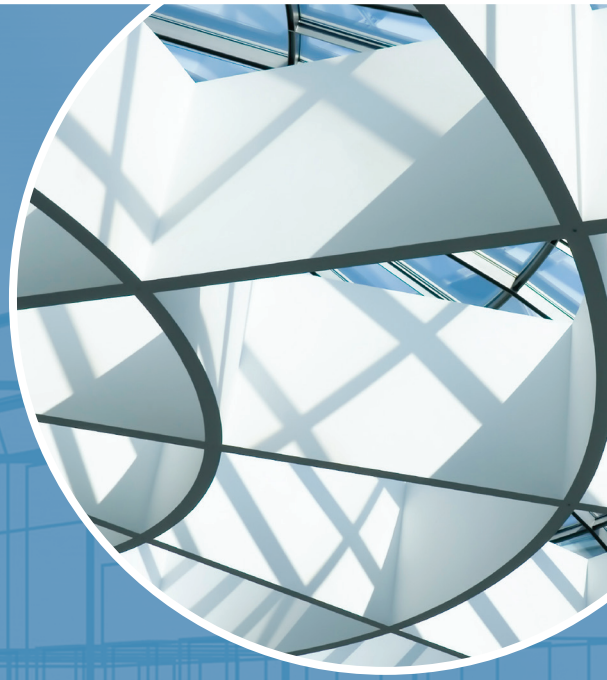


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Risk Pricing Strategies for Public-Private Partnership Projects

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Risk Pricing Strategies for Public-Private Partnership Projects

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Risk Pricing Strategies for Public-Private Partnership Projects

Abdelhalim Boussabaine

Senior Lecturer
University of Liverpool, UK

WILEY Blackwell

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Preface

Most authors in the construction industry sector tend to concentrate on the effectiveness of risk management strategies and to some extent ignore or undervalue the price of risk and its impact on whole-life cost of building assets. It is imperative that cost analysts identify the costs of risks and determine the most effective strategies to minimise the impact of these costs on the whole-life cost of building facilities. An important concept in risk management is risk pricing. Risk management is an integrated part of PPP procurement processes and procedures. The whole concept of PPP arrangement is based on an appropriate and clear allocation of risks and responsibilities, thereby delivering value for money to the client through minimising the potential for future disputes and difficulties of cost overruns. The level at which risk is priced and the magnitude of risks transferred to the private sector will have a significant impact on the cost of the PPP deals, as well as on the value for money analysis and on the selection of the optimum investment options. The price of risk associated with PPP schemes is complex, dynamic and continuous throughout the concession agreement. In pricing risk, the risk analyst must carefully consider both scenarios of potential gain and loss from retaining or transferring risks. In pricing risks, analysts have to take into consideration the balance between the cost of risk transfer and the cost of losses, if risk is retained. The decision maker must look at all of the available options and evaluate their risk prices. This book meets the growing need for a simple methodology for risk pricing in PPP projects. At present, there are few or no publications on how PPP project risk is priced. In this book, risk pricing strategies are essential to both the understanding and analysis of PPP schemes. Hence, this book sets out to explain how PPP project risk is priced and appreciated by means of the correct application of innovative risk modelling techniques, where the emphasis is on risk pricing strategies as well as price evaluation methods.

The book deals with risk pricing as an integral part of the PPP project procurement process – from the perspectives of both private and public stakeholders. The aim of this book is to set out the principal strategies involved in risk pricing of PPP projects in a clear and accessible way. It is anticipated that the book will provide the reader with the fundamental principles of risk pricing theories and enveloping processes. This book is presented in ten chapters, each of which treats specific aspects of risk in PPP projects. The book follows a thematic structure, dealing with all the

important risk pricing issues, using relevant real-world situations through case study examples. The chapters are conceived in such a way that they can be read relatively independently. The chapters cover the following topics:

- PPP process map.
- Risk, uncertainty and bias.
- Risk pricing management strategies.
- Risk pricing measurement and modelling.
- Risk pricing at each of the project life-cycle stages.

The first two aspects provide the reader with the required background knowledge with which to conceptualise the main elements of risk pricing in the context of PPP procurement systems. The reader is then introduced to project risk measurement and modelling methods that might be applicable in the process of risk pricing PPP projects. This is followed by a comprehensive introduction to an innovative framework for risk pricing of PPP projects – which is developed by the author. Finally, the book addresses risk pricing at each stage of PPP project development and operation.

The book is primarily aimed toward academic teaching and professionals in cost management, project management, quantity surveying and other relevant disciplines in construction industry. It would also provide a comprehensive text for courses dealing with project risk pricing and project risk management at both undergraduate and postgraduate level on built environment courses and other courses that deal with investment appraisal and management. Many other courses that are not related specifically to the built environment may also find this text useful, simply because of the generic nature of the risk assessment and pricing strategies. However, this is not to say that the text would not hold appeal for practitioners. The book reflects the broad understanding required by today's project risk analysts, in their new and important role in PPP contract management. In light of the recent financial crisis and best value initiatives, it is vital that newly qualified practitioners are well informed and equipped to deal with risk pricing issues in PPP projects. The level of application should enable the reader to quickly identify the relevance and flexibility of risk pricing strategies for any industry, whether it is in the world of construction or the IT industry.

