.

For example, a survey by Asenova and Beck (2003), consisting of interviews at 14 financial institutions with senior financial experts in the UK, examined the ways in which they identify, evaluate and manage risks. These authors find that: the financiers rely both on their own experience and that of external consultants to identify risks; use technical experts and financial models with a semi-quantitative analysis including 'what if' scenarios to evaluate risk; and that they manage risks by seeking to mitigate them contractually and by insisting that PFI contracts specify caps on the liability of the construction company and the facility management provider. In a later publication by one of the same authors, Asenova (2009) finds that these 14 financial institutions: remain cautious about risk; rely heavily on previous experiences when evaluating risk; allocate all major risks to project partners; and may attempt to manage not only the risks that directly affect them but also risks that affect third parties. Asenova (2009) concludes that these financial institutions have a standardised approach to the management of risk, however, the study did not distinguish between the risk management practices of debt and equity financiers.

In two UK hospital case studies Akintoye and Chinyio (2005) find that the banks were less concerned about the probabilities associated with risks than with the mitigating strategies that had been put in place to counter identified risks. These counter- measures, which include transferring risk to other private sector parties, insuring against the risks of PFI, and hedging interest and inflation rates, are priced and added to the project costs to reflect the risk assessment. Furthermore, Asenova and Beck (2003) argue that as the significance of PFI in terms of public sector service provision increases so does the reputational risk of the financiers' involvement and that reputation and political risks are difficult to avoid. In a more recent work the same authors note that in one of their case studies the bank considered the reputation and financial standing of its project partners as part of its risk management approach (Asenova & Beck, 2010).

2.3. The changing nature of risks in the credit crunch era

While it may be argued that 'the growth of PFI has at least been facilitated by the availability of easy money from banks and capital markets during the sustained economic growth of the mid-to-late 1990s and early 2000s' (Bailey, Asenova, & Beck, 2009: 4), the credit crunch made clear that this domestic policy is at the mercy of global economic factors as this type of procurement became more difficult to implement (Asenova & Hood, 2006). Bailey et al. (2009) identify a range of challenges posed by the credit crunch to all the participants, but notably to the financiers. These include higher loan margins, although as yields are falling the net impact remains unclear (Demirag, 2009); increased risk taking by the public sector; more risk-averse financiers who may require government guarantees in case of financial difficulties, which undermines the notion of risk transfer acting as an incentive to structure deals prudently; lack of availability of finance; and government intervention.

Prior to the credit crunch senior debt was generally provided by investment or commercial banks and for larger projects by a bond issue. Typically PFI projects were designed to attract a low investment grade rating, and credit enhancement was purchased by using a wrap from a triple A rated monoline insurer, which carried the credit risk of the project. Prior to the credit crunch the number of these insurers, who are mainly American and European, was relatively small, although the market was growing, but during the credit crunch era the market for new deals has essentially collapsed (Demirag, 2009). Thus bank finance has become virtually the only alternative, but bankers have become more risk averse in their lending (Bailey et al., 2009), and the number of active PFI lending institutions has reduced. Recent deals have relied on a pre-financial close syndication of banks each lending a proportion of the total, where previously it was more likely that a lead bank would have provided the senior debt, perhaps seeking some syndication post financial close (Demirag et al., 2010). The lack of capacity in the UK market place caused the previous Labour government to intervene by announcing in March 2009 its intention to lend public money to PFI projects that could not raise sufficient debt finance on acceptable terms and for which appropriate funding was not available from the market (House of Commons, 2009).

3. Research methods

The research findings reported here are one part of a larger study that investigates the financiers' role in PFI projects. In the larger study both qualitative and quantitative data were collected, using a combination of methods including a questionnaire survey, supported by follow-up interviews, and six mini case studies, which included interviews with both public procurers and financiers. In this paper we report mainly the results of the questionnaire survey, but we supplement these

findings with a small number of illustrative quotes from financier interviewees, where the cited quote represents a commonly held view.

A database of one hundred and nine financial organisations was created,[1] by drawing from the Partnerships UK's database of PFI projects. These financiers included firstly, equity providers to the SPV, which is commonly defined in this industry as share capital and any form of investment that is akin to equity, such as subordinated debt with a secondary ranking to the externally provided debt that has the primary claim on the SPV (Asenova, 2009). Equity providers include specialist financial institutions such as private equity and investment infrastructure investment groups that have billion pound sterling and euro investments in PFI around the world, and also construction, facilities management and support services organisations. Of this latter group the largest also have billion pound sterling and euro investments internationally but our respondents also included a much smaller regional construction company which constructs and finances small projects with capital values of around £20–50million.

Secondly, banks that provide senior debt. Our banking respondents were mainly from the largest banks with an international presence, but the respondents also included a UK based building society and a small regional bank. Senior debt is usually loaned under the conditions of a restrictive covenant that gives the lender some control over the SPV and has the primary claim on the SPV. Thirdly, bond holders, who offer finance that is slightly cheaper than senior debt for the largest PFI projects. They hold long term interest bearing certificates of debt and receive their principal after a specified period of time. Prior to 2008 bonds were normally enhanced in the UK by monoline insurers, who removed the project specific risk of default from the ultimate purchaser of the bond, by giving a guarantee for the payment of the principal and the interest (Asenova, 2009). Thereafter, with the collapse of the monoline market projects have been funded by senior debt.

The survey was administered in July 2008 and a second round of questionnaires was sent to non-respondents in October 2008. The survey questionnaire was developed from a preliminary literature review and pilot interviews and was revised on the basis of feedback from a sample of PFI equity and debt financiers, PFI consultants and academics. The risks used in the questionnaire were initially adapted from the Treasury's Greenbook (HM Treasury, 2003a). Forty three usable responses were obtained from the equity and debt financiers representing a response rate of 39.4%.

A total of eight follow-up interviews were conducted with survey respondents who were selected at random from those respondents who provided their contact details. Follow-up interviews were carried out between February and June 2009. The objectives were to discuss some of the issues examined in the questionnaire in greater depth and to determine the rationale for the respondents' replies.

Questionnaire data was entered into SPSS (Statistical Package for the Social Sciences), and descriptive statistics were generated. Chi squared tests of significance were also used. Where cross tabulations indicated cell counts of less than 5, a Fishers exact test of significance was generated.

Interviews were semi-structured in nature but did include some supplementary structured questions towards the end of the interview if issues remained uncovered. Interviews were tape recorded transcribed, coded and keyed into software package Nvivo for analysis. Interview data were coded drawing on key themes initially identified from the literature, and were expanded to incorporate new issues raised by the interviewees.

