Value for Money Assessment in Public Private Partnership Projects

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Abstract

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Problematisation: Public Private Partnership, PPP, is a public procurement method involving the private sector used in several countries all over the world, now upcoming in Sweden. The UK, most prominent within this method, states that it offers good value for money, but the economic and financial benefits of PPP are uncertain and subjects of debate. In order for projects to be successful and to achieve value for money, a thorough preparatory work of assessing value is vital. In Sweden, there are questions regarding how the preparatory work is best performed to ease the further implementation. A crucial question related to this is what affects the value for money achieved in PPP projects.

Purpose: The purpose of this study is to investigate and identify value drivers affecting value for money achieved in PPP projects.

Method: The methodology procedure of the study consists of three phases: the *preparatory phase*, the *executing phase*, and the *evaluating phase*. The study was designed and theories related to value and PPP procurement was studied in the preparatory phase. In the executing phase, an explorative multiple-case study has been used to fulfil the purpose. The cases are four countries that have been studied: the UK, Canada, South Africa and Sweden, all with various experiences of PPP. A qualitative perspective has been used and the empirical foundation is based on investigations of national PPP guidelines and interviews performed with expert PPP advisors. Empirics have also been gathered by interviewing professors and a private concessionaire in

Sweden. In the evaluating phase, an analysis was made by applying the empirical findings onto existing theory. Based on the analysis, conclusions answering the purpose was drawn and presented.

Conclusions: Three main areas have been identified to include important value drivers in PPP projects. These areas are *value assessment*, *procedure* and *environment*, which represent three levels where value assessment is the core, surrounded by procedure and then environment. In the level of value assessment, *technical solutions, time, risk, cost,* and *benefits* has a central role for value for money. In the second level, procedure, five value drivers are identified: *feasibility, output specification, competition, contract flexibility* and *relations*. Finally, in the level of environment, *authority support, national guidelines* and *private sector maturity* has all shown to be important value drivers for the success of PPP projects.

Key words: Public Private Partnership, PPP, Value for Money, Value Driver, Feasibility Study, Procurement

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Emilia Hansson and Kristin Skjutar

Frequently Used Terms

Local Authority
Authorities at regional level such as municipalities.

National Authority
Authorities at government level such as government departments.

Output Specification
A document specifying outputs to be fulfilled for the contracted service delivery, such as clean working places.

PPP Procurement
PPP includes various procurement forms where a public party contracts a private party to finance, construct, operate and maintain a public service. The public cash-flow has no initial payments and regular payments to the private party are undertaken once the service is taken into use.

Private Party
The participants from the private sector in a PPP project, such as concessionaires and contractors.

Public Party
The participants from the public sector in a PPP project, such as national and local authorities.

Traditional Procurement
It includes procurement forms where the public party is responsible for construction, operation and maintenance. The public cash-flow is high initial investments during construction in the first years, followed by smaller irregular payments for operation and maintenance.

Value Assessment
The activities of assessing the value to be achieved. In PPP, it provides information regarding if it is an appropriate form of procurement for a specific project.

Value for Money
The increased value by using PPP instead of traditional procurement. It includes net benefits to the public party, defined in terms of cost, price, quality, quantity, or risk transfer, or a combination of these.

Value for Money Analysis
The procedure of assessing value for money. This is often made by estimating and comparing the total project costs of PPP and traditional procurement.

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1 Introduction

The introduction of this study aims to provide an understanding of the PPP procurement method. It starts outs with describing the development of public procurement, followed by an explanation of the concept of PPP. The problematisation and the purpose of the study are then described and, finally demarcations, target audience and the outline are presented.

1.1 The Development of Public Infrastructure Procurement

The public sector has for centuries had a great impact on society, providing infrastructure and public services (The Stationary Office, 2000). The development of efficient and effective infrastructure is one of the most important things to provide for the public sector to support firms and economic activity (Winch, 2002). After 1945, public spending on welfare and infrastructure grew tremendously as a central part of the political post-war settlement (Winch, 2002). This trend, however, came to an end and lead up to a fiscal crisis in the 1970s. The first reaction was to cut back dramatically on public sector investment in infrastructure. During the following 20 years, the ability to fund infrastructure developments slowly declined among several western nation states (Winch, 2002). In Europe, this trend is especially seen as many European Union countries are struggling to meet the criteria of state debt according to the Maastricht treaty (Winch, 2002).

Consequences of demands for new infrastructure were that the fiscal crises could not be solved by a permanent cut back on capital investment (Winch, 2002). Public services has traditionally been owned and operated by the public sector, funded by taxes and of the society's highest interest to be of high quality and cost efficient (The Stationary Office, 2000). The combination of a steady income from taxes with lack of competition gives few incentives to be cost and resource efficient and thereby risking poor performance (The Stationary Office, 2000). One solution to the problem is to involve the private sector so that the tasks needed for provision of public services could be shared. These tasks include financing, production, acquiring, and ownership (Lane, 2000). As an effect, different solutions have emerged through new forms of procurement methods, varying in degree of private responsibility and control (The Stationary Office, 2000).

Many countries have solved the high demands for infrastructure by privatisation of for example rails and water with varying degrees of success in simulating capital investment (Winch, 2002). Other countries, not willing to hand over the full responsibility to the private sector, found a solution by concession contracting (Winch, 2002). It allows the government to invite concessionaires from the private sector to bid for the concession to build, finance and maintain a facility over a defined period of time (Winch, 2002). A right to exploit the construction is given

(Leiringer, 2003) and revenue streams repay the capital investment from the operation of the facility (Winch, 2002).

There are several advantages of involving the private party by concession contracting. The private involvement allows for the private and the public sector to focus on their core competences, increasing efficiency and improving quality (The Stationary Office, 2000). These partnership projects can enable such increased efficiency that the public sector gains far more than the private sector profit. The efficiency from solely competition in biding, within areas like construction, can result in cost-savings of 20-30 percent (Almqvist, 2006). The cost savings are although doubted due to the increased costs by the higher risk premium (Konkurrensverket, 2008a). There are also other contradictions to the positive effect of private involvement and the changing characteristics of the public sector. Opponents claim that this change in characteristics blurs the relations between the two sectors negatively (Antonsen & Jörgensen, 1997; Torres & Pina, 2002; Brown et al., 2003). Thomasson (2009) sees the fact that private parties make a profit on provision of public services (Konkurrensverket, 2008a), as a controversial development.

1.2 The Concept of PPP

Public Private Partnership, PPP, is an example of concession contracting with a contractual agreement between the public and private sector where a private party is allowed to provide public services or infrastructure, acting both as the role of financer and operator (Eggers & Startup, 2006; Renda & Schrefler, 2006). PPP has been used since the 1990s by a few pioneer countries (Davies & Eustice, 2005) and has become one of the most important procurement models for overcoming the gap between the need of infrastructure and public resources (Eggers & Startup, 2006).

PPP is developed world-wide as many countries are struggling with keeping up with infrastructure needs and demands (Eggers & Startup, 2006). A common approach is to begin using PPP in the transport sector and then expand the use to other sectors such as health and education, once value for money benefits are proven and the public sector competence in using PPP has grown (Davies & Eustice, 2005). PPP is extensively developed in the United Kingdom who has pioneered the trend since 1996 (Eggers & Startup, 2006) where PPP projects represent 10-13 percent of all infrastructure development (Eggers & Startup, 2006). The volume of PPP deals is doubling, tripling and quadrupling year to year in Europe and also in other continents; countries are following the example of the UK (Eggers & Startup, 2006). The currently most active markets are Canada, Australia and Japan closely followed by South Africa (Davies & Eustice, 2005). Eggers & Startup (2006) explains the growth of PPP by the benefits provided, ultimately leading to more value for money compared to other public procurement

alternatives (Renda & Schrefler, 2006). In the UK, the government can expect to save 17 percent during the service lifetime (Eggers & Startup, 2006).

The development of PPP differs vastly between countries and many are in their first stages, which includes designing legislative frameworks, getting deals right, and to build a marketplace (Eggers & Startup, 2006). The term PPP has been known for almost twenty years, but due to the varying development there is still no clear definition of the concept (Davies & Eustice, 2005). PPP covers a variety of structures where a private party deliver a public service (Davies & Eustice, 2005; HM Treasury, 2010) and in Europe barely, a great number of variants have been developed due to complexity in adopting PPP and differences of countries (Renda & Schrefler, 2006). HM Treasury (2010) describes PPP as a form of alliance joining the public and private sector in procurement of services or infrastructure. Davies & Eustice (2005), further expands the concept of PPP in a range from short-term management contracts, through concession contracts to partial privatisation and joint ventures where ownership is shared by the public and private sector.

Variants of PPP are also created to fit the type of infrastructure, as social and economical, including several public services (Leiringer, 2003). The reasons for initiating PPP projects often differ between the services of different sectors, like health care and transport (Leiringer, 2003). The complexity of the political and social context and the reasons behind the initiation is important to understand when initiating a PPP project (Leiringer, 2003). There are several models of PPP defining different concessions that are flexible and possible to adjust, depending on the sector and the characteristics of the service (Renda & Schrefler, 2006). In this study, a general concept of PPP is used, including all variants and models. PPP is seen as a contractual agreement between a private party and a government agency that allows for private participation in the delivery of public services (Eggers & Startup, 2006). Eggers and Startup's (2006) definition allows for various degrees of private participation, and enables a comparison of PPP and value for money in the different countries studied.

The concept of PPP is in this study compared to traditional procurement that include a broad spectrum of different procurement methods. Also this differs between the countries studied needing a general definition to include all. The factor determining the difference between these two forms of procurement in this study is the cash-flow of the public party. In traditional procurement, the public party has high initial investments during the first year, followed by smaller irregular payments for operation and maintenance, see Figure 1 (Andersson, 2007). In PPP, there are no initial payments and first after the construction is finished and the service is taken into use, regular payments is undertaken, see Figure 2 (Andersson, 2007).

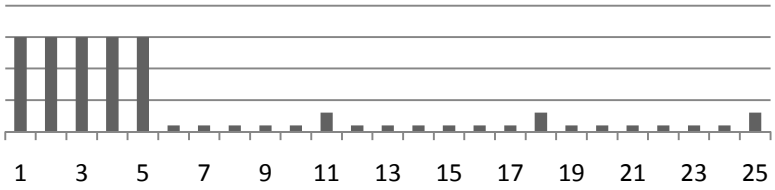

Figure 1. Public cash-flow traditional procurement (Andersson, 2007)

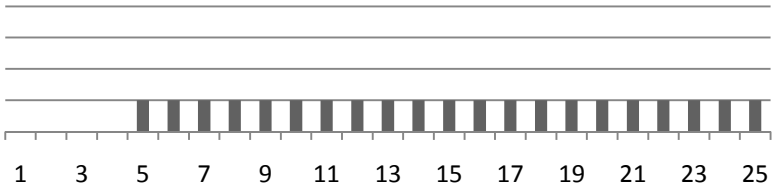

Figure 2. Public cash-flow PPP procurement (Andersson, 2007)

The main reason for using PPP is that more value for money can be achieved than using traditional procurement (Davies & Eustice, 2005). The purpose is to make use of the parties' core competences to a higher extent (Renda & Schrefler, 2006). As the private party is involved during the project's whole lifetime, more parameters are taken into consideration in early stages, which enables gains in efficiency (Konkurrensverket, 2008b). Value for money is therefore a key criterion for both determination of the need and the function of PPP projects. The definition of value for money by the National Treasury (2004c) is used in this study:

"The provision of an institutional function by a private party that results in a net benefit to the institution, defined in terms of cost, price, quality, quantity, or risk transfer, or a combination of these."

The definition by the National Treasury (2004c) is chosen due to the fact that it allows for investigation and comparison of value for money in several different PPP models.

1.3 Problematisation

Even though UK government officials states that PPP offers good value for money (Eggers & Startup, 2006), the economic and financial benefits of PPP are uncertain and subjects of debate (Greve & Hodge, 2005). Shaoul (2003) claims, that some projects do not provide any value for money at all. PPP also include a higher financing cost than traditional procurement (Konkurrensverket, 2008a). The long-term perspective of 20-30 years increases the uncertainty and makes it difficult to form contractual agreements and predict future costs. PPP also contain greater risks allocated by a contractual relationship, which makes that the formation of contract

agreements important for the success of a PPP project (Evans & Bowman, 2006). Since PPP became more frequently used in the early 1990s, few projects are completed, providing data for evaluations (Konkurrensverket, 2008b).

In Sweden, the interest of cooperation forms between the private and public sector, like that of PPP, is growing but knowledge in the subject is limited (Andersson, 2008). Discussions are ongoing and some projects have been closed within light railway (Davies & Eustice, 2005). The Swedish Competition Authority considers PPP, or Offentlig Privat Samverkan (OPS) as called in Sweden, not to be fully developed yet. Lack of information of costs is making it difficult to predict if more value for money really is achieved using PPP compared to traditional procurement (Konkurrensverket, 2008a). Due to the uncertainty and lack of thorough evaluations, only one project, Arlandabanan, is considered a real PPP project in Sweden (Konkurrensverket, 2008b). Still, considering the broad definition used in this study several other PPP projects have been performed by local authorities (Andersson, 2008) as well as by the national authority Swedish Armed Forces (Friberg & Mehmedovic, 2008). Currently, there are several upcoming PPP projects in Sweden where one is New Karolinska Hospital, NKS (Nya Karolinska Solna), where the bidder was won by the only tenderer as a result of no competition (Dagens arena 2010). To be a latecomer in using PPP has its advantages as lessons learned in more prominent countries can help the development (Eggers & Startup, 2006). The more prominent countries have more experience and are more mature, thus possessing a deeper understanding of how PPP can be applied to specific projects as they often have been using PPP in different sectors (Eggers & Startup, 2006).

Many questions are raised concerning if and how value for money can be achieved by using PPP compared to traditional public procurement. These questions are not covered by existing research and further research and experience of PPP projects is therefore needed, to avoid repeating mistakes from earlier PPP projects. The UK Government has stated that sharing experiences and knowledge between nations would be a positive step in developing PPP further in different EU countries (Davies & Eustice, 2005). Sweden among other countries that are in the start up phase of PPP could benefit to a great extent from experiences of countries where PPP is more mature (Eggers & Startup, 2006). In order for PPP projects to be successful and to achieve value for money a thorough preparatory work is needed (Andersson, 2008). There is a gap in the existing research on what factors the preparatory work should focus on. A central question related to this is what affects the value for money achieved in PPP projects. This makes value for money the unit of analysis that has been studied.

1.4 Purpose and Objectives

The purpose of this study is to investigate and identify value drivers affecting value for money achieved in PPP projects.

A fulfilling of the purpose contributes to an increased understanding of value drivers in PPP projects that ease the assessment of value for money and increase value for money achieved. The following objectives will be used to fulfil the purpose of the study:

- Investigate how value for money is assessed at present.
- Investigate value drivers for value for money in PPP procurement.
- Present value drivers affecting value for money in PPP projects.

1.5 Demarcations

The study is demarcated to a general perspective of PPP and traditional procurement and do not consider a specific variant or model of either concepts. The perspective of PPP is focusing on availability based methods where the volume risk is burden the public party. This is to enable a multiple-case study were different forms of procurement methods are used in the cases studied. The investigation of PPP is limited to the four countries the UK, Canada, South Africa and Sweden. The countries are from different continents and have various national perquisites, as well as experiences of PPP. They are considered as a representative selection for the international use of PPP.

The practical experiences investigated are those of management advisors, considered PPP experts, within the organisation of one specific advisory agency. The advisors are working for the public party and are aware of their perspective. They are the ones performing value assessments and have therefore great knowledge of this. The specific advisory agency chosen is Ernst & Young, one of the most prominent within PPP in Sweden. As Sweden is the country with least experiences of PPP this agency was premiered. Only Ernst & Young interviewees was chosen for their willingness to participate and sharing of information that to other firms is classified.

Another demarcation is the excluding of the legal aspects due to limited knowledge of the authors within the area and the time limitation. With varying legal aspects within the different countries, this enables a more general perspective.

1.6 Target Audience

The target audience of the master thesis includes the public sector and private companies somehow involved or interested in PPP. The master thesis also addresses the master program Technology Management at Lund University, including examiners, supervisors, teachers and students.

1.7 Outline

Chapter 1: gives an introduction to the study, providing a background. It also defines the purpose and the objectives, limited by demarcations. Finally the target audience is identified and an outline provided.

Chapter 2: describes the research method used to perform the study as well as the methodology procedure defining the three phases of the study.

Chapter 3: presents the theoretical foundation of PPP and value for money.

Chapter 4: describes international PPP guidelines including value for money analyses, providing empirical foundation.

Chapter 5: describes international experiences of PPP based on the interviews. Important finding of the countries' differences is presented as results.

Chapter 6: analyses the empirical foundation together with theories of PPP based on a value driver framework presented in the theoretical foundation.

Chapter 7: concludes the study by answering the objectives and the purpose of the study to investigate and identify value drivers that affect the value for money achieved in PPP projects.

2 Methodology

The methodology of this study starts with describing the theoretical perspective of the research methodology used and the framework chosen for proceeding with the work of the methodology. The next part, the methodology procedure, describes the working process of the study with a structure of the phases conducted and the actual outcome.

2.1 Research Methodology

The study of this master thesis originates from the gap in existing research concerning factors affecting value for money achieved in PPP projects. The main issue is to find relevant value drivers for the preparatory work to focus on. To address the issue, an explorative case study was performed that was found suitable to use for answering the purpose. An exploratory case study is according to Eisenhardt (1989) a method whrer empirical findings are applied on existing theory in order to develop it further. This has been done by studying relevant theories and investigating theoretical PPP guidelines, before applying empirical information as experiences and practical performance gathered from interviews. The information was then analysed in order to expand the theory to fulfil the theoretical gap.

The investigation of the exploratory case study is based on different countries, which gives it a multiple-case design. A multiple-case study is an empirical inquiry that contains a profound study of a few cases to understand the real-life context of a contemporary phenomenon (Yin, 1994). In this study PPP constitutes a contemporary phenomenon and its value drivers are a part of its real-life context making this type of study suitable. Yin (1994) recommends the investigation of a multiple-case study to focus on three or four cases with a replicating design. The empirical investigation focuses on four countries from different continents, with various experiences from using PPP, namely the UK, Canada, South Africa and Sweden. Countries with different maturity depending on the number of PPP projects performed and different national prerequisites were chosen to enable a general perspective of the study and its result. The same factors were studied in all cases to allow for a replicating design. The value drivers identified are then applicable to other countries and of relevance for constituting new theory.

The context of PPP by perception and definition is varies between countries, making it difficult to describe and identify in all aspects. To respond to this and enable a replicating design, a broad definition of PPP was chosen to include all countries and focusing on a deeper investigation of the countries' experiences of PPP and special prerequisites. For the deeper investigation a qualitative oriented approach was chosen. Quantitative data of value for money in PPPs, including numerical observations of statistics, and quantification with mathematics, is limited due to few completed projects and secrecy. For gather information of the countries'

practical experiences of PPP, interviews were thereby found to be a suitable method. The reason is twofold: to gather information that cannot be observed and to get the interviewee's perspectives and performance of PPP. These two reasons are defined by Merriam (2006). Also, written sources have been used in the empirical investigation by studies of national PPP guidelines including value for money analyses. The framework of the case study consists therefore only of qualitative methods for empirical research, including interpretations from both written and spoken sources. This is a method supported by both Eisenhardt (1989) and Backman (2008).

The empirical perspective was chosen to be deductive. Case studies are according to Yin (1994) deductive when beginning with a theoretical study on which empirical findings are applied constituting a foundation of a general conclusion. In this study existing theory related to PPP are combined with empirical findings in order to develop new theory by investigate and identify value drivers for preparatory actions and performance of PPP to achieve value for money. The complexity of the subject required a start in theory to gain an understanding of what to research in the empirical investigation.

2.2 The Methodology Procedure

The methodology procedure chosen to fulfil the purpose and objectives are based on an interpretation of Yin's (1994, pp. 49) case study method. The design of the methodology used is illustrated in Figure 3 beneath. The three arrows each represent a phase of the methodology procedure that corresponds with the phases used by Yin (1994). The activities of the study are *preparations, theoretical research, selection of cases, case studies with research of guideline* and *interviews, analysis, conclusion, evaluation* and *criticism of sources*. These overlap and interact and are distributed in the three phases: the *preparatory phase*, the *executing phase*, the *evaluating phase*, see Figure 3.