This book provides the knowledge and guidance that students and practitioners can refer to in pricing risks of PPP projects. It explains how the theory and strategies of risk pricing can be successfully applied to real PPP projects, and will assist students and practitioners in understanding more clearly the mechanisms of risk pricing strategies of PPP projects. In summary, the book provides up-to-date coverage of the latest developments in risk pricing strategies and presents a comprehensive treatment of the methodologies involved in designing and building risk pricing models. Following the steps and strategies outlined in this book should lead to a systematic means of pricing risks. After all, risk pricing should not be that uncodable!

Abdelhalim Boussabaine
University of Liverpool
January 2013

1

Mapping of the PPP's Processes and Concepts

1.1 Introduction

Over the last two decades the demand for public services and infrastructures has increased dramatically. This increase has not been matched by the availability of finance to fund the required services to improve economic development and the wellbeing of society. The problem of funding is coupled with the public sector's inability to deliver services efficiently and effectively. In contrast to the public sector, it has been argued that the private sector has the financial capacity and managerial skills to improve the efficiency of delivering public services. It was suggested (EIB 2005) that the 'private sector is expected to bring rigour and expertise in the design, implementation and operation of a project that will benefit the society as a whole'. This notion has intensified the need for the private sector in the delivery and management of public projects. Although the participation of the private sector in the development of infrastructure projects is not new, a raft of financial and contractual legislations have been introduced worldwide to allow the private sector to participate in the development of public services and infrastructure. Several frameworks for project delivery emerged from this feverish legislation. Among the well-established frameworks is the concept of Public Private Partnerships (PPPs). Almost all forms of private sector participation are delivered under this partnership framework. The purpose of this chapter is to present the current mapping of PPPs' processes and concepts. To achieve this aim, this chapter introduces the rationale for advocating PPPs as an efficient procurement route for public services and infrastructure projects; explains the complexity of the procurement process in PPPs; discusses the evolution of PPPs as a driver

for risk transfer and efficiency of production and presents the concept of value for money; and demystifies the relationship between value for money and risk. The last section discusses issues emerging from the current financial crisis.

1.2 Rationale for PPPs

Before we embark on explaining the rationale for the evolution of PPPs, we provide a brief précis of the various definitions of PPP, which are subject to context of use and vary from country to country. There are several definitions in literature. For example, the UK Commission on PPPs defined it as ‘a risk-sharing relationship between the public and private sectors based upon aspiration to bring about a desired public policy outcome’; whereas as the Canadian National Council for PPPs defined it as ‘a contractual agreement between a public and private sector entity. Through this agreement, the skills and assets of each sector are shared in delivering a service or facility for the use of the general public. In addition to sharing of resources, each party shares in the risks and rewards potential in the delivery of the service and/or facility’ (Infrastructure Canada 2007). These definitions and others are centred on the following concepts (Malone 2005, HM Treasury 2006, Deloitte 2009)

1.2.1 Risk Transfer

One of the primary reasons for the evolution of PPPs is the transfer of risk to the private sector. Normally, risk transfer is used as one of the drivers for value for money computation. PPP procurement is based on the principle that risks should be transferred to the party best able to absorb and manage them.

1.2.2 Risk Sharing

The private partner normally bears a large portion of PPPs risks. However, the public sector retains those risks that carry a large price. The greater the proportion of risks borne by the private sector, the better the incentive to minimise whole life cycle costs and improve operational performance.

1.2.3 Sharing Skills

One of the most cited arguments for PPPs is that the private sector has superior management skills. If the skills are shared with the public sector, this would lead to better efficiency, i.e. lower capital and operational costs and better quality of public services’ delivery.

1.2.4 Sharing Assets

Collaboration between the private and public sectors entails sharing skills and assets in providing public services. It is expected that the private sector will provide efficient asset management. The private sector operates and manages the assets, whereas the public sector plays a role as regulator and controller of performance. The concession agreement dictates how assets are shared. However, it is expected that, at the end of the contract, property and residuals of all assets will be returned to the public sector.

1.2.5 Sharing Resources

In some instances, PPPs are defined as collaborative endeavours that combine resources (i.e. finance, human, technical, expertise, knowledge, etc.) and skills from both the private and public sectors to delivery efficiency in public services.

1.2.6 Sharing Rewards

In PPPs, the project agreement sets out the rewards, and terms and conditions of such rewards for both the private and public sectors. It is assumed that best value/reward is better achieved through long-term partnerships.