This paper makes a contribution to relevant literature and to our understanding of financing PFI contracts in the UK by using a questionnaire survey which enables a larger number of participants' views to be examined than most prior research on PFI finance which has often used a smaller number of interviews or case studies located in specific industries. For example, Asenova and Beck (2003) and Asenova (2009) surveyed 14 leading financial institutions by means of semi-structured interviews with senior finance experts based around a questionnaire; Asenova (2009) also covered four case studies – two bundled education projects and one each in housing and waste management; Akintoye and Chinyio (2005) examined two cases both in the health sector; Asenova and Beck (2010) examined two cases, one in housing and one in waste; Nisar (2007) conducted three case studies one in a prison, one in health, and one for the Ministry of Defence; Hurst and Reeves and Ryan (2007) have one school case study; the works of Shen et al. (2006) and Alonso-Conde et al. (2007) were both based on one transport project each; Broadbent and Laughlin (2005) based their analysis on an ongoing project in health; and Broadbent et al. (2008) conducted seventeen cases, all in health. Furthermore, this study distinguishes between debt and equity providers, which previous studies have not.

Table 1 below shows that our survey covereda wide range of sectors, including the three largest sectors in terms of total PFI capital expenditure, roads, hospitals and schools.

4. Findings of the study

The findings are divided into a number of sub-sections as follows. We first provide background information about the financiers, the nature of their investments and their internal organisational arrangements. We then discuss the financing criteria used and the factors that influence financiers' decisions to fund PFI projects. Finally, we discuss the financiers' attitudes to risk, risk allocation and techniques for limiting risk.

[1] The survey database also included the contact details of 69 pension fund managers and directors, which were obtained from the Institute of Pension Managers. A very low and unusable response rate was obtained from this source, so that the results are not reported. This response rate appears to reflect the need for a more tailored survey specific to these investors.

Table 1
Number of respondents' companies reporting financing of PFI projects by sector.

Sector	Number
Schools	27
Hospitals	25
Roads	20
Defence	18
Building schools for the future (BSF)	16
Prisons and prison services	16
Waste	14
Other transports such as railways	13
Water/sewage	11
Housing	10
Others	10

Other responses: Care homes, Libraries, Police/Civil Justice/Police Offices, Courts, Fire Stations, Further Education, Government and Local Authority Offices, Street Lights, Student accommodation.

4.1. Background information

In Table 2 the majority of the respondents indicated that they provide both equity and subordinated debt, and around one third of respondents mainly provide senior debt or bonds.

Of the respondents, who *mainly* provide debt, 57% indicated that they also hold an equity stake in all of the projects for which they provide debt, but approximately one fifth do not hold equity in any such projects. While the precise values vary between equity and debt providers, in general terms respondents were most likely to have financed fewer than 10 projects in the last 10 years. Just 8% and 9% of respondents provided debt and equity respectively to more than 50 projects in this period.

There was some reluctance amongst respondents to provide information about their internal organisation and performance measurement systems. Commercial confidentiality was cited as the reason for not providing such information. Of 35 respondents who provided information just short of two thirds indicated that their companies have dedicated PFI units, typically with a small number of employees, and most units operate with minimum performance criteria. In relation to equity, minimum criteria were based usually on: equity internal rate of return; profit/deal flow; and return on equity. For debt, the minimum criteria commonly included measures based on debt service cover ratios and return on subordinated debt. Other responses included - for equity providers - internal rate of return, cash flows, portfolio value to internal rate of return, number of bids won and the investment value created. Debt service cover ratios and construction turnover were the two most common 'other' measures given for debt providers.

4.2. Financing criteria and decisions to participate in a PFI project

Tables 3 and 4 report information about factors that influence decisions to invest in a PPP project. Unprompted responses to the financial and non-financial decision-making criteria were extensive but there were some commonalities which are shown in Table 3. In line with the ways in which the financiers report their performance is measured, the most common financial criteria are internal rate of return and return on equity. Reputation was the most commonly cited non-financial criterion, which provides confirmation for a similar finding from Asenova and Beck (2010) based on a bank interviewee's perception that reputation of PFI partners is important. This also dovetails with the financial criteria of partnering financially strong sub-contractors with healthy balance sheets.

Amongst the prompted responses shown in Table 4, high proportions of respondents cited profitability, organisational competence in terms of familiarity with the project type, the industry and geographical region, and knowledge of consortium members as factors that influence their decision. The importance attached to working with known consortium members shows that Ezulike et al.'s (1997) 'credibility and contacts in the marketplace' barrier to entry appears to be in place even after

Table 2
Type of finance mainly provided to PFI projects.

Type of finance	%
Equity	76.7
Subordinated debt	67.4
Senior debt	27.9
Bond finance	7.0
Others	4.7
Total responses	100.0 $n = 43$

Table 3
Financial and non-financial decision-making criteria.

Financial criteria	Non-financial criteria
Internal Rate of Return (IRR) in particular relating to equity	Reputation
Return on equity	Familiarity with industry and client relationships
Equity payback period	Risk transfer to sub-contractors
Availability of debt finance	Quality of and familiarity with the contractor
Financially strong sub-contractors with healthy balance sheets	Availability of insurance for non-transferred risks
	Good track records and prior experience of all parties involved in a project
	Extent of standardisation in the contract
	Compensation on termination

the PFI market has matured. Whereas Ezulike *et al.'s* respondents were construction companies, our findings cover both construction/facilities management companies that provide equity and financial institutions that provide debt and/or equity. Interestingly, while the differences are not statistically significant, higher percentages of the financial institutions agree that familiarity with the industry, projects and partners is more important than the construction/facilities management companies.

The findings are mixed in terms of the influence of the level of private sector risk compared with previous contracts and the declining numbers of PFI projects available. The Chi squared tests in Table 5 show that there is a significant difference between debt and equity financiers on these two factors. In relation to the level of risk factor, responses from equity providers were evenly distributed across the categories agree, neutral and disagree whereas the majority of debt providers (73%) agreed with this statement and none disagreed, signalling a preference for lower risk projects during the credit crunch than previously. The Chi squared value of 6.899 is significant at the $p < .05$ level. While the result is not statistically significant, the respondents from construction/facilities management companies that provide equity were less likely to indicate that level of risk was an important factor than the financial institution.

A significant difference at the $p < .05$ level exists in relation to the respondents' appetite for participation in the industry. Whereas fifty percent of equity providers agreed that 'a decline in the number of available new PFI projects' was an influencing factor, none of the debt providers agreed. While the result is not statistically significant, the respondents from construction/facilities management companies that provide equity were more likely to indicate that pipeline was an important factor than the financial institutions, and at interview the construction equity providers indicated the importance of generating continuous work for their construction teams.

Table 5 also shows a significant difference at the $p < .01$ level in relation to a 'preference for certain geographic regions', expressed by the majority of equity providers (87%), whereas debt providers were more neutral. Evidence from the follow up interviews suggests that it is construction company providers of equity that have relatively strong preferences for specific geographic regions, rather than financial institutions. A sub-division of the questionnaire respondents shows that all the construction/facilities management equity providers indicate a preference for certain geographical regions whereas this is only true for 56% of the financial institution debt and equity providers. This difference is statistically significant at the $p < .01$ level.

4.3. Attitudes to risk in PFI projects

Table 6 to 12 summarise the responses concerning attitudes to risk, including the assessment and management of risk. Table 6 to 8 report the perceptions of equity, senior debt and bond providers respectively regarding the importance of a range of factors when assessing risk. An interesting finding is that with very few exceptions *all* factors were considered to be either

Table 4
Factors that influence the decision to participate in a PFI project.