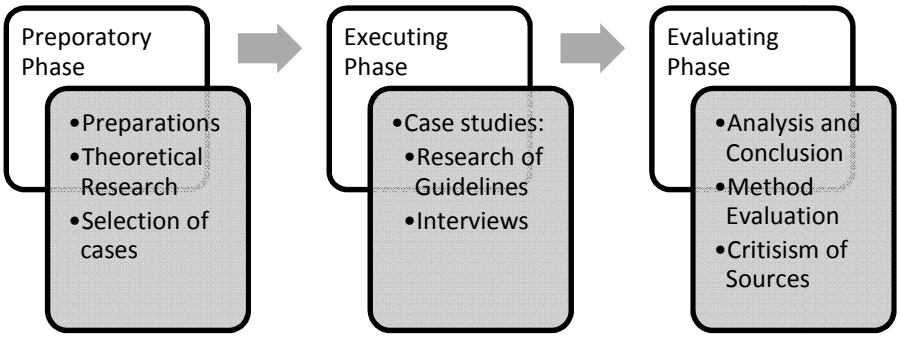

Figure 3. The phases of methodology procedure

2.2.1 Preparatory Phase

The study begins with the preparatory phase to get a deepened understanding of PPP and value for money. The purpose of this phase is to provide optimal prerequisites for performing the two following phases of the study. It begins with preparations of procedures and methodology. Procedures were formed for administration of the study as well as methodology describing how the work was to be performed. A thorough project plan was formed, including a detailed time schedule with all activities and mapping of the organisation and its relations between the authors and supervisors. This was done in order to get a fast start by structuring the work and avoid misunderstandings. Then theoretical research of PPP and relevant theories behind the concept was performed, as preparation for the executing phase. The state of the study is alterable, and therefore the preparatory phase also continues as an iterative process during the coming two phases. Finally, suitable cases were selected in order to prepare for the executing phase.

2.2.1.1 Theoretical Research

The relatively new area of PPP has resulted in limited written information, evaluating the concept and its effects. The written information about PPP available was prioritized in combination with theories related to PPP rather than internet sources, when selecting what material to study. To provide an initial understanding of value for money in PPP projects, the theoretical foundation begins with a section describing of PPP. The theoretical foundation further consists of four main theories essential for value for money in PPP; *Value, Principal-Agent, Risk Management* and *Contract Management* with *Performance-Based Contracting*. These theories were complemented with *Contingency Theory* to cover all relevant perspectives of value for money. Literature was premiered and beside form the literature research performed by the authors, some was recommended from the supervisors at the university, possessing knowledge about research within the subject. White papers, articles and web pages were also used, some of them recommended by the supervisors at the advisory agency, possessing practical experience within PPP. The papers used were for the most part gathered from the university's search engine for articles, Elin. Internet sources used are primarily government pages from the UK, Canada, South Africa and EU, considered reliable sources. The published public information on the governments' and the national authorities' web pages were perceived responsively and pedagogical.

The theoretical foundation was initiated with a broad and general information retrieval, to get an early understanding of PPP. The supervisors from the advisory agency and the university gave suggestions and recommendations regarding further theoretical research. After studying the theories, a brainstorming session was held, to lay the groundwork of the theoretical foundation. The theories found to have the greatest affect on value for money were chosen. This resulted in four main areas that were structured through a set-up with headings and subheadings. The areas

were then divided between the two authors, for deeper studies and writing. Consistently during the process of the theoretical research, the authors evaluated and recorded the use and purpose of the found theories for the study as a whole. After interviews and research of guidelines was performed, the theoretical foundation was reviewed. This corresponds to a repetitive approach according to Patel & Davidsson (2003). The theories were then complemented with a fifth area describing contingency theory to assure that all empirical aspects were covered in order to match them with the empirical findings. The theory where then matched with the empirical findings before the analysis was initiated. The theoretical foundation was reviewed after the analysis was performed to assure validation of the conclusions.

2.2.1.2 Selection of Cases

In the selection of cases a number of suitable cases were identified for the case study, an important question according to different sources (Eisenhardt, 1989; Stake, 2000; Yin, 1994). The UK was first considered as a case for a closer examination, with the intention to use both quantitative and qualitative data. Due to unavailability of quantitative data, the scope changed, and a multiple-case study with several cases was chosen instead according to Yin's (1994) recommendations to reduce the vulnerability of the study. Suitable cases were selected carefully after considering important factors, to enable replication and making analytical generalisations from the results (Yin, 1994). The cases were selected based on the countries' different experiences and prerequisites of PPP, which accoring to Yin (1994) avoids similar results. A natural limitation to achieve these results was to choose countries from different continents, to assure various national prerequisites. For the replications, all countries had performed several PPP projects, provided guidelines and have an advisory agency from Ernst & Young dealing with PPP. This was important for their willingness to participate and share information otherwise classified, but not limiting since an office existed in all countries considered. Another similarity considered was to focus on PPP health care projects, but this was found to be too narrow, excluding lots of valuable information.

The first case selected was Sweden, a country where the problematisation was relevant and the gap in research was found urgent to fill. The next case chosen was the UK, which has the longest experience of PPP and by that also effecting the development of different prerequisites. The UK have also performed the most PPP projects, have the most detailed guidelines and their advisory agency offices has cooperated a great deal with the advisory agency in Sweden. The next country chosen was Canada, based on recommendations from the first contact with the UK. Canada is another country with large experiences of PPP and the special prerequisite to have different provinces with own guidelines. The employees at their advisory agency office also have great experience and knowledge of PPP, also from other countries. The final country selected was South Africa that has less experience of PPP, but still have formed guidelines that are easy to understand and

well formulated. South Africa was recommended by the supervisor at the advisory agency in Sweden that had worked there herself and had a lot of contacts there. The country also has different prerequisites than the other countries and is in the start up phase, learning from their experiences.

Two other countries experienced in using PPP, Australia and India, were also found to be suitable for the case study and representatives at the advisory agency were contacted, but could unfortunately not participate in the study. The United States is also using PPP and would be of interest to study but lack of contacts at the advisory agency in the United States resulted in that it was not included in the study. Contact was initiated several times both trough mail and phone, but no answer was received. Otherwise, no other country has been found to have the experience needed and national guidelines in place to make it suitable to include in this study. The four final cases chosen: the UK, Canada, South Africa and Sweden are all found to have enough experience to draw conclusions from and still provide diversity in experience length and country specific guidelines and prerequisites.

2.2.2 Executing Phase

The next phase of the study is the executing phase, where the case studies were performed and empirical information gathered. When studying the chosen cases and gathering empirical data, both primary and secondary sources are used. Interviews with experts within PPP and value for money analyses are used as primary sources. A deepened study of national PPP guidelines has also been made and constitutes of secondary sources.

2.2.2.1 Research of Guidelines

The research of guidelines consists of studies of the chosen countries' national PPP guidelines. The purpose of studying guidelines was to investigate the general PPP procedure in each country and especially the procedure of value for money analyses. Using documents was found to be the most effective way to study these procedures in each country as the documents provide extensive information otherwise very difficult and time consuming to gather. This is supported by Dexter (1970) that motivates the advantages of using documents. All guidelines are published by the countries' governments or national authorities and were collected from their web pages. The sources are considered reliable, as they are publicly recognised and adapted. Merriam (2006) also support this reliability as they are complete and stable over time. The information gathered by research of guidelines was also used as foundation for interview questions.

Initially, the national guidelines of the UK were studied due to their long experience of PPP projects and since they were the first contact. The other national guidelines were studied after recommendations from an initial contact or during the first interview. In excess of the UK, Canada and South Africa, guidelines were also used from Australia. Australia has a lot of experience of PPP and pedagogical

guidelines easy to follow, strongly recommended by the interviewee from Canada. These were therefore included in the research of guidelines even though it was not possible to do interviews with Australian advisors. As the guidelines were found to be similar on many points, the empirics presented in Chapter 4 is presented as general guidelines by compiling important information from each of the national guidelines studied. This was done to give a general view of the practical performance of PPP and the value for money analysis and also to provide an introduction to these concepts to better understand the interview findings.

2.2.2.2 Interviews

PPP specialists were chosen as interviewees since they were found to have most knowledge on what affects the phenomenon value for money that was studied. The supervisor at the advisory agency initiated contacts with PPP specialists at the advisory agency in UK, Canada and South Africa. If possible, the PPP specialists agreed to be interviewed and if not, they recommended appropriate interviewees in their country. The interviewee in the UK was recommended by the supervisor at the advisory agency in Sweden, based on his experience and expertise. He, in turn, recommended suitable interviewees in Canada. The interviewee in South Africa was also recommended through the contacts of the supervisor. One interviewee was recommended in all countries as expertise knowledge of PPP and value for money assessments in the countries studied is limited to only one or two advisors. Therefore, one interviewee per country was chosen for the study. These interviewees possess great experience of working with PPP, both for the public and private sector, and are considered capable to provide the wanted empirical foundation. The interviewees have various backgrounds and experiences of PPP, which gave a holistic perspective of PPP and value for money. The authors established further contacts with the interviewees, starting with a presentation of the authors' scope and purpose of the study. Two interviews were then held with each interviewee through phone conferences. The purpose of the first interview was to gather general information of PPP within the specific country and the interviewee's experiences, see Appendix A. The second interview was more profound and specified on knowledge concerning value for money analyses, see Appendix B.

In addition to international interviewees with practical experience of PPP, advisors from the advisory agency in Sweden, Appendix A, B and C, professors, Appendix E, and a representative of the private sector, Appendix D, were interviewed. The professors has done research on the organisational factors of PPP and been focusing on different procurement methods. The advisors have several years of experience of PPP and value for money assessment in Sweden and are specialised within management and transaction advisory. The person interviewed from the private sector in Sweden is employed at a private concessionaire firm that is working exclusively with investing in PPP projects. The PPP projects involved

concerns infrastructure within different sectors such as hospitals, roads, schools and street lighting. All interviewees of the study are presented in Table 1:

Table 1. Interviewees

Title	Nation	Experience
Assistant Director, Ernst & Young	United Kingdom	Infrastructure advising for about 6 years
Infrastructure Advisor, Ernst & Young	Canada	Finance and transaction advising in PPP projects for approx. 7 years
Advisory Leader, Ernst & Young	South Africa	Advising in three PPP projects
Senior Manager, Ernst & Young	Sweden	Advising in PPP projects for several years
Transaction Advisor, Ernst & Young	Sweden	Advising in PPP projects, specialised in transaction advisory
CEO, Private Concessionaire Firm	Sweden	Concessionaire in PPP projects since 1997, possess currently a portfolio of approx. 20 PPP projects world-wide
Associated Professor, Business Administration	Sweden	Researching PPP, mainly on different PPP solutions and the relations between the parties involved
Senior Lecturer, Construction Management	Sweden	Researching PPP, mainly the procurement process
Assistant Professor, Construction Management	Sweden	Researching PPP, mainly the potential of PPP

The interviews were semi-structured with questions formed mainly from the theoretical research and research of guidelines. Open questions were premiered, as it according to Merriam (2006) is most effective when collecting experiences and thoughts. In excess of the prepared interview questions, spontaneous questions were asked to achieve an interactive dialog. Direct questions were avoided except when confirming data or interpretations. Prepared interview questions were sent in

advance to give the respondents time to prepare, and if needed go back and look up facts, see Appendix A to E. A professional approach was always held towards the contacts, by carefully formulated emails and well prepared phone calls. The phone calls were held on by email confirmed times by a conference call. This enabled both authors to share the information and avoid misinterpretations. All interviews with the international respondents were phone interviews due to the long distance. A speakerphone enabled two interviewers, interacting more easily and improving the quality of conversation. During the interviews one of the interviewers was focusing on taking notes and the other on asking questions. The interviews were also recorded when approved by the respondent to have the possibility to go back and listen to avoid fact errors. The interviews with the advisors in Sweden were performed in person when possible, to ensure a better understanding and quality. The empirical findings from the interviews are presented in country specific sections to show the countries differences. The findings are presented in three main areas: *environment*, *procedure* and *value assessment*. The differences found to be of most importance are presented in Section 5.5 *Result,* in three tables, one for each area.

2.2.3 Evaluating Phase

The evaluating phase includes the analysis of all gathered information, both theoretical and empirical, and forming of conclusion. The analysis is focusing on value for money which is the unit of analysis as called by Yin (1994), to eventually fulfil the purpose. The analysis method used when performing the study as a whole is then also evaluated to investigate the quality of the study and which improvements could have been made. Finally, criticism of sources are made to point out which areas that contribute to uncertainties and if these affects the result in a significant way.

2.2.3.1 Method of Analysis and Conclusion

Analysis of empirical and theoretical findings has partly been made simultaneous as theoretical and empirical research to ensure that the gathered information will contribute to conclusions answering the purpose. The study was early demarcated to focus on the factors found to be of most importance for value for money. This resulted in a choice to focus on the early phases of the PPP procedure and especially the value for money analysis. Both the theoretical and empirical information was also continuously processed and reviewed to make most of it and promote critical thinking, which is supported by Merriam (2006). The gathering of information is by Lincoln & Guba (1985) considered enough when any new information was found to be too far from the original subject of the study and that continued research provided little addition. This was considered and followed when gathering all information for the study.

In the analysis, the empirical finding of the case studies where related to theoretical propositions, called “pattern matching” according to Yin (1994). The empirical

information was structured after a theoretical value driver framework in traditional procurement formed by Bower (2003) and this was also applied as structure in the analysis. The value drives presented by Bower (2003), were then analysed through a PPP perspective. The framework is made of three different levels of value drivers where the levels were interpreted as three areas used in the empirical foundations well as in the analysis: *value assessment, procedure,* and *environment*. The empirical foundation in these areas are analysed by theorising the findings according to Merriam (2006) and applying them to the corresponding level in the value driver framework. This was done by speculating and explaining the empirical findings of international practice using the research of guidelines and the theories of value for money in PPP to see a pattern. The analysis evaluates the traditional value drivers' applicability on PPP projects and investigates whether other value drivers are of importance to consider and if so, tries to identify those.

To conclude the study, the objectives of the study are fulfilled and identified value drivers are presented in a value driver framework adjusted to PPP projects. This can be used to understand what drives value in PPP projects by practitioners to increase the value for money achieved in PPP projects. Finally, recommendations of further studies were made from the findings in the analysis.

2.2.3.2 Method Evaluation

At first, the intention of the study was to perform a quantitative and qualitative study on whether value for money actually is achieved by using PPP. The initial purpose was then to provide guidelines for Sweden on how to minimise the gap between projected and actual value for money. As such quantitative data could not be accessed, the purpose had to be altered and methodology changed to only include qualitative data. This limited the time frame as the study proceeded with a different angle than intended. To only use qualitative data was a suitable choice for the new purpose of investigating and identifying value drivers. Secondary sources through research of guidelines in combination with primary sources by interviews are providing a comprehensive empirical base. As no study has been found that investigate international PPP experiences by primary sources of PPP experts, the study has a strong news-value. However, quantitative data on actually achieved value for money in some PPP projects could have provided even stronger news-value and proof of outcomes.

Including more countries in the study, primary Australia and India, would have increased the validation of the conclusions formed. It would have provided a wider empirical base by including two more continents. The four countries studied, however, are considered enough as the interviewees have extensive expertise and provides reliable and comprehensive information. Interviewing more advisors in the chosen countries would probably not affect the result significantly as the ones interviewed were carefully selected to have the most knowledge and practical experience of value assessment at the chosen advisory agency in the countries

studied. The difference in the result compared to other advisory agencies is considered small; their methods are all based upon national guidelines. Though, interviewing other parties, such as representatives from the public and private sector, could have offered valuable information of the country specific development and adoption and use of PPP. This was unfortunately not possible due to the study's time limit and lack of established contacts. Many interviews have though been held with representatives from different parties in Sweden. This was needed to get a thorough understanding of the Swedish situation, since the knowledge of PPP in Sweden yet is vague and varies a lot.

2.2.3.3 Criticism of Sources

The validation of the sources used in this study is considered high. Acknowledged theories have been used and government sources are relied upon. Other PPP experts have recommended all interviewees confirming their expertise. Although, all interviewees has a subjective view of PPP based on their experience as well as the outcome of the projects they have been involved in. This affects their interpretation of the interview questions and answers. Their answers are also subjective from the perspective of an advisory agency, which profit from the development of PPP since it provides them with more projects. As the primary interviewees also are from the same advisory agency, their views are expected to be more similar than if also other agencies was included. Also, the interpretation of their answers as well as the objectivity of this study is affected by the authors' perceptions of PPP and value for money. This is however not considered to affect the reliability and validation of the conclusions in a significant way.

3 Value for Money in Public Private Partnership

Public Private Partnership is an upcoming popular form of procurement offering great potential for cost savings, increase in efficiency and providing value for money. However, PPP is yet far away from a complete concept with several different national guidelines defining procedures for reaching value for money. To investigate the value for money assessment in PPP projects, a theoretical framework of PPP is presented; focusing on the parts upon which value for money depends. The theoretical framework consists of a deepened study of the four areas *value*, and *principal-agent, risk management* and *contract management.* In addition to these, *contingency theory* is presented. Before the theoretical framework is presented a description of PPP including benefits, drawbacks and applicability is presented. Also, the development of PPP is described along with a general PPP work procedure and value for money analysis to provide a deeper understanding of the spread, use and criterions.

3.1 Public Private Partnership

The PPP is grounded on the main incentive that the private party has both the role as operator as well as financer (de Palma et al., 2009). With both roles, the private party is more motivated to be innovative and come up with sustainable solutions that last during the object's lifetime. The private party is often repaid by the public sector through periodic payments during the projects lifetime, usually 20-30 years (Konkurrensverket, 2008b). The most significant benefits are more efficient risk allocation, incitements to complete deadlines and stay within budget and cost savings (Eggers & Startup, 2006). Risks are to be transferred to the party best suited to manage them (Eggers & Startup, 2006), and the private party often answers for risks regarding meeting required standards, construction, and maintenance (Konkurrensverket, 2008b). This provides strong incentives to ensure construction quality and do preventative maintenance. To assure that the project goals are fulfilled, the contract includes quantity and quality of output, timing and models for performance monitoring (Renda & Schrefler, 2006). Exceeding the contract increase the cost of financing, while improved performance decrease it. By this, the private party is motivated to keep the contract and improve the performance to reach cost deductions. It is, however, difficult to form specific and perfect incentives, which can lead to problems and conflict of interests (de Palma et al., 2009).

Common objections to PPP are related to costs and whether the benefits outweigh the difficulties and costs (Davies & Eustice, 2005). In order to achieve best value, a well-structured and detailed output specification is needed. This can make the PPP procurement both lengthy and costly in comparison to traditional procurement alternatives (Davies & Eustice, 2005). Shaoul (2003) points out the critical aspects of PPP, as the difference in mode of operation, too large to nevertheless fit

common features. The critic continues with manipulated business cases with low risk transfers (Shaoul, 2003). The critics once more points out the importance of a similar procedure and careful preparations, which only can be done with the right competence.

The organisation of PPP is described by Leiringer (2003) as a complex arrangement coordinating the public and the private sector over a long period of time. The client in a PPP project is the public sector, often represented by a government or municipality; whereas the supplier often are a concession of investors and firms within construction and maintenance within the private sector (Renda & Schrefler, 2006). The PPP organisation also includes financial, legal and technical advisors, to provide expertise solutions adjusted to the specific project (National Treasury, 2004e). The public sector often has the role as coordinator of the project and the parties involved (National Treasury, 2004e).

3.1.1 Procedure

The public sector, as coordinator, often develops guidelines to control and manage the procedure of PPP. The development of PPP in different countries has lead to development of country-specific guidelines by national authorities, as governments or agencies, of how to use PPP in that specific country or province (Australian Government, 2008a; HM Treasury, 2006; National Treasury, 2004a). PPP is only one of several ways for procuring infrastructure and consideration need to be taken to assure that a specific project suits a PPP structure (Davies & Eustice, 2005). There are yet no international principles for how to use PPP and as a result, there are several different national PPP models describing the PPP procedure. However, there are many similarities between the guidelines and by focusing on the central elements; a general PPP procedure can be described. The general PPP procedure provides an understanding of the main methodology of PPP and enables highlighting of countries differences further on in the study.