1.2.7 Sharing Responsibilities

PPPs have evolved to share risks, responsibility and accountability in the delivery of public services. It is stated that, by sharing responsibilities, PPPs will aid in minimising the risk of conflict, assuming the parties share the same vision for the project. All contracting parties in the PPP model of delivery have responsibilities and obligations. These responsibilities are shared through a PPP contract's legal framework. Thus, the level of responsibility varies according to the type of PPP model used in the delivery of the public projects and services. Also, responsibilities are proportional to the risk-bearing capacity of the contracting parties.

1.2.8 Mutual Benefit

This is cited as key to successful partnerships. It is said that both the public and private sectors can benefit from medium- and long-term engagement in several ways, including strategic planning (i.e. focus on the specific part of shared tasks, effective business processes and organisational opportunities to exploit skills, etc.).

1.2.9 Achieving Value for Money

That is, maximising the efficiency of public services by reducing the cost associated with the design, construction and operation of public projects. Value is created by using the management skills of the private sector. Value for money is determined by using public and private sector comparators (see section 1.5).

1.2.10 Pursuing Shared Objectives

PPP collaboration must revolve around shared objectives and values between the partners. This is viewed as essential for delivering public services efficiently. This concept underpins the PPP contract framework. Shared objectives guide the PPP process from inception to the cessation of the contract. Hence, an agreement on such shared objectives is fundamental in risk transfer and value creation in PPP procurement.

1.2.11 Saving in Project Life-Cycle Costs

This is based on the assumption that because the private sector bears most of the operational risks, thus there is a huge incentive for the private partner to create further value by acquiring better building specifications in order to lower operation and maintenance costs over the life span of the concession. This approach helps minimise whole life-cycle costs through a trade-off between capital expenditure and operational cost.

1.2.12 Business Model

‘A PPP is a business entity—such as a corporation, partnership, limited liability company, or grantor trust—that is established by the private sector for a single specified purpose’ (Standard & Poor’s 2006).

Although there is a long history of private sector participation in the delivery of public services, the emergence of PPPs as one the main procurement routes to public infrastructure and services was due to the shift towards private sector participation and privatisation in general in the 1980s. The need for such a shift was dictated by public sector reform to improve efficiency in the provision of public services. This led to the quest to find new innovative methods of delivering public services. Not surprisingly, the public sector has turned to the use of market mechanisms to bring about both the efficiency and the funding required to change public services. This paradigm move has resulted in the widespread utilisation of PPPs and other forms of private–public collaborations throughout the world. The use of PPPs is now widespread in all types of public sector, including housing, health, IT, energy, waste, water, etc.

Also, legislation to cope with such rapid expansion of PPPs has evolved globally in order to create and maintain contractual frameworks. According to McKinsey and Company (2009), one of the key rationales for PPPs evolution is 'the recognition that many challenges do not fall neatly into either the public, civil or private sectors; instead, they require joint efforts from all sectors. For example, efforts to promote economic development are more likely to succeed when they include both the public and private sectors'. Boeuf (2003) attributed the evolution of PPPs to three aspects:

- *Volume*: PPPs increase the volume of investment in projects. This is not possible without private sector contribution as the public sector does have the finance to fund the required services.
- *Efficiency/quality*: the private sector has developed the capacity and experience to provide highly efficient services at lower cost.
- *Competitiveness and fair competition*: this is part of market mechanisms: the encouragement of competition to improve efficiency. It is thought that providing liberalisation and deregulation will lead to market competitiveness, thereby adding significant value to the delivery of public services.

One of the most rehearsed arguments for the adoption of PPPs as one of the main drivers for public services delivery is advocated by Palmer (2009): it 'can help alleviate chronic underinvestment in capital intensive projects. They can serve as a vehicle for the injection of private sector financing while allowing government to maintain their fiscal targets and avoid taking on additional debt'. For example, the EC (2010), in its strategy for Europe 2020, advocated the use of PPPs as one of mechanism to alleviate the chronic shortage of finance to fund public projects. It states it is necessary to 'pursue new avenues in using a combination of private and public finance and creating innovative instruments to finance the needed investments, including public-private partnerships'. It is clear from this passage that the public sector uses PPPs as a leverage mechanism to get around budgetary constraints. This view was supported by UK Treasury rule budgetary control in the 1990s: 'The golden rule: over the economic cycle, the Government will borrow only to invest and not to fund current spending' (HM Treasury, 1995).

From the public point of view the attraction of PPPs is based on:

- The need for innovative solutions to meet the ever-evolving needs of public services.
- Public infrastructure and services suffering from underinvestment.
- Increasing public efficiency by using private sector contracting and financial expertise.
- Spreading the cost of providing public services over a long period of time.
- Providing better value for money in the provision of public services.
- Provision of better maintenance and operation of public assets.

From the private sector point of view, PPPs allows:

- Diversification in a portfolio of investments.
- A stable business model, i.e. using long-term relationships will help to avoid boom and bust cycles.
- Managing project risk efficiently through innovative contracting methods, i.e. special purpose companies.
- Integration across all specialities of a company to provide whole life-cycle solutions.
- The opportunity to change from contractor status to investor and service provider, i.e. act as developer, operator and investor.