Factor or statement	Agree (%)[a]	Neutral (%)	Disagree (%)[b]	N
Familiarity with this industry	92.9	7.1	0.0	42
Considered to be profitable	90.7	7.0	2.3	43
We have engaged in a similar project before	90.5	9.5	0.0	42
Working with consortium members we have already worked with before	88.1	9.5	2.4	42
Invitation by a consortium member	80.5	12.2	7.3	41
Preference for certain geographic regions	74.4	20.9	4.7	43
Ability to trade in the equity or bond of our investments	48.7	28.2	23.1	42
A relatively small amount of private sector risks involved compared with our previous contracts	42.8	31.0	26.2	42
Decline in the number of available new PPP projects	35.7	38.1	26.2	42

[a] Agree refers to agree and strongly agree.
[b] Disagree refers to strongly disagree and disagree.

Table 5
Factors that influence the decision to participate in a PPP/PFI project.

		Equity or sub debt provider (%)	Senior debt or bond finance provider (%)	$\chi 2$
We have engaged in a similar project before	*Disagree*	0.0	0.0	0.008
	Neutral	10.0	9.1	
	Agree	90.0	90.9	
Invitation by a consortium member	*Disagree*	10.0	0.0	1.422
	Neutral	13.3	9.1	
	Agree	76.7	90.9	
Familiarity with this industry	*Disagree*	0.0	0.0	0.070
	Neutral	6.7	9.1	
	Agree	93.3	90.9	
A relatively small amount of private sector risks involved compared with past	*Disagree*	36.7	0.0	6.899*
	Neutral	30.0	27.3	
	Agree	33.3	72.7	
Decline in the number of available new PPP/PFI projects	*Disagree*	23.3	36.4	9.016*
	Neutral	26.7	63.6	
	Agree	50.0	0.0	
Considered to be profitable	*Disagree*	0.0	9.1	3.021
	Neutral	6.5	9.1	
	Agree	93.5	81.8	
Preference for certain geographic regions	*Disagree*	3.2	9.1	11.045**
	Neutral	9.7	54.5	
	Agree	87.1	36.4	
Ability to trade in the equity or bond of our investments	*Disagree*	20.7	33.3	3.016
	Neutral	24.1	44.4	
	Agree	55.2	22.2	
Working with consortium members we have worked with before	*Disagree*	3.3	0.0	2.088
	Neutral	13.3	0.0	
	Agree	83.3	100.0	

*$p < .05$, **$p < .01$.

very important or important by the majority of respondents. An equity financier explained at interview that this is because of the high costs of missing targets in PFI projects compared to other projects:

> *You do have the same uncertainties but the uncertainties actually hit you more in this (PPP) they really hit you badly…. I have just finished a school, £30m just for one school, we finished it a day late, it was due to be finished on a Saturday and it was finished on Sunday, it was opened for the teachers on the Monday but we still have to charge the builder for one day of lost rent and so normally you would …say well what a good job he has done and let's just forget about that but it is going to cost him nearly £11,000 for being one day late.*

With one single exception, noted below, Chi squared test results, which are omitted here, showed no significant differences between the attitudes of equity and debt providers. As expected, return on investment is important to all three categories of financier, although it is only the top factor for bond holders. The ability to transfer risk to sub-contractors and the availability of insurance make the top four factors for all the financiers. This offers confirmation of the Asenova and Beck (2010) banker's belief and the assertion by Keating (2004) that SPV's and financiers are minimising their own risk by passing risks to sub-contractors, but it also indicates that the ability to mitigate risks by insuring them is important to financiers.

For equity finance, all risks are regarded as very important or important by more than half the respondents apart from the risk of 'contract term after debt is paid out'. This is the one item that does show a significant difference (chi squared value of

Table 6
Factors considered important when assessing risk in a PFI project - equity finance.

Equity finance factors	Percentage 1 and 2[a]	Percentage 3 and 4[b]	N
Risk transfer to sub-contractors	97.1	2.9	35
Return on subordinated debt (or quasi equity)	91.4	8.6	35
Target return on equity	91.4	8.6	35
Availability of insurance on risks taken	85.7	14.3	35
Inflation on operating costs	77.1	22.9	35
Availability of insurance on all construction risks	74.3	25.7	35
Inflation on construction costs	58.8	41.2	35
Chance of changes in tax law	51.4	48.6	35
Contract term after debt is paid out	45.7	54.3	35

[a] 1 and 2 refer to the range very important to important.
[b] 3 and 4 refer to the range of little importance to not important.

Table 7
Factors considered important when assessing risk in a PFI project – senior debt finance.

Senior debt finance factors	Percentage 1 and 2[a]	Percentage 3 and 4[b]	N
Availability of swaps to mitigate interest rate risks	100.0	0.0	34
Risk transfer to sub-contractors	96.9	3.1	33
Interest margins on cost of debt (LIBOR)	90.9	9.1	34
Availability of insurance	90.9	9.1	34
Cover ratios (.E.g. Loan Life Cover, Debt Service Cover, Interest Cover)	90.9	9.1	34
Technical due diligence on financial model	87.9	12.1	34
Availability of insurance on all construction risks	84.8	15.2	34
Availability of insurance on all operating and maintenance risks	84.8	15.2	34
Inflation on operating costs	78.8	21.2	34
Contract term after debt is paid out	75.8	24.2	34
Chance of changes in tax law	65.6	34.4	33
Inflation on construction costs	58.8	41.2	34
Availability of bonds to mitigate interest rate risks	41.7	58.3	32

[a] 1 and 2 refer to the range very important to important.
[b] 3 and 4 refer to the range little importance to not important.

4.174) between attitudes of debt and equity providers at the $p < .1$ level, with over 70% of both senior debt and bond holders indicating this is important.

Table 7 shows that 'availability of swaps to mitigate interest rate risks' is considered important by 100% of senior debt respondents, but 'availability of bonds to mitigate interest rate risks', is the only factor rated as not important or as having little importance by a majority of these respondents. The risk of changes in the law is likely to be sector specific, as explained by one of the senior debt financiers:

> *Government legislation, change in law again, that can be quite a big risk depending upon what sector you are in. Particularly in the waste sector where you are seeing many legislative changes and let's face it, there could be one in the prison sector if a law was passed saying that, all prisoners in the future must have their own cell. That would be quite a big change to a contract… Now again that is a risk that the private sector would see passing back to the public sector, but there is still always a debate to be had.*

However, according to an equity financier, tax changes may not be important because:

> *There are usually clauses in the contract that if it is a discriminatory specific tax then the council would pay us extra anyway. So it's only if it's a general change of law and then all businesses would suffer, so if they put the corporation tax right up to 40% then every business would suffer, profitability would go down, the stock market would go down but the government might get more money (E1).*

Bondholders have been characterised as remote sources of finance, often based overseas, with no direct interest in individual projects (Demirag et al., 2010), which may explain the importance they place in Table 8 on the technical due diligence on the financial model and on their ability to make a return. Their return, the margin on cost of debt is measured against the yield on a risk-free gilt and is the additional return required by investors for the risk inherent in the bond.[2] However, the involvement of multilateral organisations[3], such as the European Investment or World Banks, which might reduce political risk and certainly adds an additional layer of due diligence, was the exceptional item rated as important by less than half these respondents.