Mainly, the overall PPP procedure consists of three phases: starting with the *feasibility study* and *procurement* (National Treasury, 2004a), which follows by *construction* and then *operation* (Leiringer, 2003) as shown in Figure 3.

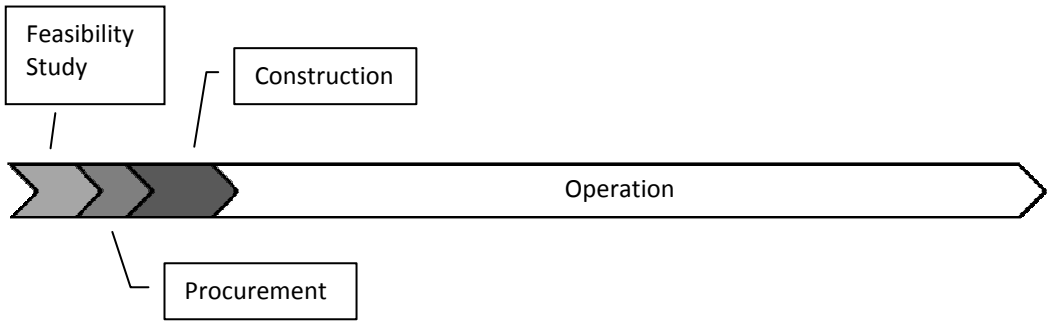

Figure 3. General PPP procedure

This study focuses on the first phase of the PPP project cycle, the preparation period. It is where several important analyses and decisions are taken regarding the need of a project, feasibility, value for money and affordability, procurement choice and choice of private tenderer. The starting point of the preparation period is according to Booty (2006) a need for change, which can be related to poor service levels, too high costs or lack of functionality. A project team it set up and a preliminary need analysis is performed (National Treasury, 2004b). Different options for improvement are appraised through technical and financial aspects (Booty, 2006) and transaction advisors are appointed to asses sources of funding (National Treasury, 2004a). Investigations are also made regarding the investment potential over the projects life cycle (Booty, 2006). At this stage, it is not decided whether the project will be procured using PPP or traditional procurement. To determine which form of procurement is most appropriate, a *feasibility study* is made (National Treasury, 2006a). The study compares the two procurement options regarding affordability, risk transfer and value for money (National Treasury, 2004c). It provides information of the costs and if those can be covered by government funds or need additional financing. Identification and allocation of risks is also made and constraints are identified (National Treasury, 2004c). Finally, the feasibility study assures that the PPP project is developed with a proper procurement plan, outlining the implementation strategy (Ministry of Public Infrastructure Renewal, 2004).

Based on the feasibility study, a decision is taken whether to use PPP or traditional procurement. PPP Procurement is comprehensive in contrast to traditional procurement with only one activity: an offer to accept or not. In PPP procurement, a limited number of qualified bidders are selected that have experience and knowledge of tendering and executing the project (National Treasury, 2004d). A request for proposal is sent, bids are received, negotiations are held and the preferred bidder is chosen (Leiringer, 2003). The stronger the link is between the feasibility study and procurement, the greater the possibility is to create more value for money (National Treasury, 2004d).

The phase of construction begins once the contract is signed and runs until the delivery of service is established. Depending on the type of project, activities performed can include construction of buildings or infrastructure, design of facilities or commissioning of equipment (National Treasury, 2004d). When the service is delivered, the phase of construction ends and operation takes place. Operation runs throughout the projects lifetime until the end of the project (Leiringer, 2003). During this time the contracted services are to be delivered according to the contract. In the end a project can either be terminated or reach an expiry date. At the end of a PPP project, the institution can as well make new financial and contract arrangements for continued service delivery (National Treasury, 2004d). The end of the project also allows for an evaluation to see if the project was successful, by investigating if there is a gap between the projected and the actual value for money.

3.1.2 Value for Money

For a PPP project to be considered successful, it should provide more value for money than if it was procured using traditional procurement. HM Treasury (2007) points out that there are two different kinds of perspectives of value for money to consider when dealing with PPP procurement. The reason is that there is costs not included in the PPP structure, but still contributes to the cost for the overall project. An example of such costs is land acquisition costs that are the same regardless of procurement choice. As a result, there is the overall value for money for the project and the value for money of the contract to consider. The first sees to if the project as whole will provide good value for money, where the second sees if the aspects of the project represent value for money compared with other procurement methods (HM Treasury, 2007). Also, the policy of Infrastructure Ontario (2007) is to not include any costs not related to the PPP procurement alternative. Therefore, this study is focusing on value for money of the contract and all further references to value for money refers to value for money of the contract.

3.2 Value

Value can be defined in several different ways and is based on ideas from both economics and psychology (Kelly et al., 2004). Kelly et al. (2004) claims that there are two components of value: objective and subjective. Objective value is value through an economic perspective and is possible to quantify with hard evidence such as cost or price. Subjective value on the other hand is difficult to define and depends on individual perceptions of benefits and satisfactions. Regardless if the objective and subjective values can be measured in monetary terms, money is the unit used for measurement (Kelly et al., 2004).

According to Oxford dictionary, value can be defined as something's worth, desirability or qualities on which these depend. Younker (2003) simply defines

value as function/cost. Either increasing performance while holding cost or decreasing cost while holding performance can thereby achieve greater value. In the construction industry, value usually means the balance of the how well the project satisfies the owner in relation to the resources needed (Dallas, 2006). This balance is called *the value ratio* (Dallas, 2006):

Value = Benefits Delivered / Resources Used

As resources used to a great extent are money, the value ratio is often referred to as value for money (Dallas, 2006). Value for money is often used to express the satisfaction of the cost of a service of a given quality (Atkin & Brooks, 2009). As value for money is often equated with reducing costs, organisations can believe that they are achieving value for money if they are paying less for a given service compared to last year. However, even though cost is easier to measure, Atkin & Brooks (2009) stresses that value for money is about quality of a service and the effectiveness of how it is delivered. Atkin & Brooks (2009) therefore claims that organisations, in order to achieve value for money, should set both cost and quality objectives and only prioritise cost where financial constraints are severe.

The delivery of value depends on a series of decisions and factors important to take into consideration (Bower, 2003). All contextual influences affecting the project need to be fully understood to choose a suitable procurement method for the service delivery (Bower, 2003). Bower (2003) display these factors in a framework called “a value driver framework for procurement” which is visualized in Figure 4.

Figure 4. Value driver framework for procurement (Bower, 2003)

The framework displays general value drivers applicable on various projects to investigate the drivers of value. The value drivers are presented in two levels surrounded by the environment. Value management provides a way of maximising value and minimising uncertainties. It applies for strategy and business projects as well as for projects within the construction industry and should according to Dallas (2006) be applied in all construction projects.

3.2.1 Value Management

Value management enables maximised value in line with the client's, and end users' demand. Male et al. (2007) defines it as a structured analytic process with the purpose to achieve value for money by delivering all functions required to the lowest total cost. It is a team-based process using function analyses to examine and to deliver a service at optimum performance, quality and cost (Male et al., 2007). Value management includes defining what the commissioners of a project perceive as value, and desired outcomes need to be well communicated to the project team who delivers the project (Dallas, 2006, Howard, 2009). Then, various techniques should be used to maximise the benefits while using as little resources as possible.

Value management originates from a new way of thinking when solving restrained resource problems. Instead of finding ways to get more resources, the key is to figure out alternative ways for delivering the same function (Dallas, 2006). Based on that approach, value management is focusing on outcomes from a project and

Howard (2009) argues that focus on outcomes is a way for driving success. Clearly articulated goals and outcomes are needed before the deliveries of them can be addressed (Dallas, 2006, Howard, 2009). Dallas (2006, pp. 1) defines a successful outcome as when "the value to the business is maximised through the delivery of a facility that gives them the benefits they need at a price they can afford at the time when they need it and to a quality that fulfils their expectations".

There are many techniques and methods for value management during the different stages of a project cycle. The project cycle can be divided into three distinct phases: *inception and feasibility*, *design and construction* and *commissioning and use* (Dallas, 2006). These phases are focusing on different areas shown in Table 2.

Table 2. Value management project phases (Dallas, 2006)

Project Phase	Focus
Inception and feasibility	Value articulation and project definition
Design and construction	Optimisation of benefits and costs
Commissioning and use	Performance optimisation

The project is defined in the inception and feasibility phase in terms of descriptions of what benefits the project should deliver to the client and the end users. These benefits are described by level and quality and are broken down into simple functional statements. The statements clearly communicate what the design team should take into consideration when developing the project design (Dallas, 2006). However, only taking the benefits into consideration represents only one part of the value ratio. The resources available must also be used as efficient as possible in order for delivering good value for money. The costs for elements and resources needed for each function are estimated to show the cost of each function. By comparing costs with the importance of each function, it can be assessed where good value for money can be achieved and where not (Dallas, 2006). The design team then generates ideas for alternative performance and finally submits recommendations to the decision-makers to decide preferred options. Later during the use of the project, a project review should be conducted to check if the benefits actually were realised and to gain experience for future improvements (Dallas, 2006).

3.3 Principal-Agent

In order to provide value and use value management in the team-based projects, the parties involved in the project needs to have common goals and objectives (Atkin & Brooks, 2009). To succeed with that, it must be recognised that the parties involved may have divergent interests. Therefore, Atkin & Brooks (2009) propose for a cooperative approach where partnerships and partnering is recommended.

However, the individual interests and efforts need to be aligned with the goals of the organisation (Atkin & Brooks, 2009).

The PPP arrangement is due to the differences of the sectors and many parties, dealing with problems of cooperation. The theory of principal-agent is according to de Palma et al. (2009), applicable on PPPs, as the relationship between the public and the private party in many ways is similar to the relationship between the principal and agent. The theory is shortly described as a situation with a manager, *principal*, whom cannot monitor the productivity of his employee, *agent*. In PPP the government agency has the role as principal and the private party operator the role as agent, seen in Figure 5.

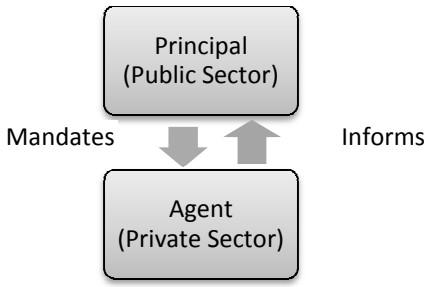

Figure 5. The principal-agent framework. Adopted from de Palma et al. (2009)

The two underlying reasons for the principal-agent situation are asymmetric information and pursue of own interests. In PPP, the private party operator has in general more information about its actions, as the quality and the duration of construction, than the public party. The interests of the private party are mainly to increase the revenue, unlike the public party's to gain value for money (Leiringer, 2003). The public party can, according to the principal-agent theory, set up incentives for the private party to perform as wished and thereby increase value for money. The most efficient ways of succeeding with a principal-agent relationship is highly applicable on PPP projects (Renda & Schrefler, 2006). The ways are described as a need for; a specified and operable contract between the parties, stable contract terms over time, measurable outputs and service deliveries and ways to monitor them, as well as punishment if cheating is proven. Another way of assuring that the private party is working according to the public party's will is to use a neutral auditor for inspection of performance (de Palma et al., 2009). In traditional procurement, the public sector is also often exposed to risks of which they cannot influence and to hidden liabilities (de Palma et al., 2009). Optimally, the risks should be transferred between the public and the private parties, to the one most suitable to manage them, in order for the project to be economically efficient (de Palma et al., 2009).

3.3.1 Risk Management

Risk management is the process of handling risks and uncertainties (Dallas, 2006) and is necessary to provide cost-efficient projects (Xingfu, 2009). Risks in construction projects are often huge and complex and construction projects are seen as high-risk processes as they have many unpredictable factors (Xingfu, 2009). Another reason for the difficulty of risk management is that it is an iterative process reflecting the risks during the project life cycle (Dallas, 2006). Risk management can, as value management, be divided in the different stages of a project: initiation/inception, feasibility study, design and construction, and completion stage (Xingfu, 2009). Risk analysis is the basis of risk control and consists of three steps: *risk identification*, *risk estimation* and *risk evaluation* (Xingfu, 2009). The risk evaluation is a key step and should be especially considered and paid sufficient attention according to Xingfu (2009). A commonly used method for analysing risks is the *Analytic Hierarchy Process*, AHP, where risks are presented in a hierarchy according to their importance. Experts decide on the importance of the risks by estimating losses if the risk occurs and probability of occurrence (Xingfu, 2009).

In PPP projects, there are many risks coming from the complexity of the arrangement itself with the documentations and agreements to be made (Fu, 2009). Also, the huge capital venture and risk variation during the project lifecycle contributes to the risks. There are five main areas where risks in PPP projects can be allocated: political, legal and contractual, construction, financial, and force major (Fu, 2009). In order to control these risks, Fu (2009) divides them into three categories:

- Inevitable risks with losses that cannot be compensated
- Evitable or transferable risks
- Profitable speculative risks

When allocating these risks among the parties involved in a PPP project, Fu (2009) presents three known principles:

Principle 1: A risk should be allocated to the party with most control over the occurrence of that risk, and if it occurs, can handle it at lowest cost.

Principle 2: The party taking on a risk should be able to charge an appropriate premium.

Principle 3: The party taking on a risk needs to have sufficient financial ability to prevent the risk from occurring or sustain its consequences.

These principals are shown in Figure 6, where Fu (2009) presents a model to be used when allocating risks in partnerships construction projects.

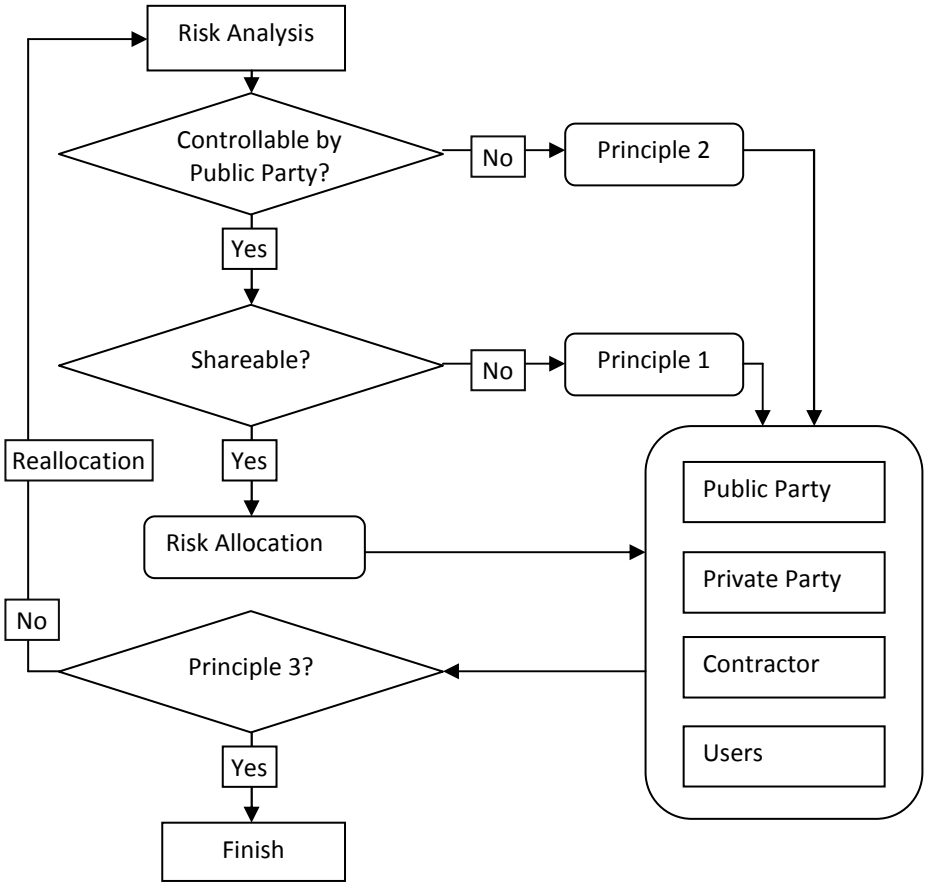

Figure 6: Risk allocation procedure (Fu, 2009)

The first consideration is if the risk is controllable by the government. If not, the second principle should be considered by controlling that the risk value is equal to the gain possible (Fu, 2009). If so, the risk can be transferred to another party or be disseminated. The second step is to ask if the risk is shareable and if not, the first principle is used to determine which party should take on the responsibility. The risk can also be portioned between the parties by an allocation solution (Fu, 2009). After the two steps of allocating all risks, the third principle is considered to assure that no party has taken on more risk than it can handle. If the loss amount of the risks is out of proportion of a party's charge, the balance between the partners will be struck and lower the effectiveness of the service delivery and increase the investment cost (Fu, 2009). Therefore, the third principle must always be used when allocating risks to others than the government to assure that they do not exceed their maximum capacity. If any party, except for the government, is

unsatisfied with a risk allocation, the risk is redistributed by negotiations or otherwise; the coefficients of the risk value are reset (Fu, 2009). In PPP the risk allocation is distributed with the help of contract management (Ng & Wong, 2007).

3.4 Contract Management

Contract management is dealt with during procurement and is essential to achieve value for money by dividing the risks (Ng & Wong, 2007). The completeness of the contract decreases the risk for dispute and abuse and increases the potential for value for money. The three main parts of the contract are the *output specification*, *performance monitoring* and *payment mechanism*. These are shown in Figure 7 beneath. With sufficient knowledge and contract management, a complete and accurate output specification can be formed to avoid an incomplete contract. By performance monitoring connected to an adjusted payment mechanism, incentives are created to deliver the service in accordance with the output specification. The effectiveness of the output specification and performance monitoring cannot be assessed in advance and is rather a continuing process throughout the PPP project (Ng & Wong, 2007). Identification of more effective solutions affecting the service quality after the contract is written cannot be included. This is difficult to handle to totally avoid incomplete contracting (Riess, 2005) and can cause ineffective and expensive solutions, not having the possibility to make profits from the latest technology.

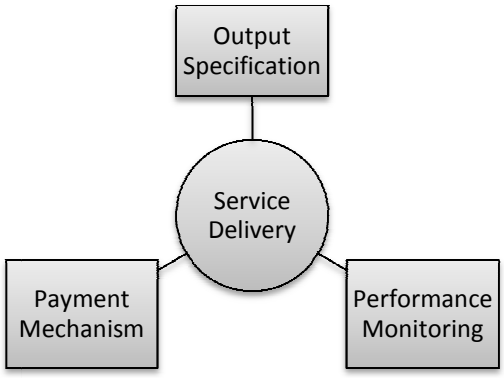

Figure 7. Key components of service delivery (Robinson & Scott, 2008)

The *output specification* constitutes a framework for the services to be delivered (Gruneberg et al., 2007). The output specification should focus on *what* to deliver, by what function and which standard, rather than *how* (Bryntse, 1992). This is the opposite of a technical specification, focusing on *how* to perform services and the inputs needed (Gruneberg et al., 2007). An output specification is dependent on client and end users to define their demands in outputs and not as technical requirements (Bower, 2003). The specification consists of functional requirements

that allow for various technical options for meeting the requirements (Bower, 2003). Forming an output specification is a different way of thinking compared to traditional procurement and there is a risk that the specifications get over-prescriptive and limits the flexibility and innovation for the service providers (Bower, 2003). To let the supplier decide how often and how to carry out a service in order to meet the specified output requirements, increase the risk for the private party. A recommendation from Howard (2009) is for the client to minimise the number of primary goals and outcomes to keep focus on what is to be accomplished. The services provided by the private party can include both hard, building maintenance and landscaping, and soft, cleaning and catering, facilities management services. The non-facility management services, often core services, like surgical and medical in health care, are often still provided and managed by the public party (Gruneberg et al., 2007). The output specification is used to measure the compliance in terms of appliance and standard, linking the output specification to the performance monitoring system and the payment mechanism (Robinson & Scott, 2008), see Figure 7.