Despite the above benefits, there are many opponents of PPPs who argue that PPPs do not provide value for money because the cost of borrowing is substantially lower for the public sector than it is for the private sector. Also, there is insufficient risk transfer to the private sector to justify the perceived added value for money (Hall, 2008). Opponents also argue that the risk of additional costs of time and budget overruns should be added to the cost of borrowing before a value for money comparison is carried out. Another aspect of PPPs that has attracted criticism is the complexity of the financial transaction and accounting procedures, which lack clarity, accountability, and are costly to run. Some opponents also claim that private sector providers should not gain large profits for delivering low-risk public services, and they argue that the excessive profit would be better invested in public infrastructure. Adversaries of PPPs also dismiss the notion that the private sector brings innovation and efficiency to public services' delivery. They cite the fact that the evidence from past PPPs projects shows that R&D investments have not increased. Hall (2010) argues passionately that PPPs contracts are subsidised: 'apart from this lobbying, governments and international public sector bodies are supporting PPPs through substantial state aid, in the form of privileged access to government guarantees or public finance'. He goes on to suggest that, for example, the EU Commission 'has already developed a number of "financial engineering" instruments to help PPPs, by making it easier for them to use EU (public) money from the cohesion funds'. Our view on this is that PPPs are still evolving as a credible alternative for delivery of public services. There are shortcomings, but if these are addressed properly this will enable them to mature into a viable alternative procurement route. To arrive at this status, partners need to tackle the issue of risk pricing and transfer through new innovative, equitable and ethica methods. Also, the question of efficiency and value for money should be based on credible assumptions and analysis. It is also imperative that the public sector must not subsidise PPP contracts in any form or shape. We must also not forget the necessity for more public finance public services. It must be remembered that the sole purpose of partnering is to create mutually beneficial relationships and equitable value creation between all participants in a project.

1.3 Key Stages in the PPP Procurement Process

PPP is now widely used as an alternative procurement method for public services worldwide. Hence, public authorities and private institutions in different countries have produced their own guidelines and frameworks for the implementation of PPP processes. Hence, the reader may find slight variations in the content details of a typical PPP project life cycle. However, all PPP projects share the generic strategic life cycle outlined in Figure 1.1. As shown in the figure, the strategic life cycle consists of four main stages. These are:

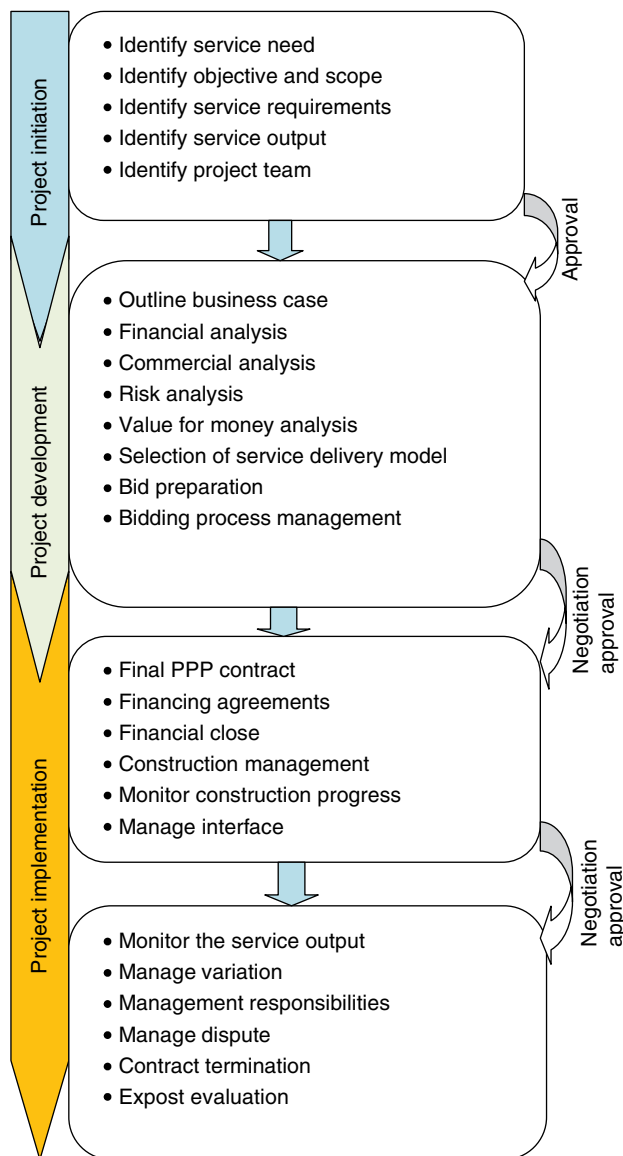


Figure 1.1 A generic PPP project cycle.