Table 9 to 11 show the overall importance of four general risk categories, design and development, finance, operation and ownership, at each of three phases of PFI projects: pre-financial close, construction and operations. On a scale from most important to least important design and development is perceived to be the most important risk in both the pre-financial close and construction phases, and finance is the second most important in all three phases. Table 11 shows a different pattern after construction is complete, when as expected, operation risks attracted a huge response at the 'most important' level.

During construction the importance of design and development is expected, but its importance before financial close may be linked to the need to fund the winning bid in order to make profits from PFI, as a senior debt provider explained:

> *Design and development is what wins a project, so that's a key risk in terms of are you backing the right horse.*

Across the three phases of the PFI lifecycle, Chi squared tests have been performed between the responses from debt and equity providers regarding the importance of each major category of risk. As Table 12 shows, operations risks are significantly more important to debt than equity providers at the $p < .01$ level before financial close, as are design and development and

[2] Most bonds issued in the UK prior to 2008 were wrapped by a AAA rated financial institution, but this market collapsed, leaving senior debt as the only feasible alternative.
[3] This item was suggested to the authors by an industry expert during the piloting of the survey.

Table 8
Factors considered important when assessing risk in a PFI project – bond finance.

Bond Finance	Percentage 1 and 2[a]	Percentage 3 and 4[b]	N
Margins on cost of debt (GILTS)	94.1	5.9	23
Availability of insurance	88.9	11.1	23
Risk transfer to sub-contractors	88.9	11.1	23
Availability of insurance on all construction risks	88.9	11.1	23
Bond rating	88.9	11.1	23
Technical due diligence on financial model	88.9	11.1	23
Availability of insurance on all operating and maintenance risks	83.3	16.7	23
Inflation on operating costs	77.8	22.2	23
Contract term after debt is paid out	72.2	27.8	23
Availability of swaps to mitigate interest rate risks	66.7	33.3	23
Inflation on construction costs	61.1	38.9	23
Chance of changes in tax law	61.1	38.9	23
Breakage costs of swaps	52.9	47.1	23
Involvement of multilaterals	33.3	66.7	23

[a] 1 and 2 refer to the range very important to important.
[b] 3 and 4 refer to the range little importance to not important.

ownership risks both at the $p < .05$ level during construction. The questionnaire responses do not provide an explanation for this distinction, but the interviews may provide a partial explanation. At interview equity providers, who are also construction companies, indicated that they are well prepared to carry design, development and operations risks with which they are familiar as part of normal business activity, whereas senior debt providers indicated that especially in the early days of PFI there was uncertainty about the nature of the risks that they might face.

However, as explained by an equity provider who is also a contractor, perceptions about levels of risk between the project phases may vary across sectors:

> *For schools, I think, the construction is the biggest risk. For prisons: I think the operation is the biggest risk because I think that there is a lot more to the operational side and the performance mechanisms and the things that you can't afford to get wrong, like letting prisoners out accidentally… For roads, I would say the construction period. In Defence transactions I would probably swing to the operations again, because, normally what you are building for an MOD, might be relatively straightforward but it's the operations of perhaps keeping technology refreshed etc. that might be the more challenging aspect.*

4.4. Risk allocation

The literature review identified risk allocation in PFIs as potentially problematic, especially in relation to shared risks, but Table 13 shows that a significant majority of the respondents perceive that they are clear about where risk lies in PFI projects. In addition, most respondents indicated that they have not overestimated risks historically, although the reduction in opportunities for profitable refinancing might suggest the opposite. Alternatively, equity sales may have replaced refinancing (NAO, 2006).

At the time the survey instrument was administered respondents indicated their agreement with the statement that over the last four years risk transfer from the public to the private sector has increased. Based on the follow up interviews, these respondents were apparently reflecting their perception that it was public sector policy prior to the credit crunch to increase the transfer of risk to the private sector. As the credit crunch takes hold of the industry reducing the availability of finance and increasing the risk-aversion of bankers, risk taking by the public sector may be increasing (Bailey et al., 2009).

While it might be expected that the majority of financiers would state their belief that risks are not negotiated or passed back to the public sector after the contract has been awarded, it is interesting to note that about one quarter of respondents, a sizeable minority, perceive some flexibility exists in these areas, which is not in line with the key principles of PFI. This may be related to the findings of prior literature that various forms of support are provided to the private sector, such as 'material adverse event clauses' (Brown, 2005), letters of comfort (Asenova & Hood, 2006; Edwards et al., 2004) and government guarantees (Alonso-Conde et al., 2007; Hood & McGarvey, 2002). During the credit crunch government guarantees were given

Table 9
Overall importance of risks: the pre-financial close phase (%).

Risks	Pre-financial close					
	Most important	Important	Less important	Least important	Mode	Total responses
Design and development	66.7	25.6	7.7	0.0	Most important	39
Finance	35.9	43.6	15.4	5.1	Important	39
Operation	10.3	15.4	43.6	30.8	Less important	39
Ownership	5.4	10.8	27.0	56.7	Least important	37

Table 10
Overall importance of risks: during construction of infrastructure (%).

Risks	During construction of infrastructure					
	Most important	Important	Less important	Least important	Mode	Total responses
Design and development	79.5	17.9	2.6	0.0	Most important	39
Finance	25.6	46.2	23.1	5.1	Important	39
Operation	5.3	28.9	42.1	23.7	Less important	38
Ownership	2.8	13.9	25.0	58.3	Least important	36

in the case of financial difficulties (Bailey et al., 2009), in addition to the government's lending of public money to fund projects that could not raise sufficient debt finance.

HM Treasury's (1999) intention is that, while there is scope in the standard contract format for some items to be negotiated, there should not be renegotiation of the major standard contractual terms. The intention is that these standards are all inclusive, that is, if a risk can be identified it should be included. As Table 13 shows, just less than 40% of questionnaire respondents would prefer to renegotiate the terms in these standard contracts, but in practice, interviewees suggest the public sector allows very little substantial deviation from these contracts. Thus there appears to be standardisation of contract terms, perhaps confirming the impression gained by Ezulike et al. (1997) from their interviewees that as the PFI market matures high participation costs might decline.

4.5. Limiting risk

Financiers may adopt a variety of means of limiting their risk, which we now consider. Firstly, Table 14 reports the respondents' use of various techniques to limit risk in the past five years. Responses were sought for periods before and after the operational phase of the project. In both phases transferring risk to sub-contractors and insurance are the top two methods. Table 15–17 show the importance attributed to this strategy for three risk categories: design and development, operations, and ownership risks respectively. Across all three categories the majority of respondents perceive these risk mitigation measures as important for all risks listed in the questionnaire.