The public party to ensure the quality of the service delivered uses *performance monitoring*. The compliance is assessed of the level imposed with the output specification (McDowall, 2000). Methods and metrics for monitoring are set, based on the standard level wanted, and often measured by a percentage scale. The scale often includes a minimum standard level, that when fallen below gives penalties and are reflected in the payment mechanism (Robinson & Scott, 2008). Other methods are spot checks, site visits and audits by a third party (McDowall, 2000).

The third factor in contract management is the *payment mechanism* (Robinson & Scott, 2008) that defines unitary payments for the buildings and services delivered. It is done based on the output specification and the expected performance monitoring, including the risk calculations of different factors. By that it also determine penalty deductions related to performances below standard (National Treasury, 2004d). This creates incentives for the private client to deliver the level of service required in order to achieve value for money (HM treasury, 2004). Howard (2009) suggests that the financial pay points should be limited to keep focus on what is important and to use nonfinancial consequences as corrective actions for other measures. When developing the payment mechanism, prior knowledge and research are vital (National Treasury, 2004d). The relations between the output specification, the performance monitoring and the payment mechanism need to be strong. This together with good relations can give increased value for money (Robinson & Scott, 2008).

3.4.1 Performance-Based Contracting

Performance-based contracting is a contract where the output specification is based on the results to be achieved instead of how the work is to be conducted (Nash et al., 2007; Garrett, 2002). The development of performance-based contracting has

the objective to gain benefits from private sector innovation (Nowell, 2008). Critics has pointed out that the government for years has micromanaged their contracts by exactly defining how demands should be fulfilled. Instead, with a performance-based approach, the public party only defines what problems need to be solved and leaves it to contractors to figure out best solutions. Contractors are free to decide on how to achieve them and incentives for achieving them (Garrett, 2002). The contractors submit their bids and the public management advisories are responsible for measuring the contractor's performance and project result (Nowell, 2008).

It is important in performance-based contracting to allow for flexibility of the contractor (Howard, 2009). The services procured can have variances in workflow over time and the contractor often has better ability to adjust their staffing accordingly (Howard, 2009). The risks and rewards should be shared and if the contractor fails to deliver, the payment should be reduced. In the same way, if performance exceeds, the contractor should receive a greater payment that is compensated for elsewhere (Howard, 2009). The share of risks must be carefully done so that the contractor does not get an unreasonable burden. When risks are shifted, there should be an equivalent opportunity to earn additional incentives for high performance (Howard, 2009). However, it is difficult to implement performance-based contracting (Garrett, 2002), both agencies and contractors can be sceptic as traditional acquisitions are well incorporated and there are uncertainties that the contracted requirements can shift later on (Nowell, 2008). Mostly, the reasons for failed projects are vague contract requirements and performance measures and therefore, clarity in the contracts are needed (Nowell, 2008).

3.5 Contingency Theory

All theories presented above are connected to the subject of value and value assessments in public private partnerships. In access of these theories, contingency theory is believed important to consider when evaluating the other theories in the actual context of public private partnerships. The reason for this is that all projects are unique and are affected to various degrees by contingencies affecting the project performance, result and outcome. The contingency theory argues that there is no universally appropriate system that applies to all types of organisations or projects under all circumstances (Otley, 1980). Specific features will depend on the context in which an organisation is located. Otley (1980) uses contingency theory to explain contradictory findings in empirical results in the use of accounting systems. His reasoning can be projected on value for money assessments as they can be seen as a type of budgeting of the PPP project's forecasted costs and revenues. Three concepts: *technology*, *organisation* and *environment*, are contingencies that have been used to explain why empirical results differ from one situation to another (Otley, 1980). These concepts correspond to three levels of factors affecting the performance and result of the budget or value for money

analysis. Technology is about the effect of technical choices on the performance of calculations. These choices and factors can aggravate or ease costings depending on how well costs can be linked to certain activities. The level of detail required in the calculations is also affecting the degree of difficulty of making correct costings. Organisational structure is also affecting the performance where interdependence between the parties involved is perceived a significant factor (Otley, 1980). As the interdependence increases, defined measures of performance become less important and flexible use of internal budgetary information lead to more effective organisation performance (Otley, 1980). Finally, environmental factors are also important to consider where the intensity of competition is an important factor and also the operating environment. A tough operating environment (difficult to show profit) and liberal operating environment (easy to maintain profit) are examples of two environmental factors that affect how budget information is used to evaluate performance (Otley, 1980). These two environments demand for different ways of budgeting if high accuracy of costs and calculations are desired.

The theories described in the theoretical foundation will be used later on in the analysis of which factors are contributing to value in PPP projects. Bower's (2003) framework of value drivers presented in Figure 4 above is used as an analysis structure and theories are applied to the different levels of value drivers. The application of theories is shown in Figure 8 where the different levels are separated by using contrasting colors.

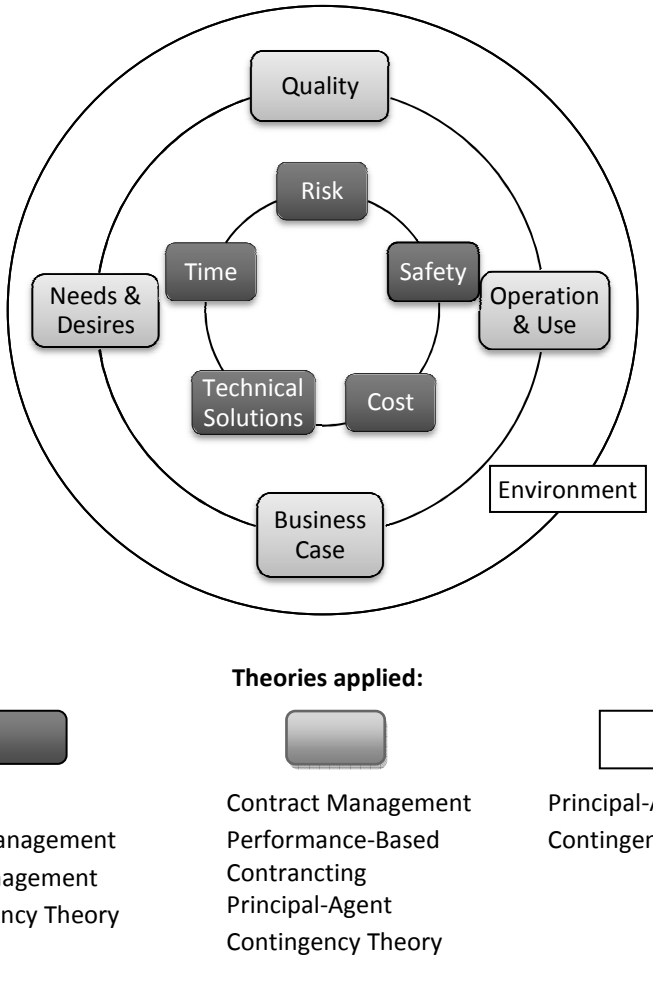

Figure 8. Theory application

4 International Guidelines for PPP

PPP is a complex phenomenon with several legal and contractual aspects to consider. National guidelines are therefore often provided to promote and ease the use of PPP, in the countries studied as well as other countries using PPP. In this section the national guidelines of the UK, Canada, South Africa and Australia has been studied to get an idea of how value for money generally is estimated in theory. The guidelines studied are very similar in both the feasibility studies and the value for money analyses and are therefore compiled into one section describing the guidelines in general. This is to provide an understanding needed for the section dealing with the international practice of PPP. The general perspective is also applicable on Sweden and later when comparing and analysing the findings of the other counties studied.

4.1 Feasibility Study

The feasibility study is described according to the National Treasury (2004c), which defines a number of activities to undertake when performing the study. Three of these: *needs analysis*, *solution option analysis* and *value assessment*, are found to be of most relevance for value for money and is presented in Figure 9.

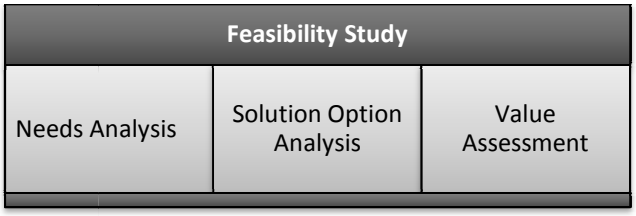

Figure 9. Activities in the feasibility study

The needs analysis defines the needs of the project (National Treasury, 2004c). It assures that the project is in line with the institution's strategic objectives and the institution's capacity and commitment to handle the project in terms of management, evaluation, negotiation and implementation. The project's officer, team, transaction advisors and key stakeholders are then presented (National Treasury, 2004c). The needs analysis specifies the outputs of the project based on what service to deliver, instead of inputs needed as in traditional procurement. The minimum standards and key indicators of the outputs are determined in order to measure the performance. The affordability of the project is also identified and the available budgets is analysed. Finally, a first indication is given of which type of PPP project that is suitable for the particular project (National Treasury, 2004c).

A solution option analysis is made to select the best option for providing the service. The analysis sets out financial, technical and legal options to fulfil the

output specification for evaluating the options (National Treasury, 2004c). First all options available is listed and then evaluated on advantages, disadvantages, risks and benefits of the government. The evaluation also covers areas such as service delivery arrangements, technical aspects, site issues and affordability. The solution options are then evaluated on suitability for PPP procurement, by ability to specify outputs opportunities for risk transfer to the private party and scale to reach large enough cash flows to achieve value for money (National Treasury, 2004c). As a last step in the solution option analysis, one option is to be recommended.

The value assessment is providing information if PPP procurement is appropriate for the specific project (National Treasury, 2004c). A comparison is made between delivering the services through PPP or through a traditional procurement, comparing a Public Sector Comparator model, PSC, and a PPP reference model. To determine which alternative that provides the most value for the public party, three value assessment tests are performed regarding affordability, risk transfer and value for money (National Treasury, 2004c). The affordability is investigated on whether the total costs of the project are within the budget's limit of the public party. The budget is scrutinised and compared to the PPP reference model, when not affordable, the output specification either is modified or the project is deserted. The risk transfer is evaluated by comparing the risk-adjusted models to determine whether risks are properly transferred from the public to the private sector. When comparing the models an initial value for money test is performed, giving an early indication of the value for money able to be achieved. If the project is affordable and gives value for money with PPP, the institution should proceed with PPP procurement (National Treasury, 2004c).

4.2 Value for Money Analysis

Value for money is initially tested in the feasibility study and later on in the procurement phase when actual offers have been received (National Treasury, 2004c). The analyses can also be used for a public report providing an understanding of the project to the public as done in Canada (Infrastructure Ontario, 2007). In the UK, value assessment is initiated as early as in the programme stage when annual budgeting is made and investment programmes are decided (HM Treasury, 2006). Commonly, value for money is analysed and tested mainly two times in a PPP project, first in the feasibility study, by the value for money analysis, and second in procurement when evaluating the bids (National Treasury, 2004c). The value assessment is important to start early before any engagement with the market is made as changes later on in the process very well can result in erosion of value for money (HM Treasury, 2006).

The value for money analysis should include all aspects of the project through both quantitative and qualitative approaches (Australian Government, 2008a). In the quantitative assessment of value for money, the PSC is used as a financial

benchmark against the PPP reference model, representing the costs for traditional procurement (Australian Government, 2008a). The models are used both in the feasibility study to assess whether PPP could offer more value for money (National Treasury, 2004c) and when evaluating bids to determine if they provide quantitative value for money (Australian Government, 2008a). For the value for money analysis to be complete, qualitative factors must also be taken into consideration. This requires a flexible valuation process to identify the best outcome. Qualitative aspects that can be considered are operational requirements, service delivery, project management and relational aspects (Australian Government, 2008a). As both the quantitative and qualitative aspects affect the value for money assessment, it is important to not consider them in isolation (HM Treasury, 2006).

When the qualitative and quantitative costs are assessed, the comparison of the PSC model and the PPP reference model is performed, using their Net Present Values, NPVs. The cash flows of the two models often differ a lot and are therefore difficult to compare without taking time into consideration. By using discounted cash flows, the models can be compared to each other as well as to actual offers later in the procurement phase (National Treasury, 2004c). The value for money test result is presented in percentage terms and is calculated as (Infrastructure Ontario, 2007):

(Traditional Project Costs – PPP Project Costs) / Traditional Project Costs

4.2.1 Cost Components of Value for Money

Value for money is the difference between the total project costs when delivered by the government or by a private party (Infrastructure Ontario, 2007). A PSC is used to estimate the hypothetical life cost of a project if delivered by the government and is based on the most efficient and likely method the public sector can provide the outputs specified (Australian Government, 2008b). A hypothetical private party bid is also formed reflecting the costs of providing the same outputs from a private parts perspective (National Treasury, 2004c). The comparison is shown in Figure 10 where the value for money is quantified to 7 million dollars.

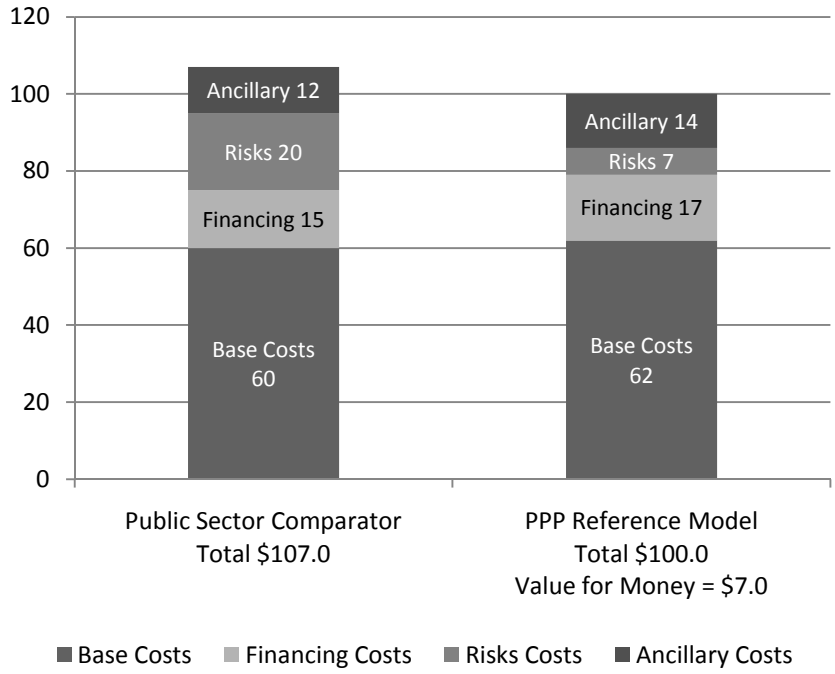

Figure 10. Illustrative value for money assessment (Million dollars). Adopted from Infrastructure Ontario (2007)

The two comparable models consist of cost components individually calculated for each model (Infrastructure Ontario, 2007). As visualised in Figure 10, the main components are *base costs*, *financing costs*, *risk costs* and *ancillary costs*.

The forming of the two comparable models is mainly done in two steps (National Treasury, 2004c). First, a basic model is formed from direct costs of outputs and financing costs. The model is then adjusted by adding risk and ancillary costs (Infrastructure Ontario, 2007). The models are cash flow forecasts and should only include cash flows, both ingoing and outgoing (Australian Government, 2008b). The reason for this is that the models are financially forecasted by the discounted cash flow method. How the calculations of value for money is done are described in Section 4.2.3 *Evaluating Value for Money*, and the cost components of the models are described in detail below.

4.2.1.1 Base Costs

The base costs mainly consist of construction costs, lifecycle costs and facility management costs. The figures are based on a similar recent project or on estimates (National Treasury, 2004c) and the best way of estimating base costs are to have professional industry experts to do the estimates (Infrastructure Ontario 2007).

Each of the base cost components can have one cost consultant focusing on estimating just that (Infrastructure Ontario, 2007). The base costs include both direct and indirect costs, and these are valued by size and timing (Australian Government, 2008b). To be able to forecast all costs during the projects lifetime, it is important to understand the method of delivery of each of the models to value and identify timing of the costs (Australian Government, 2008b). A premium is added to the PPP reference model, which reflects the added risks that are transferred during the projects lifetime (Infrastructure Ontario, 2007). Except of estimating base costs, the consultants can also estimate the eventual premium depending on the degree of risk transfer and market conditions. The premium is in the example in Figure 8 above 2 million dollars.

4.2.1.2 Financing Costs

In traditional procurement, the public sector makes progress payments during the construction phase and then pays annually for facility maintenance work (Infrastructure Ontario, 2007). In PPP procurement, the private sector borrows money to pay the projects costs until repaid by the public sector, either by a lump sum or by annual payments. The financing cost is higher for PPP procurement as the private sector borrows money at a higher rate than the public sector (Infrastructure Ontario, 2007). In the initial value for money test, external financial advisors can be employed to make assumptions of financing costs and fees that the private party is likely to be charged. Later, when bids are received, the assumed financing cost is replaced with the actual financing cost.

Even as the financing cost is higher with PPP procurement, it is important to consider the full value for money analysis when making the procurement choice. The risk transfer to the private sector and mitigation of public sector risks will often offset the higher financing costs (Infrastructure Ontario, 2007).

4.2.1.3 Risk Costs

The costs of risks are related to the accuracy of the value for money assessments determining all costs in the project. The likeliness of an additional cost to be incurred and transpire over the life of the project constitutes a risk cost. An example of this can be a new design solution in construction. These risks are although likely to be identified and estimated with the help of the right expertise. The risk costs are identified and included in the value for money analysis, by a risk workshop and a risk analysis (Infrastructure Ontario, 2007).

4.2.1.4 Ancillary Costs

Ancillary costs are costs related to planning and delivery of a large and complex project depending on the method used for delivering the project. The main cost components are costs for project management and transaction. The costs of project management constitute of the fees for internal and external project management and the incremental costs for the public party to provide the infrastructure by the

method of procurement. The costs of transaction represent the additional costs for alternative procurement, as cost concerning legal aspects, financing, capital markets and advisory fees for architecture and engineering (Infrastructure Ontario, 2007).

4.2.1.5 Competitive Neutrality Adjustment

The cost of competitive neutrality adjustment is a cost component used in Australia (Australian Government, 2008b). The PPP reference model includes costs like insurance and taxes, which the PCS does not include as the public sectors can "self insure". These are net competitive advantages that the government benefits from in consequence from public ownership (Australian Government, 2008b). This can be misleading as the government is taking on risks which should otherwise be covered by insurance and also as taxes costs is ultimately resulting in public revenues. To adjust for these perceived advantages, a *competitive neutrality adjustment* are made by adding an amount to the PSC equivalent to the cost the private party otherwise should have paid (Infrastructure Ontario, 2007). This allows for a like-with-like comparison in the value for money assessment between the PSC and PPP reference model (Australian Government, 2008b).

4.2.2 Risk Analysis

A value for money analysis should include all costs associated with a project and even though all raw cost elements are quantified and valued, situations can occur which adds on additional costs (Infrastructure Ontario, 2007). These situations are handled as risks and can be grouped into three categories (Infrastructure Ontario, 2007):

- *Retained risks:* risks that are retained by the public sector
- *Transferred risks:* risks that are entirely transferred to the private sector
- *Shared risks:* risks that are shared to varying degrees by the public sector and building consortia

Risk transfer result in higher risk costs of PPPs compared to traditional procurements (de Palma et al., 2009). The higher cost is to be covered by increased value for money, from incitements to efficiency created by the risk transfer. The risk transfer is an important equation to consider avoiding a project to be more costly than anticipated. There is unfortunately no clear rule on how to allocate risks in PPP projects (de Palma et al., 2009) and many projects fails when the parties cannot agree on the risk allocation (United Nations, 2008). If enough time and attention is devoted to perform a risk analysis, most risks can be identified, quantified and valued with a fair degree of accuracy (Infrastructure Ontario, 2007).

The valuation of risks is mainly done in four steps:

1. Identification of project risks
2. Allocation of project risks
3. Estimation of probability of risk occurrence and cost impact ranges
4. Quantification of total risks

To identify the risks associated with the project, a risk workshop is held with participants from all authorities, agencies and advisors involved (Infrastructure Ontario, 2007; National Treasury, 2004c). All identified risks are listed and grouped into categories such as strategic, financial, design and construction, maintenance and life cycle (Infrastructure Ontario, 2007). All risks are then allocated by the workshop participants to the appropriate part (public or private) depending on procurement choice as seen in Table 3.