1.3.1 Strategic Analysis

This is the stage where the need for service procurement is established. In the UK at least this strategic analysis process consists of the following key phases:

- *Establish service need:* the analyst is required at this early phase to identify the extent of need for a particular public service and how this maps onto the public authority's priorities. In doing so, the strategic analyst is expected to focus on service output specification requirements rather than on input requirements. The analysts are normally encouraged to consider broad, or scenario, needs for the services in question over a long time horizon. They are also required to take into consideration any possible future scope for innovation in the provision of the services.
- *Optional appraisal:* Projects are appraised at very early stages by the procuring authorities. The purpose of the appraisal is to check the economic and commercial viability of the proposed service development. It is also necessary to demonstrate that the proposed development adheres to the goals of value for money and affordability agenda objectives. Normally, the service output key assumptions are used to derive the appraisal process and develop capital cost plans. The financial appraisal is the ultimate determinant of affordability and it is based on developing an assumption for revenue costs, income projection and sensitivity testing; whereas the economic appraisal determines if the proposed service development via PPP mechanisms provides value for money to the tax payer. Service provisions are ranked based on the economic appraisal in terms of the relative cash impact of the scheme on the procurer's overall financial status, taking into account the timing of cash flow occurrence and the cost of capital. There is also the issue of commercial appraisal, which deals with the procurement process, the resulting contract and its key elements, risk transfer and payment mechanisms. The ultimate outcome of this process is to evaluate financial risk, commercial risk and benefits to determine the base-line for taking the decision to proceed with the project via the PPP route or other alternatives. If the outcome of the appraisal is approved by the appropriate authority concerned, an Outline Business Case (OBC) will be drawn up to ascertain proposed project benefits.
- *Outline business case:* the OBC will define service requirements in detail, based on service output specification. The content of the OBC includes the pricing of service output specifications, option appraisal and a public sector comparator. The OBC will also examine in detail whether the project should be financed and provided by the private sector or public sector. It does this by comparing the PPPs option with a theoretical Public Sector Comparator (PSC). The outcome of this economic and financial appraisal will feed into the cost computation at this stage. However, the cost plans developed at the appraisal stage must be updated to reflect the more detailed design information that emerges from the outline design. All cost benefit analyses are carried out and approved at this stage. In most PPP frameworks, approval is obtained before proceeding to the next stage.

- *Project development:* as explained above, an outline business case is developed before the announcement of tenders. The outline deals with objectives, desirable outputs and benefits of proposed PPP projects.

The project development phase is associated with the assembly of an effective and qualified team to oversee and manage the procurement process. The team should be composed of multi-skilled and experienced negotiators who have been involved with, and have the skills to deal with, the private sector. The team should include experts with knowledge of how to deal with procurement regulatory systems. This is imperative for the successful completion and capture of value for money in PPP projects. It is very common that external advisors with previous experience in PPPs are appointed to assist in-house teams in providing good legal and financial advice. Usually, the procurement team is led by an experienced manager, who represents their interests and acts as the project's focal point for its day-to-day management. The procurement team is usually organised around the procurement functions, such as finance, legal and technical groups. It is accepted that at this stage the final approval for the project will be sought from the appropriate authority.

The outcome of this stage will be the issuing of an invitation for expression of interest for project tender. The key tasks for the team at this stage might include (Boussabaine 2007):

- Setting timetables for all stages of the procurement process.
- Monitoring progress.
- Negotiating the deal.
- Drawing up the contract.
- Resolving problems as they arise.
- Investigating the market for the services in question with a view to developing a procurement strategy of how to present the project to the market.

1.3.2 Tendering

The procurement process begins with the approval of expressions of interest from bidders. In EU countries, this will be followed by the advertisement of the project notice in the OJEC. At this stage it is expected that the procuring authority will produce a marketing brief, describing the project and the form of procurement in more detail, and a preliminary selection questionnaire. Those documents are sent out to all those bidders who have expressed interest in the project. The pre-qualification process is based on the information from the returned questionnaire and it is normally evaluated against a predetermined set of criteria. The outcome of the evaluation is the invitation of a number of preselected bidders for further discussion and interview regarding their bid proposals. Based on the outcomes of these interviews and discussion, the procuring authority will select an appropriate number of bidders to be issued with the Invitation to Negotiate (ITN) documentation. The procuring authority may conduct further interviews with the bidders if

necessary. The invitation to tender documentation is exhaustive, and it is normally thoroughly checked and cross-checked to reduce the need to issue amendments during the tender period as well as the need to clarify a tender during appraisal. The ITN documentation usually includes the following sections (Boussabiane 2007):

1. *Instructions to negotiate*: includes information about the procurement process, compulsory items that have to be considered or included in the bid, and the evaluation criteria for selecting the preferred bidder.
2. *Building design output specification*: this document lays down the design requirements for building assets and the associated accommodation concerning the operational management and its relevant policies, as well as the operational and capacity requirements.
3. *Building service output specification*: this comprises all performance requirements and quality standards for the estates and management service; catering services; caretaking, security and safety services; and the equipment provision and maintenance services.
4. *Contractual framework*: this is the basis on which the contract will be awarded, such as the standard contract model (HM Treasury 2007).