During interviews some financiers discussed the significance of life cycle risk during operations. This risk remains with the private sector over the long term and, as a senior debt provider explained, may affect the risk profile of the project in the future:

> *The private sector has priced what it thinks the fabric of that building will require how much money it will require to keep it running at a standard that has been agreed with the public sector. It may say there should be no scratches on that wall, that carpet should not show wear and tear and they are pricing that on day one. So if you take the very first transactions and we are only ten years into thirty years, only now are we able to see if there has been enough put aside to pay for those repairs and renewals and that risk is definitely a private sector risk. We can't go back to the public sector and say, sorry we have under priced our lifecycle, can we have some money? The answer will be no. So do I see the risk profile changing? If I do it will probably be through that lifecycle.*

Secondly, the literature suggests that one means of limiting private sector risk is the extraction of explicit or reliance on implicit guarantees from government. Table 18 shows that responses were mixed on this issue, with responses being fairly evenly split in relation to implicit guarantees while approximately half of the respondents (51%) perceive that an explicit government guarantee is not needed.

However, this mixed response contrasted with the much more consistent importance attached to the direct agreement between senior debt holders and the procurer. This agreement enables the senior debt or bond providers to step-in to problematical contracts to protect their own interests. Seventy five percent of respondents agreed that projects would not go ahead without such direct agreements. Although, PwC (2008) find that step-in is infrequent in practice, at interview a senior debt financier stated that ultimately they will exercise these rights, even though such a move signals to the market that a project is in distress:

> *The banks need to be able to step in to the situation before the council … we want to be able to fix it before (the procurer) does … (The procurer) will probably compensate us but we don't want to go down that route.*

Table 11
Overall importance of risks: OPERATIONAL phase (%).

Risks	Operational phase					
	Most important	Important	Less important	Least important	Mode	Total responses
Operation	90.0	7.5	2.5	0.0	Most important	40
Finance	12.5	55.0	32.5	0.0	Important	40
Ownership	7.9	28.9	28.9	34.2	Least important	37
Design and development	0.0	12.5	35.0	52.5	Least important	40

Table 12
Importance of risks during each phase of a project.

Importance of risks during each phase			Equity or sub debt provider (%)	Senior debt or bond finance provider (%)	$\chi 2$
Finance	Pre-financial close	*Important*	82.8	66.7	1.070
		Not Important	17.2	33.3	
	During construction	*Important*	65.5	90.0	2.201
		Not Important	34.5	10.0	
	Operational phase	*Important*	60.0	90.0	3.077
		Not Important	40.0	10.0	
Design and Development	Pre-financial close	*Important*	89.7	100.0	1.011
		Not Important	10.3	0.0	
	During construction	*Important*	100.0	90.0	2.976*
		Not Important	0.0	10.0	
	Operational phase	*Important*	13.3	10.0	0.076
		Not Important	86.7	90.0	
Operation	Pre-financial close	*Important*	13.8	66.7	9.902**
		Not Important	86.2	33.3	
	During construction	*Important*	37.9	22.2	0.753
		Not Important	62.1	77.8	
	Operational phase	*Important*	96.7	100.0	0.342
		Not Important	3.3	0.0	
Ownership	Pre-financial close	*Important*	13.8	28.6	0.887
		Not Important	86.2	71.4	
	During construction	*Important*	10.3	42.9	4.292*
		Not Important	89.7	57.1	
	Operational phase	*Important*	36.7	37.5	0.002
		Not Important	63.3	62.5	

*$p < .1$, **$p < .01$.

Chi squared tests, not reported, show no significant difference between equity and debt holders.

Thirdly, risk may be limited by monitoring the progress of PFI projects. The extent of monitoring varies depending on the phase of the project but interviewees indicated that monthly written reports of performance are common. Moreover, in critical phases interviewees signalled the importance of direct information from construction sites that involved physical 'walk arounds' by their technical advisors.

Quantitative financial models, which are considered to be commercially confidential, are used to inform financing decisions, and these computer generated models form an important basis for subsequent project monitoring and review against forecasts. As Table 19 shows financiers maintain relatively tight control over projects, as deviation from the financial model by less than 10% will trigger intervention by over 80% of respondents' companies. It is noteworthy that only a small percentage of respondents identify the award of penalty points or payment abatements as triggers for action, despite the importance attached by proponents of PFI to these contractual incentives that are expected to ensure good performance.

Fourthly, the literature makes a distinction between risk and uncertainty, in terms of calculable probabilities attaching to the likelihood of an adverse event, but as explained by an equity investor who is also a contractor, uncertainty about project specifications increases risk:

So the clarity from the client was probably the number one area of reducing the risk from our perspective.

As the same interviewee explained, the involvement of too many third-party service providers can also add complexity and uncertainty:

Table 13
Risk Allocation in PFIs.

Statements	Agree (%)[a]	Neutral	Disagree (%)[b]	N
Over the last four years the amount of risk transferred from the public to the private sector has increased	80.4	9.8	9.8	31
We prefer to renegotiate the terms of the standard PPP contract.	37.9	29.7	32.4	39
The transfer of risks is *not* always agreed upon until after the PPP contract has been awarded.	26.8	4.9	68.3	41
It is possible to transfer some of the risks of a PPP back to the public sector after a project is negotiated	22.5	7.5	70.0	40
We have realised from experience that historically we have overestimated the risks in PPPs	19.5	9.8	70.7	41
It is often unclear who bears what risks in a PPP project.	2.4	7.3	90.3	41

[a] Agree refers to agree and strongly agree.
[b] Disagree refers to disagree and strongly disagree.

Table 14
Methods organisation used to limit risk in PFI over the past 5 years.

Methods of limiting risk	Pre-operation	Post-operation
Transferring risk to sub-contractors	39%	25%
Insurance	31%	35%
Spreading risks through syndication	18%	11%
Transferring risk to public sector	18%	8%
Spreading risks through a portfolio of projects	17%	21%
Contract renegotiation	7%	6%
Securitisation	6%	8%
Sale before contract period expires	4%	18%
Others: Hedging	1%	1%
Total responses	$n = 43$	$n = 43$
Mode	*Transferring risk to sub-contractors*	*Insurance*

Some of the biggest areas… of uncertainty are about third-party involvement in the projects. It's not such a big issue on (this prison) but the ones that are currently bidding in England there's a significant element level of third-party service provision within the prisons.

In order to limit these areas of uncertainty, interviewees stressed the importance of getting close to the ultimate client, that is, the public authority, in order to fully understand the nature of the project. However, this can be difficult for the financiers, especially bond holders, who tend to be remote from the client in the extensive PFI network.

5. Discussion and conclusion

This paper, which forms part of a larger study of risk in PFI projects, reports the findings of a questionnaire survey administered to providers of equity and debt finance for PFIs. These findings have been supplemented by a small number of quotations from interviewees, chosen as they illustrate a point directly relevant to a specific question in the survey. The contribution of the work is that we focus on financiers, whereas most prior literature has tended to focus on the public sector and the contracting partners, or where it has related to financiers has not examined the distinctions between debt and equity. Because of the questionnaire methodology we have a larger number of respondents across a wider range of sectors than has been typical of previous work, which has mainly relied upon interviews.