Table 3. Risk allocation (Infrastructure Ontario, 2007)

	Allocation					
	Traditional Procurement			PPP Procurement		
Risk	Public	Private	Shared	Public	Private	Shared
Design Coordination Completeness	X					

The probability of occurrence of each risk is estimated based on statistic data from previous projects (Infrastructure Ontario, 2007). Assumptions also have to be made and these need to be reasonable and documented as they can be challenged later in the procurement process (National Treasury, 2004c; Australian Government, 2008b). The cost impacts of the risks are then estimated and are expressed as a percentage of the base costs ranging between unlikely with low additional costs (10^{th} percentile), most likely and unlikely with high additional costs (90^{th} percentile) (Infrastructure Ontario, 2007). This is visualised in Table 4.

Table 4. Risk impact (Infrastructure Ontario, 2007)

	Traditional Procurement			
	Probability of Risk Occurring	Impact Range		
Risk		10^{th}	Most Likely	90^{th}
Design Coordination Completeness	90%	1.0%	3.0%	8.0%

All risks are presented in a risk matrix including all identified risks, allocation, impacts and associated costs (National Treasury, 2004c). The cost of each risk can finally be quantified by the following formulas (Infrastructure Ontario, 2007):

Cost of Risk, PSC = Base Costs x Probability of Occurrence of the Risk under Traditional Procurement x Impact of the Risk under Traditional Procurement

Cost of Risk, PPP = Base Costs x Probability of Occurrence using PPP x Impact of the Risk using PPP

The total cost of the risks is summarised and added to the models (National Treasury, 2004c). A sensitivity analysis should finally be performed to test the models resilience to changes in assumptions, risk components and the operating environment over the term of the project (National Treasury, 2004c; Australian Government, 2008b).

4.2.3 Evaluating Value for Money

The initial value for money can be read as the often better capacity of the private party to handle risks and ability to improve performance through innovations (National Treasury, 2004d). After bids have been received, they are thoroughly reviewed on a number of criteria including the financial solution (National Treasury, 2004d). It is difficult to evaluate the financial aspects of a bid and a great understanding of the project costs during the projects lifetime is demanded for (National Treasury, 2004d). The most important factor in the financial evaluation is value for money and the focus is to find any deductions or additions to the initial value for money estimate (National Treasury, 2004d). The PSCs and PPP reference models base costs are updated according to an actual bid so that it reflects the most accurate costs on the market at the time (Infrastructure Ontario, 2007). The actual value for money is the difference between the PSC and an actual bid and shows if the bidder can offer additional value for money than predicted. The initial and actual value for money are visualised in Figure 11.

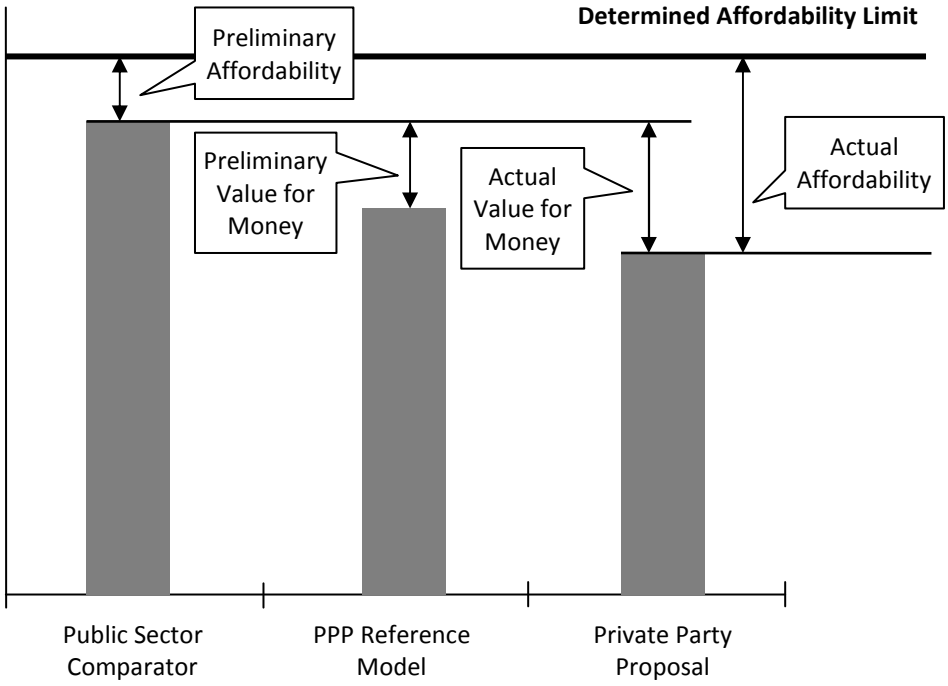

Figure 11. Initial and actual value for money and affordability. Adopted from National Treasury (2004c)

Before a preferred bidder is chosen, a value for money report can be written including information about evaluations, affordability, risk transfer and a negotiation plan (National Treasury, 2004d). The report can have various objectives, in South Africa, the report is written and approved by the relevant treasury to show that the chosen bid provides the best value for money and is affordable (National Treasury, 2004d). In Canada, the report is public and provides an understanding of the project and the decision basis for the choice of PPP procurement (Infrastructure Ontario, 2007).

5 International Practice of PPP

The international practice of PPP projects has been investigated through interviews with practitioners within advisory. The empirical foundation is structured in accordance to the countries' experience of PPP, beginning with the UK with the most experience followed by Canada, South Africa and finally Sweden. Bower's (2003) framework of traditional value drivers presented in the theoretical foundation has been interpreted to reflect three levels of value drivers. These levels have been used to structure the empirical findings in this chapter. For the levels to apply for PPP projects, they are named *value assessment, procedure* and *environment* as shown in Figure 12. The empirical findings of each country are presented in these levels, starting with the outer level of environment and ending with the core of value assessment.

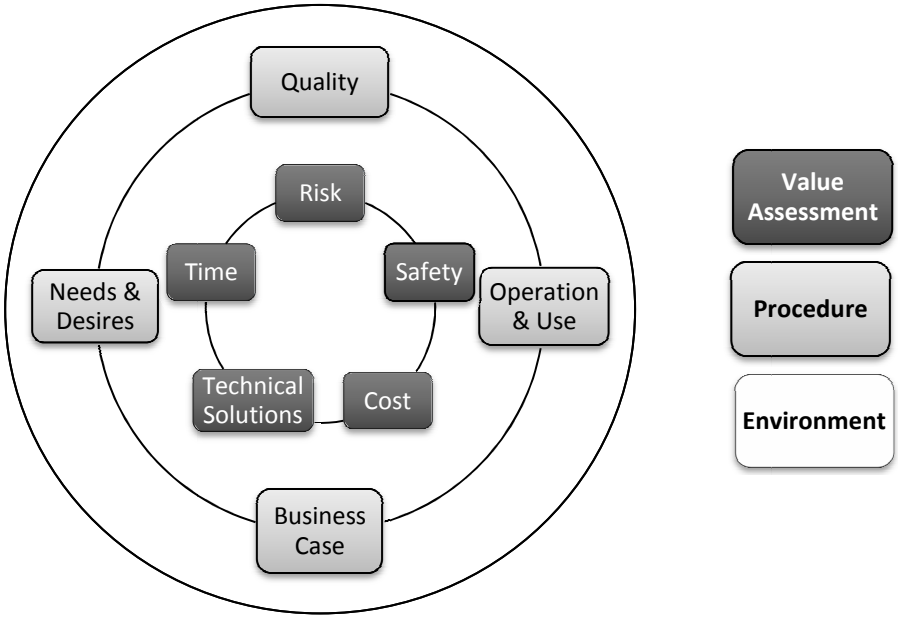

Figure 12. Levels of value drivers

5.1 The United Kingdom

The interviewee has been working with infrastructure advising for several years and mainly advises the public sector with a financial focus. The interviewee has advised over 30 PPP projects where many have been within social infrastructure as hospitals and schools.

5.1.1 Environment

In the UK, PPP was initiated in 1992 and more than 600 projects have been performed (PPP, Forum). HM Treasury is the main stakeholder of PPP together with the transportation and health care departments and lately also several independent central government departments. The authorities' engagement varies in periods of low and high interest. The HM treasury provides specific guidelines for the use of PPP and the office of government commerce provides guidelines covering the regulations of the EU. The advisory agency in the UK is advising both governments and private companies, where approximately three of four are governments all over the UK. The advising is across a wide range of sectors such as social infrastructure, energy resources and transportation. The public advising last from the beginning of planning a project and includes the feasibility study and all planning processes up until the contract signing. In private advising, advisors get involved after the decision of submitting a bid is taken and are then advicing with the financial structure through the whole tendering process.

There are two main advantages of using PPP in the UK. Firstly, it enables the public and the private sector to focus on their core competences, creating innovation and better solutions within both sides. Secondly, it provides access to money from the private sector that makes it possible to realise more projects. A prerequisite for making PPP a suitable choice in the UK is the growing and ageing population, which requires a fast increase of public services, especially in health care. Another prerequisite is the need for long-term investments of the private sector and PPP projects are stable, secure and provide relatively good return. This applies especially for pension funds that are long-term and are willing to invest in longer, financial projects.

5.1.2 Procedure

The advisory agency's involvement is financial advising of the feasibility study, which is seen as a cost benefit analysis called an Outline Business Case, OBC. The OBC is examining three main project options: a Public Sector Comparator, PSC, a PPP option and a do-minimum option at an early stage. The options costs and benefits are evaluated to decide which option to choose. The do-minimum option is the option of doing the absolute minimum. The OBC is comprehensive and includes technical issues, risks and demand assessments with future prognoses. The results are a scored list of benefits and transferring of risks to the party most suitable to manage it. After that, the advisory agency also performs an affordability session, adding up all funds to ensure that the project is affordable. Affordability is in the UK the most determining factor, which often leads to a decision to use PPP procurement. When traditional procurement is not afforded, possible achievement of value for money is only compared between the PPP and do-minimum option.

In the feasibility study, the output specification is either specified from scratch or by using general output specifications that are tweaked to fit the specific project. The output specification should be defined by outputs instead of inputs, for innovations to take place. In tendering, the private party makes an effort to show all technical improvements possible in order to win the contract, leading to advantages impossible for the public party to perform. The PPP contract ties the private party up for the next 25-30 years to the output specification and thereby limits technical improvements during the operational phase. The technical aspects of the contract should therefore be adjusted during the project. The fulfilment of the output specifications is measured in service availability by performance monitoring. If the service availability is not enough, a time is set before price deductions are made according to the payment mechanism.

5.1.2.1 Private Involvement

The UK has a mature private sector with a lot of different bidders interested in PPP projects. However, competition in tendering varies and has been affected by the financial crisis. For some projects there is no existing market for certain services to be privately procured. Although, some services can be of such high interest that private firms cooperate and build an organisation just to be able to provide a specific service. The tendering firms are evaluated on if they are able to deliver for a long time, if they understand all the project needs and if they are large enough to cope with the financial aspects. Around three firms are then selected to hand in a more detailed tender and answer questions in a dialog process. The dependent factors are to maximise the value for money and affordability, which often is the main constraint and brings the scope back to reality. All information is considered and weighted and finally, one bid is selected. PPP projects offers significant improvements on paper of keeping time and budget compared to traditional projects. Even though, nothing clearly indicates if value for money actually is achieved, since two procurement options are compared and only one is performed. There is no formal approach of evaluating how well people have done or database to look back in.

5.1.3 Value Assessment

In the UK, two main value for money tests are made, both by a qualitative and quantitative assessment. In the OBC, all cost components are used when calculating value for money of the three models, PSC, PPP and do-minimum. In the calculations, capital and revenue are calculated in nominal terms and opportunity costs are included while sunk costs are excluded. The developing costs are also added, as well as the cost for bids and to put it to tender, including costs for advisors, architects, and planners. The costs can be semi fixed or fully variable and depending on for example the amount patients a hospital takes in. There are different drivers of cost, for a hospital it can be patients in and patients out where the cost of each patient needs to be understood. The costs are also dependent on the building quantities and technical advisors calculate the cost per area unit. The

financial advisors estimate if the cost is likely by benchmarking to other similar projects.

Besides the OBC test, three questions are used to evaluate the bids together with a spreadsheet: is the project viable, desirable and achievable? Once the decision has been made to proceed with the project, the focus shifts from *if* value for money can be achieved to *how* to maximise the value for money. However, the national authority is strongly supporting PPP and as it is a way of accessing funding not otherwise possible to get, the value for money criteria is not always determining if a project is realised. Using PPP may thereby be the only way to be able to perform the project. Advisors also estimate the future market conditions and costs for each year, by using an index. The costs are then calculated to a Net Present Value, NPV. If the market is going through larger changes, the contract length is shortened, as it is difficult to project future market conditions. The market for specific services can also be tested every fifth year and if the contracted costs differs these are changed. Value for money clauses can also be set in the contract, such as that the private party wants to earn 15 percent at contract close. If that amount exceeds, the revenue is shared.

5.1.3.1 Risk

When considering and valuating risks, a risk workshop is organised at an early stage to quantify and allocate all risks associated with the project. An initial list of risks is used and these are allocated to either the private or public party in each of the procurement alternatives: the PSC and the PPP option. The risk driver is identified and it is estimated whiter the cost will increase or decrease. The impact of each risk is also estimated. The whole list of risks is transferred to zero or 100 percent and estimated in probability of occurring and impact. The estimations are used to calculate the NPV of the risks, which are added to the procurement alternatives. The numbers are set by the HM Treasury and technical advisors and not by the financial advisors. The financial advisors role is to ask questions in order to make the others think twice when making the estimates.

The most difficult part in the value for money analysis is to find a cash value for the risks as no one can predict the costs in 25 years. The PSC and the PPP reference model are equal except for risks and therefore value for money is based on subjective opinions of risk. The solution is to use a robust process to find the right percentages for the risk estimates in order to increase the accuracy of the value for money analysis.

For the further work with PPP in Sweden, an advice is to look at the UK PPP guidelines that have gone through an evolution and form a Swedish framework to make the use of PPP consistent regarding discount rates and inflation and to form own guidelines that is flexible. PPP should neither be seen as a “yes” or “no” answer, but instead consider all future costs and expectations.

5.2 Canada

The interviewee in Canada have been working with PPP for several years and been involved in various PPP projects including hospitals, prisons and transportation.

5.2.1 Environment

Canada has since the early 1990s concluded over a 100 PPP projects (Icobacci, 2010). The PPP projects are divided between the different provinces that are responsible for the development of infrastructure. British Columbia was the first province to establish an agency for PPP in 2002 and the other provinces were to follow. The agencies provide guidelines for the procedure of PPP, including the value for money methodology. They also provide support and information to parties involved. The guidelines are used by all parties involved in a PPP project and allow for efficient procurement and thereby save money for the bidders as well as for the government. The main sectors using PPP are health care and transportation, but also other social infrastructure. The advisory agency in Canada has been advising PPP projects for several years. They are advising both the public and private party and are working as transaction and financial advisors.

The main advantage of using PPP in Canada is that it allows for an efficient procurement. The efficiency possibly saves money both for bidders as well as for the government. Another advantage in Canada that eases the use of PPP is the standardised process and guidelines that are developed from experiences. The prerequisites for PPP in Canada is difficult to assess, due to that it differs between the provinces. The general reason to use PPP as procurement method is the limitation of capital avaliable in relation to the need of new infrastructure. The amount of value for money enables generation of more projects. In general all projects are suitable for PPP, each projects need an own approach and analysis to determine if it is large enough for value for money to be reached.

5.2.2 Procedure

The form of procurement is already chosen and the feasibility study is already performed internally by the agency, when it gets involved in PPP projects. The advisory agency begins with investigating if the project is big enough to be suitable for PPP procurement and have prospects for providing value for money. The project needs to be big enough as it is hard to find value for money in smaller projects. When the project is approved for PPP, it enters the procurement phase where a Request For Qualification, RFQ and Request For Proposals, RFP are formed and used. The bids are then evaluated objectively according to objectives that are decided and outlined in advance.

5.2.2.1 Private Involvement

The interest of PPP in Canada is high among private firms as well as the competition in bidding. In the beginning, there were the same three to four bidders tendering on PPP projects, while it nowadays are a wide range of bidders. Press releases indicated that there is a large variety in bidders. The bids are evaluated objectively after the request for proposal for design and outlines that are defined before the bids. The general criterions are construction, innovation, partnering, and financial aspects. In the evaluation they are balanced and weighted, for example technical to 70 percent importance and financial to 30 percent importance, both important in their way. The private sector in Canada contributes with great efficiency and security, thus keeping the budgets and deadlines very well in PPP projects (Icobacci, 2010).

5.2.3 Value Assessment

The initial value for money analysis is made from estimations that are used as inputs to the financial analysis. The information available is restricted and the project design is not always in place, decreasing the accuracy of the estimations. The actual prices are obtained later on, when bids are received. Risks are identified and quantified and the public agency Infrastructure Ontario (2007) provides standardised risk valuations. As all projects are different, many questions occur and different scenarios are formed when predicting the costs and it is therefore hard to determining the accuracy of the analysis.

There are indications of that value for money is achieved, both in British Columbia and in Ontario, when signing the contract. A value for money report is written and publicly published that states the contract value and the cost for performing the project with traditional procurement. It is however hard to evaluate value for money in the operating phase as it is difficult to get insight in the operation of the project. It is possible to evaluate if the government is paying the right amount and it is rarely that the amount is not correct.

5.2.3.1 Risk

The most important incitement to achieve value for money for the public party is risk transfer to a reasonable price. The risk transfer is what the public sector looks at the most when doing assessments. In both British Columbia and Ontario, a lot of the projects are uncomplicated and the public authority and other involved knows how to transfer risks, to the party most suited to manage it. In general, most risks are transferred to the private party, which to some extent control the risks for the next 20-30 years.

The recommendation for Sweden is that it is important that the national authorities have a positive attitude towards using PPP. The bidding costs of PPP projects are incredible high, and makes authority support for PPP important for the bidders' willingness to bid. Otherwise, competition in bidding would be low and submitted

bids would be half hearted. In other countries when PPP has been used without national authorities support, projects have been stopped and bidders have lost a lot of money. If PPP gets political backing in Sweden, there are strong believes that PPP is adopted and makes a success. When starting working with PPP, suitable projects first need to be identified. Then documentations need to be reviewed and later also closed transactions to learn from experiences and form a framework for PPP in Sweden.

5.3 South Africa

The advisor interviewed in South Africa has participated in some PPP projects of various types of infrastructure for the government.

5.3.1 Environment

In South Africa PPP has only been used since 1997 (National Treasury PPP Unit, 2010) and less than hundred projects have been performed. The National Treasury PPP Unit is the main stakeholder of PPP and conducts the regulation framework that forwards information and guidelines to the parties involved in PPP projects. The interest of PPP is especially high within the health care sector, where focus is on construction. In health care, an interest also exists to include services like medical and nursing services. The advisory agency in South Africa are mainly working for the government and are in general transaction advisors with combined skills within project management. In PPP projects, the advisory agency is involved in the faces initiation, feasibility study, procurement, financial close and contract completion. The advisory agency mainly has a drifty role and provides resources and skills.

The main reason for using PPP in South Africa is to accelerate the development of infrastructure. An advantage is the possibility for the public and the private sector to focus on their core competence. Another advantage is an increased quality of the society by being able to develop a lot of infrastructure and sophisticated projects. The government also learns how to outsource their requirements. The government in South Africa has limited access to funding and see PPP as the only solution to accelerate the development infrastructure projects. A special prerequisite, affecting the usage of PPP in South Africa, is a regulation framework of PPP, including specific demands that need to be followed. The National Treasury PPP Unit also provides approvals for the different stages of feasibility, procurement documentation and for the financial close.

5.3.2 Procedure

The PPP procedure begins with a need analysis before the feasibility study is performed, to identify what is needed and required and to define the project scope. A solution option analysis is then performed, investigating and evaluating

alternative solutions and the solution best corresponding is chosen. The feasibility study is then performed based on the chosen solution, including construction of a PSC and a PPP reference model and measure the affordability. Then an initial evaluation is performed predicting value for money before the final value for money analysis. The main components of the feasibility study described quantify all the costs and constitute a foundation of a financial model that is important to calculate the cost and quantify what to transfer and what to retain.