The bidders return the ITN by a predetermined date. These ITN documents are then used as the basis for selecting a preferred bidder based on selection criteria such as the legal, financial and technical aspects of the bids. The purpose of the evaluation is to compare the offerings of each bidder against the affordability limits in the outline business case and to test assumptions about value for money. In doing so, the procuring authority is expected to seek further clarification from the bidders. Depending on the outcome of the evaluation, one of the bidders will be awarded preferred bidder status and another bidder might be selected as a reserve bidder. The selected bidder, and in some cases the reserved bidder, will enter into contract negotiation.

The ultimate aim of the negotiation is to reach financial closure as soon as possible, based on a sound legal framework. The existence of contractual standardised frameworks and processes worldwide, which have considerably improved, and reduced the length and cost of, the PPP bidding process, helps attain this goal. NAO (1999) produced a list of recommendations regarding how a procuring authority might be able to reduce the length of the bidding process in PPP projects. The items on the list include:

- Demonstrate a clear purpose and a strong vision of the desired outcomes from the scheme.
- Establish a simple output specification and eliminate or minimise changes to specification.
- Get early commitment to the scheme from key stakeholders.
- Develop a project management structure that allows for an appropriate level of delegation to key officers and is integrated with existing decision-making processes (as discussed above).
- Establish a robust project plan with project milestones and monitor progress against the plan on a regular basis.

- Establish and agree the key contractual terms, including payment mechanisms and risk transfers, prior to issuing the invitation to negotiate, in order to force bidders to indicate their position early on in the negotiation process.

1.3.3 Contract Completion

There is a considerable workload, for all parties, between preferred bidder selection and the contract award stages. Hence, a realistic and achievable timetable with key milestones should be agreed upon at the earliest opportunity so that the contract negotiation does not extend beyond what is necessary. The contract completion stage is used to negotiate and refine the key commercial and financial terms between all parties. Formalisation and standardisation of PPP contract and bidding process documentation will allow bidders and clients to limit negotiations to the key commercial terms, rather than technical ones. Normally, at this stage, the partners in PPP projects produce a detailed negotiation brief and the key points that need to be discussed with each relevant contracting party. The issues that are normally included in the negotiation briefs include risk allocation, variation, payment mechanisms, etc. Inconsequential issues should be left until essential matters have been negotiated. Both commercial and financial contracts are negotiated at this stage. This can be done in parallel or in tandem. If commercial and financial agreements are negotiated as one package, a quick negotiating result can be reached with minimal impact on the overall contract. If this is not possible, usually the financial and commercial close of the project aspect will be negotiated separately.

At this stage, it is expected that project funding bodies will appoint financial experts, usually accountants, and technical experts to carry out due diligence on the bid. Financial experts will audit the financial model for consistency, accuracy, sensitivity and so on. Technical experts usually carry out audits on the construction programme and maintenance proposals. If the funders are satisfied with the outcome of the auditing process, the concerned parties will then be in the position of closing the deal. It is normal practice at this point of the project procurement that the unitary charge is fixed by reference to base rates. If all of the above issues are resolved, then the final outcome will be the execution of the contract and financial close.

1.3.4 Project Operation and Contract Management

The operation phase of PPP contracts lasts throughout the project concession term. By this stage, the mechanisms to manage and control the implementation of the contract have already been agreed at the financial close stage and embedded in the contract terms. Once the project agreement is signed, the parties responsible for implementing and managing the contract will trigger the mechanisms for managing its progress. The process starts with monitoring of the programme, budget and quality of construction at the early stages of project

implementation. During the construction phase, the work is usually inspected regularly by the independent tester and progress observed by representatives from the client's organisation to ensure that the building meets agreed contractual technical requirements. At the construction stage, the provisions relating to time control and delay events normally follow the standard form of project agreement. It is the responsibility of the provider to complete the PPP project on time and, until the project starts operation, he will not receive any payment. Time/cost overrun risks (except in the case of delay events and/or any changes approved by the client) in PPP projects are normally transferred to the private sector. Once the construction process is complete, the commissioning process will start. The procuring parties normally form a commissioning team, comprising different managerial and operation skills and users of the new facilities, that is responsible for bringing the new facilities smoothly into operation. Arrangements for commissioning might include (Boussabaine 2007):

- Preparation of commissioning and services planning, including risk management and operation strategies.
- Preparation of handbooks and operational guides for operating the new facility or service.
- Detailed equipment installation schedules.
- Training and induction for new facilities.
- Set up of service PPP monitoring team.
- Set up of evaluation procedures and strategies.

Once the above processes have been completed then the operation of the project is kick-started. Operational and maintenance performance play an important role in the procurement of PPP facilities. Normally, the project agreement sets out the process and principles for measuring the delivery of facilities management services by which technical and financial performance measurement systems will operate. PPP contracts are based on 'self monitoring' in that the PPP provider is responsible for providing and reporting on quality service aspects. However, the procuring authority has its own team to lead supervision and monitoring of the provider's performance in terms of meeting the required standards for the availability of the PPP facilities and the delivery of FM services, to confirm satisfactory delivery of the contract obligations. This information is then used as the basis for approving regular contract payments to the PPP provider. The procurer has control over operating cash flow through payment deductions for underperformance; financial performance also plays a pivotal role in PPP projects. In PPP projects, the lenders have great control over how the cash flow of the project is used and distributed during both the construction and operation periods of the concession.