All research methods have their limitations and in this study the focus is on one specific PPP type; the UK's PFI, which is a long-term cost specific contractual relationship. As PFI was one of the earliest forms of PPP and has been mimicked internationally experiences from it may have relevance elsewhere. However, any generalisation of results to the different environments of other countries must be made cautiously, because the cost of UK PFIs is borne by the government, not service users, so that revenue streams are low risk. Furthermore, any changes to the PFI project take the form of amendments to the legally binding contract, which will be subject to additional charges or conditions, so that there is limited flexibility without the financiers' consent. Alternative forms of PPP that allow greater flexibility in the project specifications or provide income streams that are sourced, in full or in part, from service users would increase the financiers' risk and could change their attitudes to and management of such risks.

A second limitation of this study is our focus on the financiers who have been arguably one of the most vociferous and well organised groups within the PFI network and like other industry participants may well have a proprietorial interest in stating

Table 15
Importance that the following risks are allocated to sub-contractors and/or fully insured – design and development.

Design and development	Percentage 1 and 2[a]	Percentage 3 and 4[b]	N
Fitness for purpose of the projects design	100.0	0.0	42
Delivery of design of construction projects	100.0	0.0	42
Planning problems	97.6	2.4	42
Construction costs overrun	97.6	2.4	42
Planning approvals	97.6	2.4	42
Late delivery of detailed design	97.6	2.4	42
Delivery schedule	95.2	4.8	42
Independent certification	95.0	5.0	42
Availability of construction assets to site	92.7	7.3	42
Disruption to existing services	90.2	9.8	42
Site preparation	88.1	11.9	42
Environmental issues	83.3	16.7	42
Design and construction variations by the SPV	83.3	16.7	42
Archaeological issues	78.6	21.4	42
Industrial disputes	69.0	31.0	42

[a] 1 and 2 refer to the range very important to important.
[b] 3 and 4 refer to the range little importance to not important.

Table 16
Importance that the following risks are allocated to sub-contractors and/or fully insured – operations.

Operation	Percentage 1 and 2[a]	Percentage 3 and 4[b]	N
Asset/service performance	100.0	0.0	42
Asset/service availability	100.0	0.0	42
TUPE (Transfer of Undertakings Protection of Employment	92.9	7.1	42
Security	90.5	9.5	42
Change to public sector partner requirements	87.2	12.8	42
Cost of keeping latent defects in existing assets	85.0	15.0	42
Staff training	83.3	16.7	42
Repairs and maintenance cost variations	83.3	16.7	42
Latent defects in existing assets	82.9	17.1	42
Changes in demand	72.2	27.8	42
Third-party revenue	65.8	34.2	41

[a] 1 and 2 refer to the range very important to important.
[b] 3 and 4 refer to the range little importance to not important.

particular views. Furthermore, the financiers are not a homogenous group. While we have asked respondents to distinguish between their roles as debt and equity providers, it is also the case that the equity providers' activities and the size of their participation in PFI takes rather different forms; that of large financial institutions and of construction, facilities management or support services company, which range from the largest international operators to much smaller locally based organisations. Therefore interpretation of these views must be made carefully. Despite these limitations we are able to make a number of comparisons with prior literature, and to identify further areas of research.

Dixon et al. (2005) argue that one of the SPV's main objectives is to minimise risk. The empirics in this present study, drawn from financiers with experience across a wide range of sectors, confirm the report from Asenova and Beck's (2010) single banker that this may be achieved by passing risk to sub-contractors. The empirics also confirm Akintoye and Chinyio's (2005) findings in healthcare that transferring risk to sub-contractors and buying insurance cover are the most prominent strategies for managing and mitigating risks in PFIs. The implication of these findings is that PFI risk is diversified through a number of private sector companies, not all of which are members of the immediate PFI network, so that there is scope for duplication or over diversification of risk. Furthermore, the involvement of too many third parties may of itself increase risk.

By way of contrast the financiers identify reputational risks, which cannot necessarily be transferred, as an important non-financial decision-making criterion for becoming involved in a PFI. This may be driving the importance reported here of the direct agreement between the senior debt holders and the procurer, enabling the senior debt holder to step-in to take control over a failing contract. Reputation may also be driving the expressed preferences for working with familiar partners on familiar project types. But in so doing the reputational effect may be maintaining barriers to entry identified by Ezulike et al in their 1997 article. These authors found that small contractors suffered from a lack of credibility and contacts in the market place, which excluded them from joining syndicates, whereas medium and large contractors were likely to bid selectively for projects inhibiting the extent of their involvement in the industry, and thereby reducing competition. Thirteen years later our study focuses on the financiers and finds that they are also inclined to bid selectively for projects, and to prefer working with familiar partners. These findings confirm Ezulike et al.'s prediction that a lack of credibility in the marketplace would continue to act as a barrier to entry irrespective of the level of maturity of the PFI market. In the credit crunch era it is likely that this 'credibility' barrier to entry for small companies has risen, as there are a smaller number of more risk-averse financial players willing to lend, and deals are more likely to require several banks lending as part of a syndicate all of whom will be concerned about the choice of partner. Currently, the construction industry is suffering in the economic recession increasing the likelihood of small contractor bankruptcy, which has been identified as a major concern for lenders.

Furthermore, in 1997, Ezulike et al. argued that the need to contribute equity finance was a further potential barrier to entry to small companies. Since one effect of the credit crunch has been to increase the proportion of equity in PFI deals, this raises the entry barrier in respect of any small contractors whose Balance Sheets could not sustain the pre- credit crunch equity requirements.

Table 17
Importance that the following risks are allocated to sub-contractors and/or fully insured – ownership.

Ownership	Percentage 1 and 2[a]	Percentage 3 and 4[b]	N
Uninsurable loss or damage to the assets	89.5	10.5	42
Public/third-party liabilities	85.4	14.6	42
Government legislation/regulation changes	85.0	15.0	42
Reputational	82.5	17.5	42
Technology change or obsolescence	76.3	23.7	42
Force majeure	64.9	35.1	42
Realisation of the residual value of assets	62.2	37.8	42

[a] 1 and 2 refer to the range very important to important.
[b] 3 and 4 refer to the range little importance to not important.

Table 18
Direct agreements and guarantees.

Statements	Agree (%)[a]	Neutral (%)	Disagree (%)[b]	N
Most projects would *not* go ahead without a direct agreement between the senior debt holders and the government.	75.0	2.5	22.5	41
Most projects would *not* go ahead without an *implicit* guarantee by the government.	35.9	28.2	35.9	39
Most projects would *not* go ahead without an *explicit* guarantee by the government.	28.2	20.5	51.3	40
It is often unclear who bears what risks in a PPP project.	2.4	7.3	90.3	41

[a] Agree refers to agree and strongly agree.
[b] Disagree refers to disagree and strongly disagree.