After the feasibility study is performed implementation and construction takes place. The users supported by advisors, then normally define the output specification to understand the requirements of the project. The output specification is then used as foundation for the technical performance monitoring, depending of the service performed and the payment mechanism. The payment mechanism can be defined by a unity payment when the service starts to be delivered, of all elements in feasibility study and value for money that cost capital as well as additional funding of the cost of capital. The output specification should be formed to enable the payment mechanism to measure the fulfilment of the private part and control all elements evaluated by the performance monitoring. Hopefully, the projects work well and the private party understand what can be done differently and contribute with innovations, but there is yet no indication of the project's status.

5.3.2.1 Private Involvement

The interest of PPP is high at the private side and there is a lot of competition in tendering. The competition in tendering although varies, depending on the type of PPP project and the legal requirements. However, at the time the market is active and has an adequate size. After tendering the bids are evaluated and premiered in accordance to the regulation framework after technical requirements and financial considerations.

The result of how well the deadlines and budget are kept in the PPP projects are unsure, currently the deadlines are not always met. As for the budget, a contract is agreed including all costs. Although there are some PPP projects struggling in terms of service delivering, in these projects, the contracts has not been managed well. It is of great importance to manage PPP projects as well as getting the implementation right. The project management are the ones responsible for this and to keep timelines so that advantages can be reached.

5.3.3 Value Assessment

When calculating value for money, there are three main steps important to consider. A financial evaluation first needs to be made, quantifying value for money in financial terms. Secondly, the same needs to be done both economicaly and financially with social benefits and finally, special for South Africa, with Black Economic Empowerment, BEE. The value for money analysis used begins with a

financial evaluation, where a PSC model is constructed and compared to a PPP reference model. The models include a quantification of all benefits the project brings to the table in a mathematical calculation with real numbers resulting in a quantifiable value. The PSC and the PPP reference model are developed by the transaction advisors, providing knowledge from skilled persons, and model the difference between the PSC and PPP reference models, displaying the potential value for money. This constitutes the foundation to the first approval by the government to decide if it is affordable and if value for money is achieved. The cost assumptions are based on knowledge of the market conditions, the movement of the market and inside personal.

If everything works according to the value for money analysis, calculated initally in the feasibility study, that will indicate that value for money is achieved. Quantifiable benefits are upfront by which the contract can be completed and a financial model can be done. The social economic evaluation is more problematic, since government project management element by the government can be limited. The main difficulties when forming the feasibility study and the value for money analysis are lack of information and lack of commitment from some departments to be supportive of the analysis.

5.3.3.1 Risk

The risks are identified when identifying a cost by calculating the probability that the risk occurs and evaluate the effect is has on the overall cost. The final cost depends on the risks that are dealt with where the probability is multiplied with the effect to get the total cost. The risk calculations are based on a predefined list, but careful adjustments are made to ensure that all the risks of the specific project is identified and dealt with. The financial advisors together with the technical participate in the risk analysis and determine the value for money by evaluation and quantification. When evaluating risk and value for money it is important to involve people that are able to get the comparator. The main advice and recommendation for further work with PPP in Sweden is the importance of forming a functioning and proper framework.

5.4 Sweden

In Sweden, three professors and two advising consultants, all involved in PPP by research of respectively projects, have been interviewed. The professors have done research on the organisational factors of PPP and on different procurement methods. The consultants have several years of experience of PPP and value for money assessment in Sweden and are specialised within management and transaction advisory. An interview has also been performed with a candidate involved in PPP from a private concessionaire firm, the only actor within investment in PPP projects in Sweden.

5.4.1 Environment

PPP was initiated in Sweden in 1994 when building Arlandabanan, one of the most known PPP projects that have been performed. Since then until today a few more projects have been performed and the interest of PPP is compared to the other countries considered low. The government and other national authorities are often negative and see PPP as a costly alternative, rather than seeing advantages by transferring the risk. The interest for PPP is partly dependent on the competence of the procuring entity. In Sweden the authorities focus is mainly on efficiency and minimising risk rather than of a solution for financing. Abroad the concept is especially gaining interest in regions with a strained economy. Interest are shown by both national and local authorities within healthcare, transportation and social infrastructure. Local authorities' procurement methods is only restricted by legal aspects and not controlled by national authorities and they are therefore freer to use which procurement method they find suitable. The research of PPP is still almost non-existing, because of the problem with getting financial support from the government due to the lack of interest.

PPP is a natural step in the development of procurement, where regular contracting has become total contracting and then performance-based contracting, making the projects more predictable in quality and timeframes. The central advantages of PPP are that the projects can be realised earlier and do not have to wait for budget decisions, by the help of private actors that are motivated and invest. In comparison with traditional procurement methods, PPP is considered in theory to be a less costly alternative, since the project life cycle cost is optimised in the development process. Risk allocation is another central aspect, which allows for a fair way of transferring the risks better born by the private party to the concessionaire while the public sector copes with the risks that they are able to control. The infrastructure is built with long-term sustainability since the private party is financing the project and is responsible for construction and operation.

The prerequisites in Sweden are considered optimal for PPP by both professors and consultants. The business climate even avoids conflicts to a greater extent compared to abroad, which eases the complex contracting. The standardisation of documents is another prerequisite to consider, which can be applied on PPP if adjusted to each specific project to ease the implementation. The principle of public documents although complicates the secrecy of confidential information and needs to be handled. A final consideration is the division of the larger projects into smaller projects, due to lack of economic possibility to perform the project as whole. This is necessary or suitable in PPP, where the projects need to be of a certain size. An example of this is the west coast railway that not yet is completed and unable to take part of the benefits of the completed construction.

5.4.1.1 Future Development

The negative approach to PPP and lack of knowledge in both public and private sectors are the main reason for the immatureness of PPP in Sweden compared to other countries. The recent downfall in the world economy has affected PPP differently between countries: by stopping or forcing the use of PPP. This shows that what is good for one country can be bad for another. Another important aspect for the development of PPP is the increase of public procured projects in Sweden, by 2000 each year.

The future development of PPP in Sweden is dependent on a change in the political will and interest that is lacking in Sweden today. Consensus between the political parties can avoid that projects are affected by a change in government. National guidelines of PPP are also needed, based on the experiences of a number of performed PPP projects, identifying the difficulties of PPP in Sweden to see if PPP is suitable at all. Guidelines ease the cooperation between the public and private party, by a clear definitions avoiding conflict of interest by different individual goals. The private sector needs to see the benefits and possibilities of PPP and how it can give return on investment, both monetary and non-monetary. A challenge is the limited market of interested investors and private firms of PPP projects, only two firms has shown a major interest for PPP. International firms are interested, but often need a Swedish partner to enter the Swedish market, although it is only a matter of time before they are established at the Swedish market.

5.4.2 Procedure

There is defined procedure for PPP projects in Sweden, but they differ between projects. The consulting in PPP projects in Sweden also differs from other countries, due to the immature public and private parties and the lack of national guidelines. Because of the inexperience, advisors have a very close cooperation with the public party with the role of project leader and deciding the work methodology. The work tasks include the feasibility study, the finance and procurement, where they perform the request of proposal, the function demands, the cost structure, and the financial close. Routines for project evaluation is made but not yet tested, and the value for money analysis is designed to enable evaluation of the projects since it is important that the public party is aware of the outcome.

5.4.2.1 Private Involvement

The private concessionaire firm has customers exclusively from the public sector within PPP in different countries. Determining if to tender on a project is appropriate financial returns, a scope within their core values, the right partners for construction/operation and that the size of the project is large enough to cover additional transaction costs. The request for proposal is preferred to only include functional requirements in PPP projects. However, in most construction projects the public party traditionally tends to engage in detail specification of the project.

Functional requirements give the private party's room for innovation and more sustainable solutions that traditional procurement excludes. The private party is also able to optimise the project cost over its life cycle.

In the beginning of PPP project good partners is selected by the private concessionaire firm, including contractor, operator and founders. The partners enter a long-term cooperation, where the partner relations play a very important role. Their partners have different expertise, such as construction or maintenance, which defines the role of each party in the consortium. The relationship with the financial and legal advisors is also important. It is also essential that the public party choose suitable advisors. The private partners form a consortium consisting of investors that put together a joint organisation for the management of the project.

5.4.3 Value Assessment

The value for money analysis is made by simulating if PPP compared to traditional procurement indicates value for money. The estimated costs of the procurement alternatives are calculated by a NPV, including risk assessment. The risks are measured in probability and consequence. The UK is often used as an example for determining the costs, risks and calculations models. The main cost components used are capital expenditure for traditional procurement, design, construction and operation and maintenance. In health care, facility management services are also usually included. Besides the cost components, the risk premium, reflected in the cost of capital and the financial flows, is assessed. When assessing the cost components, help are taken from earlier performed projects, and the risk premium is assessed with help from the UK. Technical consultants, often and preferably hired by the public party, are also a help to determine the costs. Although, it is important that the technical consultants are aware of that PPP is the form of procurement and understand the concept. The value for money analysis is both qualitative, determining efficiency and the private party's competence, but also quantitative, which both are important for the continuing of the project. The main difficulty with performing the value for money analysis is the access to, and quality of the input.

5.4.3.1 Risk

The risk assessment is performed by a workshop with all persons involved in the project as management advisors, the public party, technical advisors and in some cases risk specialists, where the quality is dependent on the amount of time available. There is no routine for how to identify all risks, but a list with general risks areas are used as foundation. The other risks are identified together with the client, as they are best suited for that task. The monetary part of the value for money analysis with risks is mainly to allocate the risks. The risks are divided into two different areas: project and solution related risks. Project related risks are those that are the same for all projects, both PPP and traditional, and the solution related risks are for example the skill of contract writing. The result of the risk assessment

is often presented in a table or matrix describing the risk itself, the valuation and the allocations.

The accuracy of the risk allocation that enables reasonable estimates and price determinations is necessary for a successful PPP project. The levels of equity return differ between the different projects and sectors. Not until a PPP project has been running for a while, it is possible to see indications of the final result. The monitoring of a PPP project consists of monthly reports that include financial and technical parameters to enable the investors to actively follow the developments. Value for money is not measured by the concessionaire but indications, such as more traffic than expected on road projects and number of patients in hospitals, have shown that the value for money estimates have been met. The public sector makes its own evaluation based on project data provided by the concessionaire. The projects performed by the interviewed private concessionary firm have been successful. Deadlines and budgets have generally not been exceeded. For successful PPP projects, a final advice to the public party is to be careful in its selection of projects and to procure experienced advisors.

5.5 Result

The result of the international practice of PPP is presented in the tables below to give an overview of the practical empirical findings before the analysis. The tables each represent the areas of *environment*, *procedure* and *value assessment*, highlighting important findings. The result shows that there are both similarities and differences between the countries studied. The main differences derive from differences in experience and use of PPP, for example *guidelines*, *private sector maturity* and *deadlines and budget*. Similarities are mainly seen in value assessment where using a PSC and PPP reference model is a recognised method for evaluating value for money. Although, there are differences in *value for money criteria* and which *cost components* are used. The differences and similarities are analysed in next section where the theories presented in the theoretical foundation is applied in accordance to Figure 8 to the different levels.

5.5.1 Environment

	United Kingdom	Canada	South Africa	Sweden
PPP Initiation	1992	1990	1997	1994
Projects Performed	> 600	> 100	< 100	< 10
Involved Authority	National authorities and HM Treasury	National authorities, as province agencies	National authority, PPP Unit of National Treasury	National and local authorities
National Guidelines	Yes	Yes	Yes	None Provided
Examples of Sectors	Social infrastructure, energy resources and transportation	Social infrastructure, (health care) and transportation	Health care	Health care, transportation, social infrastructure
Advantages of PPP	Focus on public/private core competence, innovation, access to private funding, realisation of more projects, creation of long-term investments	Increase efficiency, saves money, eased procurement by guidelines and standardisation	Acceleration of infrastructure development, focus on core competence, increase quality of society, access to finance	Predictable quality, realisation of more projects, cheaper procurement, improved risk allocation, long-term sustainable solutions
Prerequisites	An ageing population requiring more public services, long-term investments	Need of money and infrastructure	Regulation framework, government approvals	Business climate of avoiding conflicts, document standardisation, public principle, division of large projects

5.5.2 Procedure

	United Kingdom	Canada	South Africa	Sweden
Feasibility Study	Performed	Performed	Performed	Performed
Feasibility Study Performer	Management advisors	The national PPP authority	Management advisors	Management advisors
Feasibility Study Methodology	Outline Business Case examining a PSC, a PPP option and a do-minimum option	Differs between provinces	A solution option analysis, a PSC and a PPP reference model and affordability	Provided, but differ between projects
Bid Evaluation Criterions	Ability to deliver long term, financial aspects, value for money and affordability	Construction, innovation, partnering, technical and financial aspects	Regulation framework, technical requirements and financial aspects	-
Contract	Renegotiated every 5th year, shorter contract lengths if the market is going through larger changes	Public party is often paying in accordance to what have been contracted	Project management is responsible for contract management which is important for reaching advantages	Functional require-ments are preferred to give room for innovations and sustainable solutions
Private Sector Matureness	Mature	Mature/ varying	Varying	Immature
Evaluation of projects	Continuous evaluation but no final	Continuous evaluation but no final	No formal	No formal

5.5.3 Value Assessment

	United Kingdom	Canada	South Africa	Sweden
Value Assessment Participation	Technical advisors, financial advisors, legal advisors	Technical advisors, financial advisors, legal advisors	Technical advisors, financial advisors, legal advisors	Management advisors, technical advisors
Value Assessment Structure	Formal analysis to identify and maximise value for money	Initial analysis and analysis based on bids	Initial analysis and analysis based on bids	Initial value for money test
Value for Money Criteria	Viability, desirability and achievability	-	Affordability and value for money	-
Value for Money Methodology	Two tests: quantitative and qualitative. A PSC, one or more PPP models and a do-minimum model are made.	The initial value for money analysis is made from estimations. A PSC and a PPP model are made.	Quantifying value for money, social benefits, and Black Economic Empowerment. A PSC and a PPP model are made.	Simulates and compares value for money in PPP and trad. procurement. Qualitative and quantitative cost estimations.
Cost Components	Capital and revenue, opportunity costs, developing costs, cost for bidding.	-	Quantification of all benefits resulting in a quantifiable value	Capital expenditure, design, construction, operation and maintenance.
Deadlines and Budget	Improved	Improved	Unsure	-

	United Kingdom	**Canada**	**South Africa**	**Sweden**
Risk Evaluation Participation	Public party, technical advisor	-	Financial advisors, technical advisors.	Management advisors, public party, in some cases risk specialists and technical advisors.
Risk Evaluation Methodology	Risk workshop. Initial predefined list of risks. Risks are transferred to either 0 or 100 percent. The driver of the risk is identified as well as the probability and impact of the risks. Risk values are discounted by NPV and added to the PSC vs. PPP model.	Uncomplicated, experienced. Risks are often transferred to the private party.	Initial predefined list of risks, carefully adjusted to the specific case. The probability is multiplied with effect on overall cost to get total risk value.	Risk workshop. Initial predefined list complemented by the public party. Problem and solution related risks. Measure probability and consequence.
Recommendations for initiating PPP	Form own guidelines with inspiration from the UK's. Consider all future costs and expectations	Get political backing to support bidding, choose suitable projects and form a PPP framework	Form a functioning and proper framework	Careful selection of projects and procure by experienced advisors.

6 Analysis of Value for Money in PPP Projects

The theoretical study shows that there are different definitions of value in procurement indicating that value is a subjective phenomenon hard to assess. The empirical investigation supports this, finding a huge focus on value being a determining factor in PPP procurement. There are complex and detailed national guidelines of value assessment and yet vague knowledge among the participants of a PPP project if value for money really is achieved. According to Bower (2003) value in procurement depends on a series of decisions, factors and contextual influences affecting the project. These are displayed in his framework named "a value driver framework for procurement"[1]. The framework is structuring dependant value drivers into three different levels of procurement that is interpreted to correspond to value assessment, procedure and environment. All three levels are emphasised in the empirical foundation and have been found to be of importance when identifying value drivers of value for money in PPP projects.

The value drivers in the framework of procurement are all influenced by contingencies and Otley (1980) presents three contingencies that well correspond to the framework's three levels. These were added as a further extension of the value driver framework, where the contingency theory presented by Otley (1980) was interpreted to suit PPP. Beginning with the core, the level of value assessment is related to *individual* performance as it is performed by specialists and therefore dependant on their individual competences. The level of procedure depends on the *organisation* and finally the level of environment corresponds to the *society*. These relations are shown in Figure 13.

[1] See section 3.2 Value

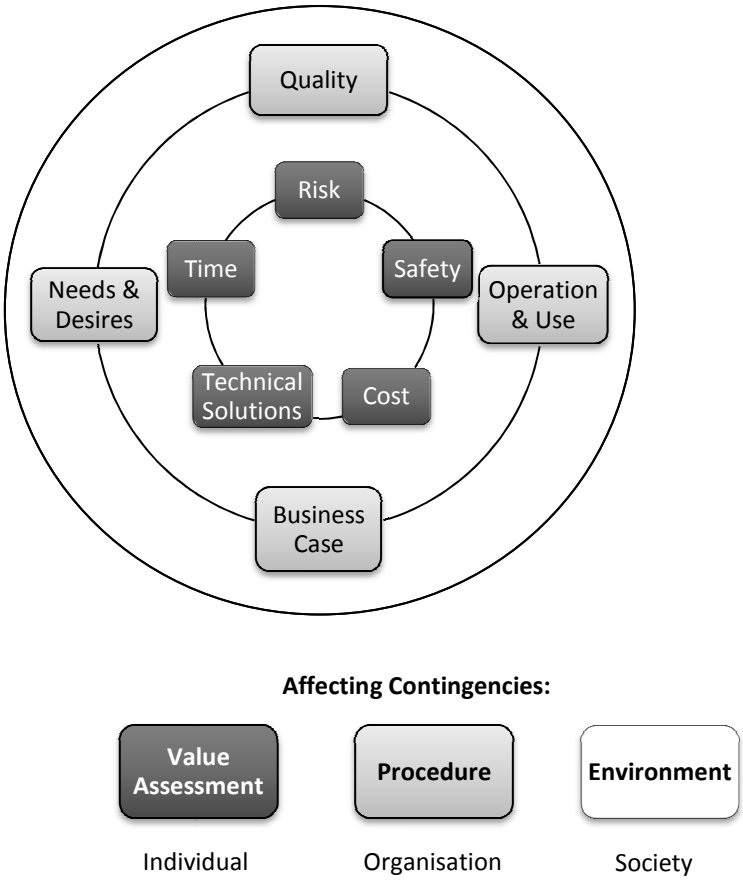

Figure 13. Levels of value drivers, adapted from Bower (2003). (The outer level of environment does not include any value drivers.)

To analyse the empirical findings and theoretical aspects of PPP, the three levels of Bower's framework in combination with the contingency theory were applied as structure. This eases the investigation of value drivers of value for money in PPP projects. The levels are analysed separately in the sections of *value assessment*, *procedure*, and *environment.* In each section, the theoretical framework of PPP were applied to the empirical information gathered from the guidelines and the cases studied, concluded in the result in Section 5.5 *Result*. The general value drivers' applicability on PPP is investigated by analysing all three levels in the context of PPP. The analysis was used to find conclusions that answer the purpose of the study: to identify and investigate value drivers affecting value for money achieved in PPP projects.

6.1 Value Assessment

Determining what contributes to value for money in PPP projects is a difficult question. Value assessment in PPP projects is performed on an individual level and is in this section analysed by using the general value drivers presented in the core of Bower's (2003) framework. The level of value assessment includes the value drivers of *cost*, *time*, *technical solutions*, *risks* and *safety*, see Figure 14. The contingencies affecting this level are on an individual level and consist of technical choices (Otley, 1980).

Figure 14. Value drivers in value assessment (Bower 2003).