1.4 Financing PPP Projects

PPP projects are financed, completed and executed under a stable legal framework. A typical framework is project finance, which is defined as the creation of a legally independent project company, sometimes referred

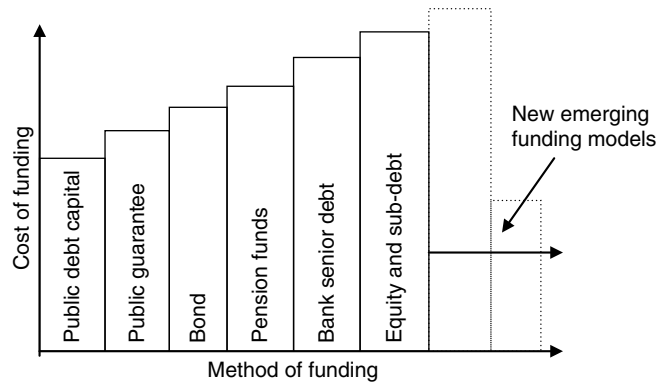


Figure 1.2 Some PPP funding instruments.

to as a Special Purpose Vehicle (SPV), financed with non-recourse debt for the purpose of investing in a capital asset, usually with a single purpose and limited life (Esty 2003). The creation of the SPV entity amounts to risk management via organisational form. In the majority of PPP projects, the SPV is capitalised up to 90% with senior debt and the remaining 10% is capitalised with equity contribution from investors. The funding of a PPP is based on the theory of non-recourse beyond the SPV. This is necessary in case the SPV goes bankrupt; the sponsor has no right to recover any losses from any other parties. Thus, project finance is a risk-sharing tool for the private sector and is based on the principle of non-recourse financing for highly capitalistic projects. The idea is very simple: the private sector invests money in a PPP project and seeks an equitable return as remuneration of the equity as well as for carrying the risk. However, this sort of project finance is driven by large teams of lawyers, bankers and other advisory teams necessary to reach a legal agreement and create the SPV. This makes the project finance option very unrealistic for small projects. From 2008 to date, the PPP market has been affected by the worldwide financial crisis. This has resulted in the public sector seeking better ways of financing projects and balancing risks between PPP partners (TIF 2011). For example, the UK reviewed PPP procurement with the aims of finding a system that was less expensive than the current one and diversifying the sources of funding to include pension funds and even contributions from the public sector (Treasury Committee 2011). The Committee found that the current funding system is very complex and relies extensively on advisors. The Committee also pointed out that the cost of finance has increased due to the financial crisis (Parker 2012). Figure 1.2 shows typical funding instruments available for PPP projects. As can be seen from the figure, there are several sources of funding. Each source of financing will take differing levels of risk and have different financing terms attached to it (Yescombe 2002). Normally, PPP projects are funded from a combination of these sources.

1.4.1 Senior Debt Funding Principles

The source of this type of funding is bank debt and bond issuance. It is called senior debt because it must be repaid before equity or subordinate debt. This debt is referred to as senior (non-recourse) debt where the bank funding liability is non-recourse beyond the SPV; that is, in the event of the SPV failing, the bank has no rights to recover losses from any other party. The debt is normally issued by large commercial banks, either individually or through syndicates. The latter is preferable from a risk point of view. Senior debt can be drawn down as required and there can also be a standby facility to be called upon if required. In the UK, senior debt is normally priced with reference to the London Inter Bank Offered Rate (LIBOR). Pricing can be through either the variable interest rate or fixed rate. It is the responsibility of the fund arranger to put together the best deal possible. The risk of the PPP project to the senior debt issuer is normally commensurate or reflected in the pricing of the debt. Thus the paradigm of passing down risks from SPV to relevant subcontractors. To achieve the best value for money from the investment, the risk of loss for senior lenders is mitigated through contract terms, such as step-in provisions and recovery in termination analysis scenarios. The senior debt issuer's repayment security is based on the future revenue stream from the PPP project. Hence, the issuer or lender uses an extensive analysis to assess the viability of PPP projects' cash flows. Also, the lenders exercise significant control and monitor the operation of the SPV and its cash flow. Normally, senior lenders use the following financial ratios to exercise their control over SPV:

- **Debt service coverage ratio (DSCR):** DSCR is one of the key indicators of the creditworthiness of a project. A measure of the ability of a project to service its debt, it reveals the relationship of annual cash flow to the amount of debt outstanding. DSCR is the ratio of cash flow available in any period to the level of cash needed to cover the debt repayment (principal and interest). The ratio is computed on a yearly basis to provide a continuous view of the project's ability to service its debt.
- **Loan life cover ratio:** this concerns the present value of all future surplus cash flow. Note that the present value must be discounted at the loan interest rate. Note also that all reserve account balances are added to the present value and the total is divided by the capital outstanding on the debt at the test date.
- **The debt to equity ratio:** Lenders and investors use the relationship between equity and debt to evaluate financial risk. The debt to equity ratio indicates how much the project or SPV is in debt or leveraged and provides a window onto how strong the project finances are. A high debt to equity ratio indicates that the project may be overleveraged, and also that the project is financially risky. If the level of debt to equity ratio is low, this implies that the project might generate less profitability to investors due to the fact that the profits are shared by equity investment in the project.