In 2008 most financiers reported that risk transfer to the private sector had increased over the last four years, apparently reflecting their perception that it was public sector policy prior to the credit crunch to increase the transfer of risk to the private sector. While the credit crunch may have forced a change in attitudes to risk transfer by the public sector (Bailey et al., 2009), it is notable that a substantial minority of respondents believe projects could not go ahead without either implicit (36%) or explicit (28%) government guarantees. This raises questions about a key assumption of PFI that the private sector is well placed to take on the risks of procuring assets which may be inherently more risky than other business activities. It remains to be seen how risks will be allocated when the economy recovers.

Abednego and Ogunlana (2006) argue that PFI partners typically have different perceptions of risk allocation, and our empirics provide an illustration of this by way of comparison with previous work. Based on their case study of a hospital, Edwards et al. (2004) reported that public sector interviewees were concerned about lack of clarity in some risk sharing arrangements, but that the SPV manager had no such concerns. Our financiers, the vast majority of whom believe that risk allocation is clear, confirm the SPV manager's perception, suggesting a divide between public and private sector players.The perceptions of finance industry insiders that risk allocation is clear do not necessarily negate Ng and Loosemore's (2007) contrary arguments that: (i) risk allocation is difficult because of the technical, legal, political and economic complexity of PFI; and, (ii) the way risk profiles change over the duration of projects is not well known. Industry insiders could present an overly confident assessment of their own abilities. Since risk transfer is a critical element of PFI, more empirical evidence of how it operates in practice would be useful to policy makers, procurers and service providers.

While this paper has focused on one specific PPP type that has been used to deliver large scale infrastructure projects, various new types of PPP arrangements have been developed in the UK to expand the market for private finance, for example, involving joint venture partnerships between a public authority and a long-term private partner. In the schools sector such partnerships have been designed specifically to overcome the difficulties PFI poses for smaller value contracts which cannot sustain the high bidding costs associated with PFI. Internationally governments have designed their own variations and prior to the credit crunch there was rapid growth in the volumes and $ values of PPP type contracts, as governments sought new ways to deliver their infrastructure projects. While the effects of the credit crunch and economic recession had begun to slow this growth by 2009, the factors that underpin the industry remain intact. Globally there is a huge demand for new or refurbished infrastructure, and politically in many Western governments and Supra-national organisations such as the OECD, the IMF and the World Bank there is a commitment to private sector involvement in its provision. Thus while the form of PPP may evolve and the credit crunch and economic recession may slow the rate at which projects reaching financial close, this remains and is likely to remain an important industry.

Consequently, the paper closes by suggesting two further areas for future research. Firstly, one of the surprising outcomes of the survey is the high proportion of respondents who indicate the importance of a very wide range of potential risks when assessing a PFI project. Interviewees suggest that PFI decision-makers focus on a full range of risks because the costs of missing targets in PPP projects are higher than for other projects. In terms of overall ranking, design and development was ranked as the highest risk in the pre-financial close and construction phases of PFIs and interviewees suggest this is because of the high penalty costs associated with missing construction targets. Finance risk was ranked as the second highest risk in both these phases and in the operating phase. Clearly, risk pricing strategies for these risks are an area where future research would be valuable, as these are likely to have an important influence on project costs.

Table 19
Point of involvement at levels of deviations of operating performance from the financial model (%).

Point of involvement	Percentage ($n = 38$)
At less than 5% deviation from the financial model	39.5
Between 5% and 10% deviation from the financial model	44.7
Between 10 and 15% deviation from the financial model	7.9
Between 15% and 20% deviation from the financial model	2.6
After the award of penalty points or payment abatements by the public authority	5.3
Mode	Between 5% and 10% deviation

Secondly, one clear message from this survey is the importance financiers attach to working with familiar partners on familiar projects and in familiar sectors, so that research that identifies the characteristics of successful networking would be valuable. However, while such practices may serve to reduce risk they may also act as barriers to new entrants. This risk mitigation strategy has possible adverse impacts on the competitive processes that are essential if the PFI policy is to create incentives for the private sector to provide better performance than traditional procurement achieves. Again research that investigates whether or not new entrants are able to create and/or participate in successful bidding syndicates in practice would be invaluable.

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References

Abednego, M. P., & Ogunlana, S. O. (2006). Good project governance for proper risk allocation in public–private partnerships in Indonesia. *International Journal of Project Management, 24*(7), 622–634.
Akintoye, A., & Chinyio, E. (2005). Private finance initiative in the healthcare sector: trends and risk assessment. *Engineering, Construction and Architectural Management, 12*(6), 601–616.
Alonso-Conde, A. B., Brown, C., & Rojo-Suarez, J. (2007). Public private partnerships: incentives, risk transfer and real options. *Review of Financial Economics, 16*(4), 335–349.
Asenova, D. (2009). *Risk management in private finance initiative projects*. Saarbrucken, Germany: Lambert Academic Publishing AG & Co.
Asenova, D., & Beck, M. (2003). The UK financial sector and risk management in PFI projects: a survey. *Public Money and Management, July*, 195–202.
Asenova, D., & Hood, J. (2006). PFI and the implications of introducing new long-term actors into public service delivery. *Public Policy and Administration, 21*(4), 23–41.
Asenova, D., & Beck, M. (2010). Crucial silences: when accountability met PFI and finance capital. *Critical Perspectives on Accounting, 21*(1), 1–13.
Bailey, S., Asenova, D., & Beck, M. (2009). UK public private partnerships and the credit crunch: a case of risk contagion? *Journal of Risk and Governance, 1*(3), 1–11.
Bing, L., Akintoye, A., Edwards, P. J, & Hardcastle, C. (2005a). The allocation of risk in PPP construction projects in the UK. *International Journal of Project Management, 23*, 25–35.
Bing, L., Akintoye, A., Edwards, P., & Hardcastle, C. (2005b). Perceptions of positive and negative factors influencing the attractiveness of PPP procurement for construction projects in the UK - findings from a questionnaire survey. *Engineering, Construction and Architectural Management, 12*(2), 125–148.
Broadbent, J., & Laughlin, R. (2002). Accounting choices: technical and political trade-offs and the UK's private finance initiative. *Accounting, Auditing & Accountability Journal, 15*(5), 622–654.
Broadbent, J., & Laughlin, R. (2003). Control and legitimation in government accountability processes: the private finance initiative in the UK. *Critical Perspectives on Accounting, 14*(1/2), 23–48.
Broadbent, J., & Laughlin, R. (2005). The role of PPP in the UK government's modernisation agenda. *Financial Accountability and Management, 21*(1), 75–97.
Broadbent, J., Gill, J., & Laughlin, R. (2003). Evaluating the private finance initiative in the National Health Service in the UK. *Accounting, Auditing & Accountability Journal, 16*(3), 422–445.
Broadbent, J., Gill, J., & Laughlin, R. (2004). *The private finance initiative in the national health service*. CIMA Research Report. London: CIMA.
Broadbent, J., Gill, J., & Laughlin, R. (2008). Identifying and controlling risk: the problem of uncertainty in the private finance initiative in the UK's National Health Service. *Critical Perspectives on Accounting, 19*(1), 40–78.
Brown, C. (2005). Financing transport infrastructure: for whom the road tolls. *The Australian Economic Review, 38*(4), 431–438.
Demirag, I. (2004). Towards better governance and accountability: exploring the relationships between the public, private and the community. *Journal of Corporate Citizenship, Autumn*(15), 19–26.
Demirag, I. (2009). *Keeping PFI on course*. AgendaNI. Issue 28, June, 54–55.
Demirag, I., Dubnick, M., & Khadaroo, I. (2005). A framework for examining accountability and value for money (VFM) in the UK's private finance initiative (PFI). In I. Demirag (Ed.), *Corporate social responsibility, accountability and governance: Global perspectives*. Sheffield: Greenleaf Publishing.
Demirag, I., & Khadaroo, I. (2008). Accountability and value for money in private finance initiative contracts. *Financial Accountability & Management, 24*(4), 455–478.
Demirag, I., & Khadaroo, I. (2010). Costs, outputs and outcomes in school PFI contracts and the significance of project size. *Public Money & Management, 30*(1), 13–18.
Demirag, I., & Khadaroo, I. (2011). Accountability and value for money: a theoretical framework for the relationship in public -private partnerships. *Journal of Management and Governance, 15*(2), 271–296.
Demirag, I., Khadaroo, I., Stapleton, P., & Stevenson, C. (2010). *Public private partnerships financiers' perceptions of risks*. Edinburgh: Institute of Chartered Accountants of Scotland.
Dixon, T., Pottinger, G., & Jordan, A. (2005). Lessons from the private finance initiative in the UK: benefits, problems and critical success factors. *Journal of Property Investment & Finance, 23*(5), 412–423.
Edwards, P., & Shaoul, J. (2003a). Controlling the PPP process in schools: a case study of the Pimlico project. *Policy and Politics, 31*(3), 371–385.
Edwards, P., & Shaoul, J. (2003b). Partnerships: for better, for worse? *Accounting, Auditing & Accountability Journal, 16*(3), 397–421.
Edwards, P., & Shaoul, J. (2004). In *Highway robbery? The UK experience with private finance in roads. British Accounting Association Conference Proceedings 2004*. York: University of York.
Edwards, P., Shaoul, J., Stafford, A., & Arblaster, L. (2004). *Evaluating the operations of PPP in roads and hospitals*. ACCA research report. London: Certified Accountants Educational Trust.
English, L. M. (2007). Performance audit of Australian public private partnerships: legitimising government policies or providing independent oversight? *Financial Accountability and Management, 23*(3), 313–336.
Ezulike, E. I., Perry, J. G., & Hawwash, K. (1997). The barriers to entry into the PFI market. *Engineering, Construction and Architecture Management, 4*(3), 179–193.
Froud, J. (2003). The Private Finance Initiative: risk, uncertainty and the state. *Accounting, Organizations and Society, 28*(6), 567–589.
Gallimore, P., Williams, W., & Woodward, D. (1997). Perceptions of risk in the Private Finance Initiative. *Journal of Property Finance, 8*(2), 164–176.