Value is defined in theory as benefits delivered per resources used by Dallas (2006). This is a recognised term and can be connected to all core value drivers in the framework as they all affect the benefits delivered and resources used. However, the theories of value for money are somewhat contradicting; Atkin and Brooks (2009) claims that it is about quality and effectiveness of a service, while Male et al (2007) defines it as delivering all functions to the lowest cost. These are two different perspectives when looking at how value for money can be increased that both correspond to the definition of value. In this study, the focus is on Atkin and Brooks' (2009) definition as it is supported by the benefits of PPP procurement described in Section 3.1 *Public Private Partnership*.

The lack of evaluations of PPP projects, a problem in all countries studied, adds the difficulty to prove that extra benefits are provided when using PPP. Project reviews should be made according to the theory of value management where Dallas (2006) stresses the importance to gain experience for future improvements by investigating if benefits actually were realised. The high detail level of the calculations can prove to be unnecessary if other factors, such as quality and other benefits, are shown to affect the value a lot. Lack of evaluations makes it difficult to evaluate if the cost estimations in the value for money analysis are correct and thereby if the methods used for performing the value for money analysis is suitable.

6.1.1 Cost

The purpose of PPP according to the literature is to achieve more value for money than by using traditional procurement. This coincides with the perspective of Atkin & Brooks (2009) and also to the empirical findings with increased efficiency and long-term solutions as main advantages of PPP. However, the empirical results show a great focus on costs, and that PPP is used to access finance to be able to afford the provision of needed infrastructure. In South Africa, PPP is seen as the only solution to accelerate infrastructure projects and in the UK and Canada, advantages of PPP is to access private funding and save money for the government. The theoretical benefits of PPP are to gain a higher quality for the money invested, while the practical use of PPP seems to derive from lack of financial resources. This focus on costs and affordability puts high demands on the value for money analysis where the cost of PPP procurement is compared to that of traditional procurement. The different cost components in the value for money analysis should preferably include all possible costs of the project and the calculations are made in detail according to procedures specified in national PPP guidelines.

As PPP procurement will be more expensive in strict monetary terms due to higher financing costs and risk premiums, benefits provided and a higher service quality is crucial to show to prove that value for money is achieved. This shows that besides costs; benefits are also important value drivers in PPP projects. These are factors difficult to quantify as their value is subjective and depends on individual perceptions (Kelly et al., 2004). This urges the importance of appointing competences suitable for the specific project to do cost estimates. This is seen in the empirics where difficulties in Sweden, among others, are due to inexperience and lack of established networks of advisors[2].

6.1.2 Time

A factor greatly affecting the uncertainties of the calculations is time. As the length of a PPP project can be up to 30 years, it is impossible to correctly predict all costs affecting the project during its lifetime. This is said to be the most difficult part of the value for money analysis in the UK. The theory of contract management argues that the completeness of the contract increases the potential of value for money (Ng & Wong, 2007). A complete contract is however very difficult to form in PPP projects as Ng & Wong (2007) further states since the effectiveness of the output specification and performance monitoring cannot be assessed in advance. Future market conditions can lead to both cost increases or decreases and it can be of great value to be able to adjust the contract accordingly. Nevertheless, Ng & Wong (2007) says that more effective solutions affecting the service quality cannot be included after the contract is signed. This means that future cost savings cannot be made and thereby an opportunity to gain more value for money is lost. In the UK,

[2] See section 5.4.1.1 Future Development (Sweden)

that has the longest experience of PPP, some solutions to these problems have developed. Besides for estimating future market conditions, they can be tested on a regular basis and also, clauses for private earning can be included in the contract[3]. It is difficult to say if these solutions would fit other countries as the strong government support and experience in the UK may bring greater possibilities to allow for flexibility to future market and cost changes.

6.1.3 Technical Solutions

Technical solutions are directly affecting the project costs and thereby the value. These are called base costs in the guidelines of value for money analyses and are recommended to be estimated by industry experts[4]. This is also the case according to the empirics where technical advisors are used to estimate construction quantities and costs. In the comparison between the Public Sector Comparator, PSC, and the PPP reference model, base costs should not differ, as the project design are the same regardless of procurement choice to be able to compare them. However, as PPP is a form of performance-based contracting, it is up to the private party to decide on how to fulfil the output specification (Garret, 2002). This makes that the PPP base costs never really can be estimated as they very well can change dramatically in a private bid. Howard (2009) further stresses the importance of flexibility for the contractor. The complexity of estimating base costs should therefore depend on the prediction, or guessing, what a private party bid would be. The complexity of predicting base costs are not directly outspoken in the interviews. The reason may be that the complexity is not as high as for other cost components and therefore is not of primary focus in the value for money analysis. In Canada, the difficulty of predicting base costs is that the project design is not always in place, which restricts the information available. Low quality of input is also a major problem in Sweden, where it is seen as the main difficulty when performing value for money analyses.

6.1.4 Risk and Safety

The risk analysis is at the heart of the value for money analysis and the majority of the interviewees stress the importance of accurate risk valuation to achieve value for money. As the two comparative models are the same for all project specifics, the main difference in costs is related to the risk scenarios. This makes risk a central value driver in PPP projects. Safety is a factor not mentioned in either interviews or guidelines, which indicates that it is not a value driver of importance in PPP projects. However, safety can be interpreted in a wide variety of ways and could include factors such as financial margins or safe delivery of services. In PPP projects, safety and risks are close connected and factors related to safety seem to be included in the risk analysis.

[3] See section 5.1.3 Value Assessment (UK)
[4] See section 4.2.1.1 Base Costs

The risk analysis can be divided into three tasks: *identification*, *allocation* and *valuation* based on the interview answers. This resemble to the guidelines that presents four steps: *identification*, *allocation*, *estimation of probability and impact*, and *quantification*. The exception is that valuation in practice includes both estimates and quantification. The theoretical steps of risk valuation presented by Xingfu (2009) are *identification*, *estimation,* and *evaluation* which coincides with the three tasks practically used and is complemented with risk allocation as a separate step for risk analysis in value for money analyses. This shows that the risk analysis procedure used in PPP projects are well established and reinforced, both through guidelines and theory.

Allocation seems like the most crucial task of the risk analysis as it constitutes the largest difference between traditional and PPP procurement. According to the guidelines investigated: there is no clear structure of how to allocate risks. Fu (2009) presents a theoretical framework of a risk allocation procedure[5], based on three principals applying when allocating risks. The framework is especially made for risk analyses in PPP projects and can therefore be helpful when practically allocating risks. Some adjustments need however to be made to suit practical performance. The empirical findings show that Fu's (2009) third principle (stating that "the party taking on a risk needs to have sufficient financial ability to prevent the risk from occurring or sustain its consequences") is not possible evaluate in the risk analysis as the private party is unknown until contract signing. Also, in practice, there are only two parties risks are allocated to, in contrast to the four parties presented by Fu (2009). Figure 15 shows a risk allocation procedure, adjusted to better apply to practical risk analyses and can be used as a risk allocation tool.

[5] See Figure 6 in section 3.3.1 Risk Management

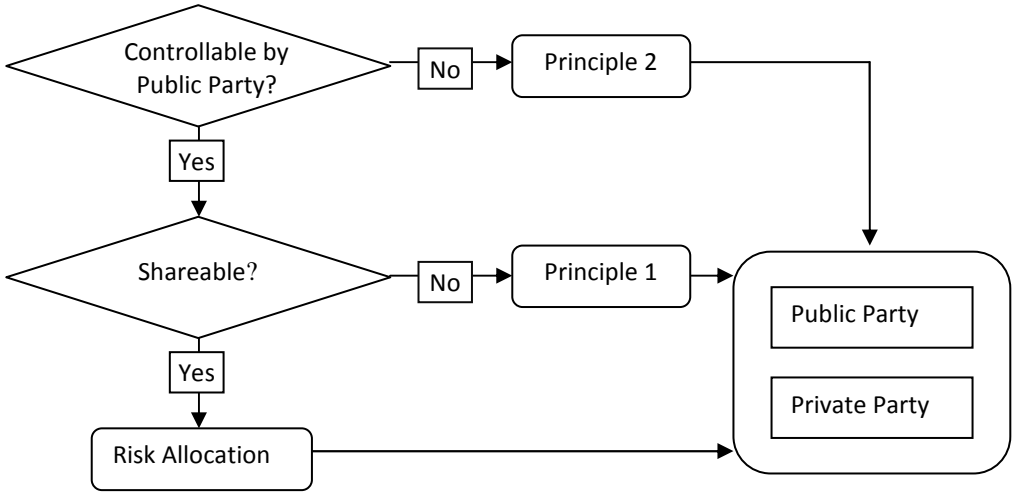

Figure 15. Adjusted risk allocation procedure[6]. Adopted from Fu (2009)

Risk analysis results can be very uncertain, especially as they are of such great importance of the value for money analysis. The uncertainties can depend upon several factors, both theoretically described and some found in the empirical research. Contingencies are also contributing to uncertainties as the contingency theory states that there is no universal system that can be used under all circumstances (Otley, 1980). As all construction projects are unique, there cannot be only one way of identifying, allocating and valuing risks. The risks will vary between projects and be affected by different contingencies where technical choices (Otley, 1980) are especially affecting the value assessment. Factors found in the empirical research that adds to the uncertainties are subjective opinions[7] and lack of information and commitment[8]. These factors are affecting all three tasks in the risk analysis. A risk workshop is commonly used to perform all these tasks, which makes the quality of the risk analysis highly dependent on the expertise of the workshop participants. The empirics show that it is preferred that all parties and advisors are involved in the risk analysis. This should lead to quality improvements as a broad range of expertises and various experiences thereby can be used when identifying, allocating, and valuing risks.

The valuation of risks is performed quite equally between the countries studied and is corresponding with the guidelines for risk analysis regarding estimation of impact and probability of occurrence. However, there is a difference in which cost base to use when calculating the risk value: the overall cost or a cost base associated with the risk called a risk driver. The formulas used in the guidelines

[6] For principal 1 and 2, see section 3.3.1 Risk Management
[7] See section 5.1.3.1 Risk (UK)
[8] See section 5.3.3 Value for Money (South Africa)

uses the term "base costs" as the cost base[9]. The term is a bit unclear on what exact cost base to use: the base cost cost component or the base cost of that specific risk, i.e. a risk driver? In the UK, risk drivers are used which indicates that it in a favourable choice due to their great experience. Using risk drivers could ease the risk analysis as it can be divided into the different parts of a project. This could also make it easier to appoint specialised advisors to do the estimations of impact and probability. Based on these advantages, a formula recommended for risk valuation is:

Risk value = Risk driver x Impact x Probability of Occurrence

However in Canada, projects are often perceived uncomplicated and parties involved know how to transfer risks. This indicates that knowledge of PPP, matureness, and experience are positive factors that can decrease the uncertainties of the risk analysis results.

When identifying value drivers in value assessment, one new value driver is added while four remains important to consider also in PPP procurement. The change in value drivers between the two procurement options are visualised in Figure 16 and 17 where *benefits* is highlighted.

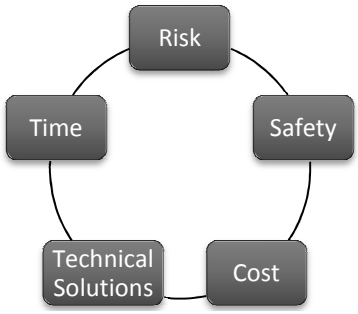

Figure 16. Value drivers in value assessment in traditional procurement. Adopted from Bower (2003)

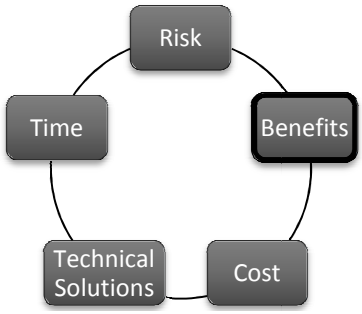

Figure 17. Value drivers in value assessment in PPP procurement

6.2 Procedure

There is a great focus in PPP on the value for money analysis to prove that more value for money is achieved. This strong focus can lead to that calculations are forced even though the uncertainties are too big for the analysis to be reliable. There are other factors, than included in the analysis, which can have great importance for value for money achieved. Such factors are related to the procedure

[9] See section 4.2.2 Risk Analysis

of a PPP project as the empirics show that it is a main issue in PPP projects. The second level of Bower's (2003) value driver framework is interpreted to represent the procedure. It contains four value drivers: a *business case*, project *needs and desires*, *quality,* and *operation and use*, shown in Figure 18. The organisational structure is an important contingency to consider according to Otley (1980). The contingency theory is therefore applied at this level and is concerning the organisations involved in performing the procedure and the interaction between them.

The procedure is according to the interpretation of Bower (2003) including four value drivers in procurement. All these value drivers are also used in PPP procurement. This is despite of that PPP projects differ, as they often are large and complex in relation to traditional procurement that often is based on repetitive procedures. The complexity and size of PPP projects affect the accuracy of the value for money assessment and where the value drivers may be of importance. The question is whether they are the ones to be considered determining the value for money in the procedure of PPP? It might be better to determine such value drivers individually for each PPP project but that will maybe lead to too much administration having a negative effect on value for money.

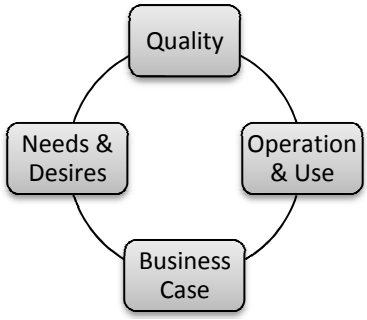

Figure 18. Value drivers in procedure (Bower, 2003)

In theory, PPP projects can be divided into four phases: *feasibility study*, *procurement*, *construction* and *operation* as shown earlier in Figure 3 and in Figure 19 below. The theories of contract management and performance-based contracting are applicable on these phases as they address how value can be increased (Ng & Wong, 2007) and prerequisites for that by for example flexible contracts (Howard, 2009). When applying these theories, three main subjects emerge as important to analyse: *feasibility*, *tendering*, *contracting,* and *organisational relations*. In Figure 19, feasibility is related to the feasibility study, tendering to procurement and contracting to both construction and operation. Organisational relations affect all phases.

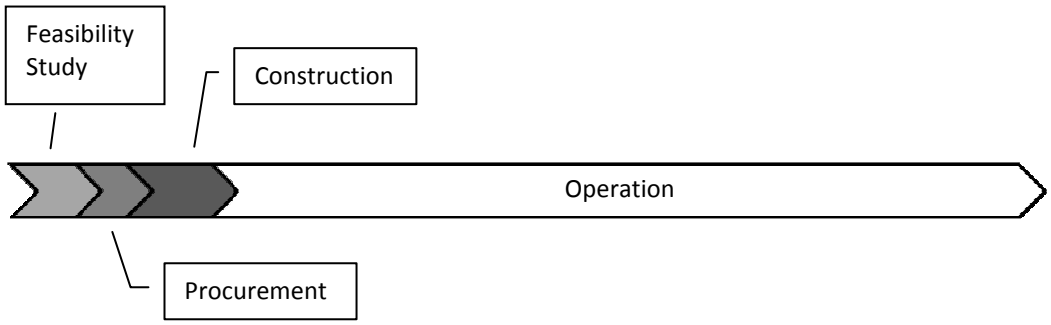

Figure 19. General PPP procedure

The procedure analysis starts with analysing feasibility, where the first two general value drivers of procedure, *business case* and *needs and desires*, shown in Figure 18 are included. Then tendering are analysed which include the third value driver of *quality* and finally, contracting and organisational relation are analysed which are related to the *operation and use* of a project.

6.2.1 Feasibility

The first two value drivers, *business case*, and *needs and desires*, are in PPP covered by the feasibility study by the *needs analysis*, *solution option analysis*, and *value assessment*[10] (analysed above). The feasibility study is providing a foundation to assess the feasibility of the project and is therefore of great importance for the continuing work and decisions. A feasibility study is performed in all countries studied which further contribute to the study's significance. The empirics has shown that the procedure of PPP as well as the feasibility study is quite similar in the UK and South Africa[11]; probably a result of that South Africa has used the procedure in the UK as reference when forming their own. The procedure from the UK is also recommended by South Africa, Canada and the UK themselves, due to their long experience and many reviews. This can mean that a similar procedure can be used to assess the feasibility of a project, regardless of country.

However, differences are found in the purpose of the study and who are performing the study. In the UK, the feasibility study confirms PPP while it in South Africa and Sweden needs to motivate the choice of PPP. In Canada it identifies the need of the project and opportunities to gain value. In all countries except from Canada, management advisors are appointed to perform the feasibility study. In Canada, the national PPP authority performs the analysis. This could mean that the analysis is not as comprehensive as in the other countries and therefore the appointment of advisors is unnecessary. It shows though that national differences exist in how

[10] See section 4.1 Feasibility Study
[11] See section 5.5.2 Procedure (Result)

feasibility is investigated. This motivates routines with factors to consider in the feasibility study that are adjusted to the national context. The feasibility is also affected by the complexity of the specific project which further reinforces that the study must be adjustable. However, the similarities show that it could be beneficial to find inspiration in other countries' feasibility procedures when forming own.

To investigate feasibility is required to proceed with a project in all countries studied even though the way of doing so varies some between them. *Feasibility* is added as a value driver in PPP procurement as it is a prerequisite for the continuing of a project.

6.2.2 Tendering

When the feasibility study has been performed, the next step is *procurement* in the PPP procedure[12] where tendering is made to decide on which private party is to perform and operate the project. In tendering, bids are received and evaluated by various criteria, as for example technical and financial aspects as used in Canada. To win the contract, the private bidders must show all their suggestions for improvements[13] and by that; they can offer more advantages than what the public party is capable of. Tendering is therefore affecting value for money by bid quality, technical improvements and innovation. Bower's (2003) value driver of quality is therefore seen as an important ingredient in tendering and is in PPP procurement seen as an effect of the other value drivers.

The output specification has a central role for finding efficient, innovative solutions which is strongly supported by theory as well as in the empirical findings[14]. In theory, the output specification corresponds with Bower's (2003) second procedure value driver, *project concept needs and desires*, as it gathers all needs and desires of the project. Male et al. (2007) states that the formation of the output specification is important for reaching an optimum performance according to the theory of value management. Bower (2003) suggests that the project needs and desires should be formed after outputs instead of inputs, which also is supported by the theory of performance-based contracting (Nash et al., 2007; Garett, 2002). In the empirical investigation, using outputs are positively met as functional requirements are preferred in comparison to detailed specifications[15]. This is clearly indicating that using outputs is beneficial. *Output specification* is therefore added as a value driver in PPP procurement.

The maturity of the private sector varies between the countries. In Canada, the maturity process has increased the interest for PPP projects and the number of

[12] See Figure 3 or Figure 19
[13] See section 5.1.2 Procedure (UK)
[14] See section 5.1.2 Procedure (UK)
[15] See section 5.4.2.1 Private Involvement (Sweden)

tendering bidders which has lead to a higher competition. Also in South Africa, the interest among private firms for PPP projects is high as well as the competition in tendering. Private sector maturity therefore seems to contribute to positive effects such as improved quality and increased value for money. The UK, which has a mature private sector with a lot of experience of PPP projects, should thereby profit from high quality levels and achieve value for money. This is confirmed on paper, but is difficult to practically evaluate. Although, the interest for PPP projects in the UK is high as firms are encouraged to cooperate to build new organisations just to provide a specific requested service. In all countries the maturity has successively evolved which shows that immature sectors have good chances to develop after a few years. However, a complication is that experience is needed to reach maturity, which indicates that value for money achievement in early projects is uncertain. When looking at Canada, with increased interest for PPP projects, and at the UK, interest in bidding seem to positively affect value for money thanks to competition. To achieve value for money, the competition in bidding should therefore be taken into consideration as it can lead to innovative solutions and lower costs. *Competition* is therefore also added as a value driver in the PPP procedure. A contingency affecting the competition in tendering is the private sector maturity, based on the experiences in the UK and Canada, and is therefore also qualified as a value driver. However, as private sector maturity is affecting the context of a PPP project, it is related to a higher level than the PPP procedure. *Private sector maturity* is therefore added as a value driver in the level of environment, which is further analysed in next section.