- **Project life cover ratio (PLCR):** PLCR compares the net present value of cash available over the remaining project life with total loan balances at the time of testing, and gives the sponsors reassurance as to their likely value of return. The PLCR value is usually greater than the LLCR. PLCR is computed using the value of a project's cash flow available for debt service until the end of the project divided by the principal outstanding.

1.4.2 Junior Debt

Sometimes this debt is referred to as subordinated debt. Basically, this is a layer of debt between the sponsors' equity or subordinated debt and the senior debt. However, it ranks above equity both for distributions of dividend and for liquidation if this occurs. It is junior because the senior debt lenders are entitled to repayment of their interest and principal before the lenders of junior debt. Hence, it has less security than the senior debt and has a higher rate of interest. This type of debt is sometimes used as a proxy for risk reduction to senior debt, but is not always used in PPP projects. Junior debt is usually formed from:

- **Mezzanine loan tranches:** provided by banks and other institutions like insurance fund holders. Usually, these are for short durations and are more expensive to service.
- **Mezzanine bond issuances:** This type of funding interest on a loan is paid during the term of the loan and principal at maturity, i.e. at the end of the loan period.

1.4.3 Shareholders' Funds

This is also a subordinate debt and is normally referred to as equity. It is simply an investment by SPV in exchange for ownership and earnings after all other investors (e.g. debt-holders) have been paid. The sources of the funds are sponsors and shareholders. It represents the risk and liabilities of the SPV. It is possible to sell these equity shares after the project is operational. In fact, most contractors and other investors sell on their interest instead of taking smaller, longer-term dividends which offer investors lower-risk and guaranteed returns. This attractive certainty of return has led to the development of a secondary market in PPP projects and consequently pushed up prices. It is argued that the early sale of equity by the holders can undermine the value for money analysis that is conceived at the early stages of PPP projects.

1.4.4 Funding Concepts

1. **Debt term:** this concept refers to the duration of senior debt. The duration of the debt varies from project to project. But most PPP projects are procured around a 20–30 year debt term. Also, in most PPP funding

agreements there is a requirement for a tail between final repayment of senior debt and project finance expiry or end of the PPP contract, during which the debt service continues to be paid. Sometimes it simply means residual fund. This is important from the debtors' point of view in the sense that, if the project gets into revenue difficulties, then there will be enough revenue at the end to pay off the debt. The length of the tail depends on the degree of risk associated with the project revenue. The greater the risk the longer the tail period and consequently the higher the debt service will be.

2. **Reserve accounts:** contain a separate amount of cash to service debt or maintenance payments. They are created to provide additional financial support and short-term liquidity for the SPV. Normally, they are funded from the CAPEX budget and controlled by the lenders or trustees.
3. **Term loan tranches:** normally, a tranche is related to non-senior debt financiers with a different margin and term. It also refers to the tranches for funding CAPEX. These tranches are drawn down against the construction progress and certification of completion. By and large there is no repayment of debt during the construction phase, the interest due at the construction stage is capitalised, i.e. is added to the capital cost of the project.
4. **Standby, variation and change in law:** this is a funding reserve put aside in case of variation, e.g. in the contract terms and exchange rate, unexpected CAPEX escalation and general changes in law. The latter is related to issues that are associated with the project company, such as taxation.

1.5 Rationale for Value for Money and Risk Transfer in PPPs

One of the key benefits cited for procurement of PPPs is the transfer of whole life risks to the private sector. It is argued that this can only be achieved through long-term contracts. The long-term relationship is also viewed as a catalyst for bringing value for money to the public sector and realising potential investment returns for the private sector. The well-rehearsed argument is that best value leads to efficiency of public services delivery. This is based on the notion that the combination of construction, operation and maintenance contracts into one is looked at as a means of efficiency or value for money generation. The problem with the value for money agenda is that it is very hard to convince the sceptics that the two opposite objectives – that is, the public sector seeking to maximise social benefits while the private sector is aiming to maximise profit – can be reconciled. Opponents of PPPs argue that they do not represent good value for money because the cost of borrowing to the public sector is much lower than the returns on debt and equity made by the private sector. However, proponents of PPPs argue that this view is too simplistic and is misconceived, and it ignores the benefits of value for money generated to the public sector through risk transfer and life costing savings. No one can argue against the fact that the public sector can finance projects at lower costs;