Grimsey, D., & Lewis, M. (2002). Evaluating the risks of public private partnerships for infrastructure. *International Journal of Project Management, 20*, 107–118.
Helliar, C., Lonie, A., Power, D., & Sinclair, D. (2001). Attitudes of UK managers to risk and uncertainty. *Balance Sheet, 9*(4), 7–10.
HM Treasury. (1997). *The Greenbook: Economic appraisal in central government - A technical guide for government departments*.
HM Treasury. (1999). *Standardisation of PFI contracts version*. London: HMSO.
HM Treasury. (2003a). *The Greenbook: Appraisal and evaluation in central government* (pp. 82–83). London: HMSO.
HM Treasury. (2003b). *PFI: Meeting the investment challenge*. London: HM Treasury.
Hood, J., & McGarvey, N. (2002). Managing the risks in public–private partnerships in Scottish local government. *Policy Studies, 23*(1), 21–35.
House of Commons (2009). HC Deb 3 c47ws. 3 March. London: Hansard.
Keating, S. (2004). *Public-private brinkmanship*. Project Finance. Sept, 27–29.
Khadaroo, I. (2005). An institutional theory perspective on the Private Finance Initiative (PFI) accounting standard setting process. *Public Management Review, 7*(1), 69–94.
Khadaroo, I. (2008). The actual evaluation of school PPP bids for value for money in the UK public sector. *Critical Perspectives on Accounting, 19*(8), 1321–1345.
McKim, R. A. (1992). Risk management – back to basics. *Cost Engineering, 34*(12), 7–12.
Miller, P., Kurunmaki, L., & O'Leary, T. (2008). Accounting, hybrids and the management of risk. *Accounting, Organizations and Society, 33*(7–8), 942–967.
NAO (National Audit Office). (1999). *Examining the value for money of deals under the private finance initiative (HC 739)*. London: HMSO.
NAO (National Audit Office). (2006). *Update on PPP debt refinancing and the PPP equity market HC1040*. London: HMSO.
Nisar, T. M. (2007). Risk Management in Public-Private Partnership Contracts. *Public Organization Review, 7*(1), 1–20.
Ng, A., & Loosemore, M. (2007). Risk allocation in the private provision of public infrastructure. *International Journal of Project Management, 25*(1), 66–76.
de Palma, A., Leruth, L., & Prunier, G. (2009). *Towards a principle-agent based typology of risks in public-private partnerships*. IMF Working Paper, WP/09/177. Washington: The International Monetary Fund.
PartnershipsUK, (2009). Website www.partnershipsuk.org.uk/puk-background.aspx. Accessed 09.11.10.
Pollock, A., & Price, D. (2004). *Public risk for private gain? The public audit implications of risk transfer and private finance*. London: Unison.
Project Finance. (2008). *Vital statistics*. March. London: Project Finance.
Project Finance. (2010). *Vital statistics*. February. London: Project Finance.
PwC. (2008). *The value of PPP: Hanging in the balance (sheet)?* London: PricewaterhouseCoopers LLP. www.pwc.com/extweb/industry.nsf Available on the Internet at:.
Reeves, I., & Ryan, J. (2007). Piloting public private partnerships: expensive lessons from Ireland's schools' sector. *Public Money and Management, 27*(5), 331–338.
Rodney, W., & Gallimore, P. (2002). Risk assessment in PPP schemes for primary health care. *Facilities, 20*(1 & 2), 52–60.
Royal Society. (1983). *Risk assessment: Report of a Royal Society study group*. London: Royal Society.
Shaoul, J. (2005a). Accounting for public money after privatization: An information deficit. British Accounting Association Conference 2005, Edinburgh: Heriot-Watt University.
Shaoul, J. (2005b). A critical financial analysis of the private finance initiative: selecting a financial method or allocating wealth. *Critical Perspectives on Accounting, 16*(4), 441–471.
Shaoul, J., Stafford, A., Stapleton, P., & MacDonald, P. (2008). *Financial black holes: Accounting for privately financed roads in the UK*. Edinburgh: Institute of Chartered Accountants of Scotland.
Shen, L., Platten, A., & Deng, X. P. (2006). Role of public private partnerships to manage risks in public sector projects in Hong Kong. *International Journal of Project Management, 24*(7), 587–594.