One identified difference related to the submitted bids is that the countries studied uses different bid evaluation criterions[16]. This can be dependent on what that specific country hopes to achieve by using PPP. National authorities are responsible for determining such aims and are further analysed in Section 6.3 *Environment*.

6.2.3 Contracting

The contract is used to control the quality of services delivered in combination with performance monitoring (McDowall, 2000) and payment mechanism. Strong relations between them can contribute to more value for money according to Robinson and Scott (2008). This is seen in South Africa where the output specification is connecting them[17]. Also in the UK, performance monitoring is used to measure the fulfilment of the output specification and payment mechanism is used for controlling correct payments[18]. The performance monitoring and payment mechanism is specified by national guidelines to follow, adjusted on a detailed level, which could contribute to kept deadlines and budgets. However, the theory

[16] See section 5.5.2 Procedure (Result)
[17] See section 5.3.2 Procedure (South Africa)
[18] See section 5.1.2 Procedure (UK)

of principal-agent describes cooperation problems originating from asymmetric information and pursue of own interests (de Palma et al., 2009). The private party has in PPP projects more information about the project than the public party which makes it difficult for the public party to control the performance. According to the principal-agent theory, such difficulties can be handled by using a specified and operable contract between the parties, measurable outputs and service deliveries and ways to monitor them. This is all supported by the empirical findings presented above. Another contributor to succeed with a principal-agent relationship according to de Palma et al. (2009) is to have stable contract terms over time. Stable contract terms over time are, however, negatively affecting value for money according to the UK empirics. Technical improvement is believed to decrease during the operational phase as the private party is tied to the output specification for the next 25-30 years[19].

Performance-based contracting can be a way of minimising such problems which to the contrary promotes flexibility to the contractor (Howard, 2009). This can be done by focusing on *what* is to be delivered instead of *how* (Gruneberg et al., 2007) and using outputs instead of inputs to specify the projects needs (Bryntse, 1992). Howard (2009) stresses flexibility to achieve the advantages of performance-based contracting. A problem related to this is the inflexible contracts in PPP projects due to the long duration, preventing future changes and adjustments. The UK has come up with a solution to this, by adjusting technical aspects and renegotiate price every five-year during a projects lifetime. This could be applicable on other countries as well, but however, as earlier described[20], it is uncertain if the solutions can be applied directly on another environment. As traditional procurement is flexible throughout the whole lifetime and driven by the market, it is a huge limitation for PPP to only have an increased flexibility in the start up phase. *Contract flexibility* is added as the fourth value driver in procedure as it contributes to flexibility and possibilities for more value for money during operation and use.

6.2.4 Organisational Relations

The organisation of a PPP project often constitutes of several different parties obligated to collaborate. Some of the critics of PPP are based on organisational differences and that the public and private sector has different objectives when entering a project (Thomasson, 2009). This can lead to many situations affecting value for money and how successful a project are may very well be determined by the parties' collaboration. An important factor can be to find the "right" private party to work with which the empirics show is important for the long-term cooperation to function[21].

[19] See section 5.1.2 Procedure (UK)
[20] See section 6.1.2 Time
[21] See section 5.4.2.1 Private Involvement (Sweden)

In PPP projects, the interaction between the two parties is limited as the private party is excluded at first when the public party performs the early estimations of the feasibility study. Then when the project is procured and the contract is signed, the private party takes over and are in control of the operation and use. This can lead to a need for extensive control by routines and regulations. According to the principal-agent theory, limited relations enhance the problems of control and asymmetric information (de Palma et al., 2009). This is supported by the contingency theory, where Otley (1980) means that the need for performance measures becomes less important and the organisation performance becomes more efficient with increased interdependence between the parties. If the cooperation between the parties is working well and they can understand each others' different objectives, problems related to control and monitoring should be minimised. *Relations* between the public and private parties are therefore seen as a value driver. Good relations can to a great extent ease the cooperation and thereby minimise control needs and disputes.

The traditional value drivers in the level of procedure, shown in Figure 20, are all updated and changed to PPP specific value drivers. These are *feasibility, output specification, competition, contract flexibility,* and *relations* and are shown in Figure 21.

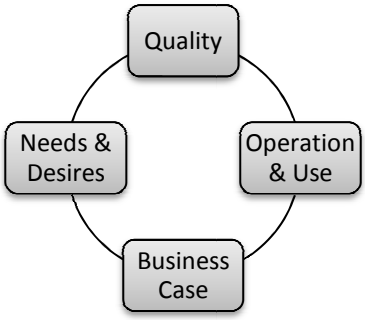

Figure 20. Value drivers in procedure in traditional procurement. Adopted from Bower (2003)

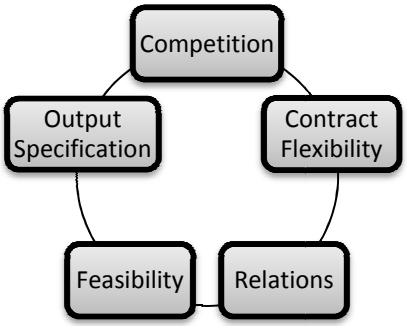

Figure 21. Value drivers in procedure in PPP procurement.

6.3 Environment

Although there are similarities between the countries' studied PPP procedures and value assessments, empirical findings show that the countries are experiencing different advantages and prerequisites for PPP[22]. Guidelines are used in all countries studied, for both procedure and value assessment, where steps and calculations are described in detail. These firm guidelines can be helpful as they

[22] See section 5.5.1 Environment (Result)

provide guidance on which actions to take. However, the high level of detail can be deluding due to great influence of factors not included in the guidelines. A verification of this is the national differences seen in the result of the empirical foundation[23]. These differences indicate that national adjustments have been made related to the context and environment PPP is used within.

The environment is the third level of the value driver framework, surrounding and affecting both the procedure and value assessment and thereby the achievement of value for money. Bower (1980) is not presenting any factors to consider regarding the environment; although Otley (1980) means that it is an important contingency to consider. This level corresponds to the impact of society and how it ultimately affects value for money achieved. Even though it is not especially investigated in this study, the societies are likely to differ to a great extent between the cases studied due to cultural differences. The question is therefore raised if PPP is a complete concept applicable on any environment or need national adjustments.

6.3.1 Authority Support

The differences in the empirical findings are indicating that PPP needs national adjustments and support from several instances of the society to function. The first example of this is when examining the duration of the use of PPP in relation with number of projects performed presented in the empirical result[24]. These factors are not correlated by exception from the UK that has the longest duration and largest number of projects performed. In Canada, PPP was introduced in the same time period as in the UK, but the amount of projects performed differs to a great extent. In Sweden, where the use of PPP started only two years later than in Canada, only one project has been performed.

The number of projects performed seems instead to be dependent on the interest of PPP among national authorities. The development in the UK is thereby explained by the government enforcement of PPP, where PPP sometimes is the only way of realising needed projects[25]. The same development may be seen in the future in South Africa where PPP is seen as the only solution to accelerate the development of infrastructure projects[26]. The national authorities have the responsibility to regulate legal aspects affecting PPP and in South Africa where PPP still is in the start up phase, it is vital to investigate all legal aspects, before a PPP project is initiated. An advantage in Sweden is that local authorities' procurement methods is only restricted by legal aspects and not controlled by national authorities[27]. This can be an explanation to their increased interest of PPP in contrary to the national

[23] See section 5.5.1 Environment, 5.5.2 Procedure, 5.5.3 Value Assessment (Result)
[24] See section 5.5.1 Environment (Result)
[25] See section 5.1.3 Value for Money (UK)
[26] See section 5.3.1 Environment (South Africa)
[27] See section 5.4.1 Environment (Sweden)

authorities' interest. The interviews also showed that Sweden has several stakeholders interested in PPP both in public advisory and within the private sector, which is indicating that the interest of PPP in Sweden is increasing.

Another similarity related to the lack of interest by national authorities in Sweden is the amount of research performed within the subject of PPP, since research is often financed by public support. Internationally, several reports have been written about PPP, some of them used as references in this study, but in Sweden the amount of research is limited. The number of PPP projects performed also limits the amount of research since practical experiences constitute a foundation for different studies. It would therefore be of great importance for Sweden to have a public interest of PPP to initiate some PPP projects and support research in the subject. *Authority support* of practical experiences and research is therefore seen crucial for the development of PPP and is added as a value driver.

In all countries studied, except from Sweden, a national PPP authority has been established which could be a contributing factor to successful development of PPP, which is especially wanted in South Africa. These national PPP authorities have had the role of performing necessary national adjustments of PPP and are using incitements to control local parties involved. The empirics also show that the national PPP authorities ease communication about PPP and eases for local parties to turn to and communicate with representatives at national level[28]. A difference is seen in Canada where each province has a PPP authority, instead of one national. Perhaps this is more suitable when having distinguished differences between regions of a country.

The UK, Canada, and South Africa all have national authority support but are experiencing different advantages and no actual evidence of that PPP provides more value for money than traditional procurement. One clear advantage found in the empirics is that PPP enables initiation of more projects[29], as an initial investment is not needed. Is this in itself enough to provide more value for money to the society or is it the final cost of procurement that counts? This is an important question for the national authority to deal with to find their purpose of using PPP depending on how they are defining value for money. Finally, not to forget is that the purpose of using PPP should rely on the achievement of value for money (Davies & Eustice, 2005).

6.3.2 Authority Guidelines

Routines in the form of guidelines are seen in all countries except for Sweden. The guidelines are said to ease the use of PPP and at the same time improve the reliability and increase interest for participating. In a principal-agent perspective,

[28] See section 5.2.1 Environment (Canada)
[29] See section 5.5.1 Environment (Result)

using guidelines can be a way of controlling the parties involved in order to get them to perform as wished by the public party. A backside to using guidelines can be the inflexibility by not allowing adjustments for different types of projects.

Even though the guidelines are similar enough to distinguish one main procedure as described in Chapter 4, they differ on some points. Examples of the differences concerning national adjustments are that the national PPP authority is determining the procurement method in Canada and that Black Economic Empowerment, BEE is considered in South Africa. Also, in the value for money analysis in the UK, a do-minimum option is added to the Public Sector Comparator and PPP reference model to see if doing nothing is a preferable option. These are all differences needed to consider in the specific countries, which shows that PPP guidelines need national adjustments. The cases studied although reveal several advantages that are general for PPP projects not directly affected or dependent on national environmental prerequisites. Such advantages are clear definitions of PPP and value for money and clear criteria for when PPP is a preferable choice. *National guidelines* for the use of PPP are thereby found to be another environmental value driver ultimately affecting value for money. The advantages from using PPP guidelines can ease the understanding of the national authorities' objectives of using PPP and can thereby encourage firms to participate in PPP projects. The advantages hoped to reach should be considered and dealt with when making national adjustments and guidelines for the use of PPP.

The formation of national guidelines requires according to the cases studied, performance of a number of initial PPP projects to gain experiences from. No society is similar to another and due to its complexity it should be impossible to copy either experiences or guidelines directly from another country. The importance of considering which areas to start with for the initiation projects is emphasised in the empirical foundation. Transportation was found to be one of the easiest (Davies & Eustice, 2005), where the payment can be solved with payback by road taxes. Healthcare is an important area, but can be challenging and complex needing extra consideration before chosen. This has in general been followed, but regardless, the first projects have according to the empirical findings been challenging and caused a lot of initial problems. As the performance of the projects in the initiation of PPP not is optimal due to lack of experience it can be negatively affecting the value for money achieved. This makes it difficult to determine when the initiation phase is over and thereby if the difference between no value for money achieved and value for money achieved are due to lack of experience or that PPP procurement not is suitable. Yet, even though achieved value for money still is uncertain none of the countries studied have regressed the development of PPP.

In the level of environment, three value drivers have been identified: *private sector maturity, authority support,* and *national guidelines*. These are all found to be valuable prerequisites for achieving value for money and are affecting both the

procedure and value assessment in PPP projects. They are presented in Figure 23 and the lack of traditional value drivers on this level is represented by an empty circle in Figure 22.

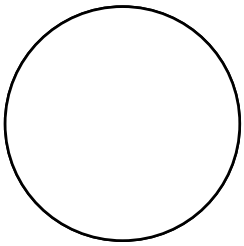

Figure 22. Value drivers in environment in traditional procurement

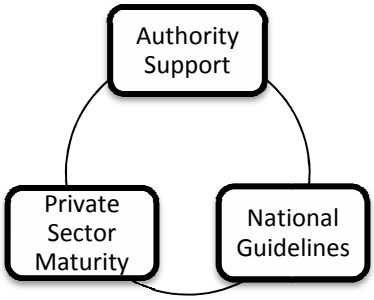

Figure 23. Value drivers in environment in PPP procurement

To conclude the analysis, all value drivers identified are presented in the framework seen in Figure 24.

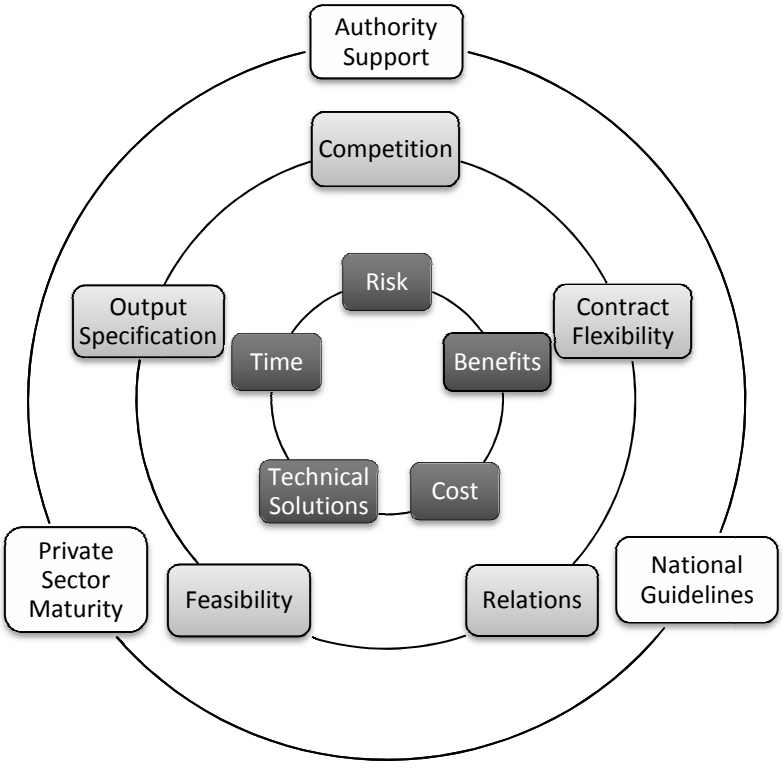

Figure 24. Value driver framework in PPP procurement

7 Conclusion

There are several theories describing the potential of public private partnership and national guidelines describing the procedure, but vague knowledge of factors affecting value for money achieved. The intention of this study is to fill this gap in existing research, by identifying such factors to consider in the preparatory work of PPP projects. The conclusion of this study is intended to provide an understanding of the value drivers that affects value for money achieved. The findings of the study are of interest for both academics and practitioners and are presented as *academic contribution* and *contribution for practitioners*. The academic contribution is presenting a framework for value drivers in PPP procurement. The practical use of these is the *contribution for practitioners.* Finally, *recommendations for further studies* are presented, based on the findings of this study and their limitations.

7.1 Academic Contribution

In accordance with the purpose, this study has investigated and identified value drivers affecting value for money achieved in PPP projects. This has been done by studying theoretical value drivers in traditional procurement, national PPP guidelines and interviewing practitioners. Value assessment is today made by a value for money analysis and even though it should include all factors affecting value for money, this was found to not be the case. Other value drivers have been identified related to the procedure and environment of a PPP project which also should be considered to fully grasp the value for money achievement.

Three main areas have been identified to include important value drivers in PPP projects. These areas are *value assessment*, *procedure* and *environment*, which represent three levels where value assessment is the core, surrounded by procedure and then environment. The value drivers identified are presented in a model based on a value driver framework of procurement constructed by Bower (2003). The model is called *value driver framework in PPP procurement* and shows the three levels and their value drivers in Figure 25.

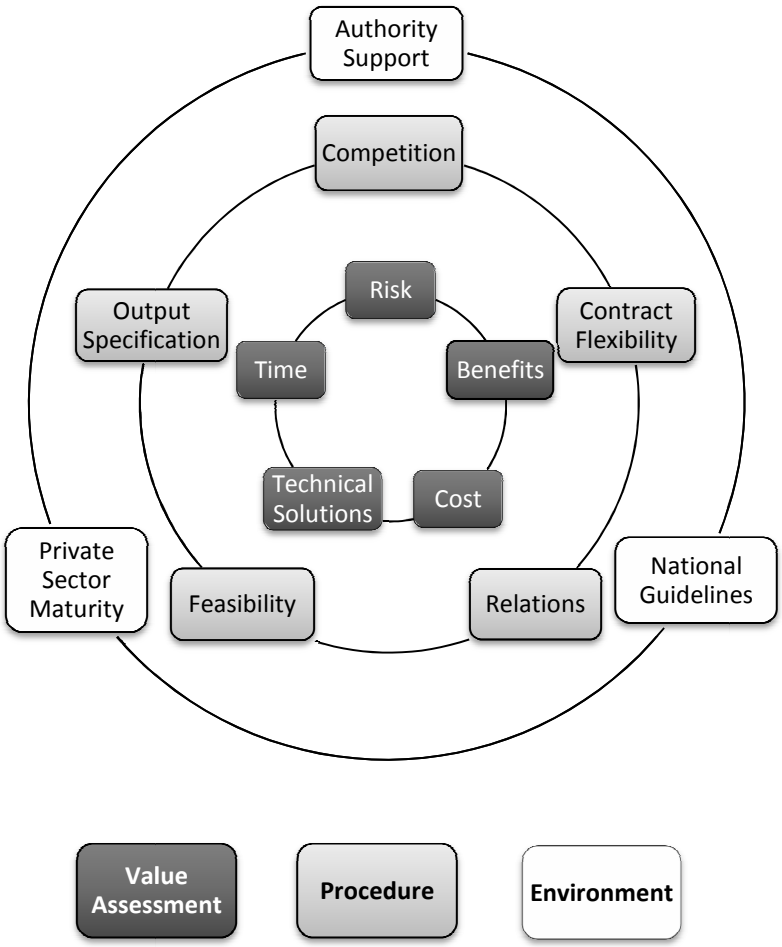

Figure 25. Value driver framework in PPP procurement

In the level of value assessment, *technical solutions, time, risk* and *cost* are value drivers kept from Bower's (2003) framework as they are all found to be relevant also in PPP procurement. *Benefits* is added as it has a central role for value for money. In the second level, procedure, all of Bower's (2003) traditional value drivers have been changed to PPP specific ones. These are *feasibility, output specification, competition, contract flexibility* and *relations*. They are contributing to value during the procedure of a PPP project and are presented in a chronologic order starting with *feasibility*. Good relations are however important to consider during the whole project cycle. Finally, the environment is found to affect value delivered as *authority support, national guidelines* and *private sector maturity* all has shown to be important factors for the success of PPP projects in the cases studied.

7.2 Contribution to Practitioners

The value drivers presented in the framework in Figure 25 can be helpful for practitioners working with PPP projects. Foremost, the framework shows that there are more factors to consider than is done today in the value for money analysis. This is especially interesting for practitioners involved in the early stages of PPP projects as that is where the estimations for future success are made. Even though this study has an advisory perspective, the findings are also relevant and interesting for representatives from both public and private sectors. The model is further useful for both countries more mature in PPP as well as for countries where PPP is to be introduced.

7.3 Recommendations for Further Research and Studies

This study has investigated the value drivers in PPP procurement by interviewing PPP advisors in the UK, Canada, South Africa and Sweden. For further investigation of factors contributing to value in PPP project, interviewing other practitioners as well would be interesting. Especially practitioners within the public sector would be of interest to hear as the public sector has an important role for the development of PPP. Examples of questions would be what the intention is to use PPP and what benefits is hoped to be reached and if they have been reached? Also, other countries can be studied to investigate whether nationality and continent is affecting the success of PPP.

For further studies, it would be of great interest to investigate the investment potential in PPP projects by taking a private party's perspective. This could be done in a country where PPP is in its initial stage to see if and how the private sector is affecting the development of PPP. If the potential is found to be large, it could affect private firms to show more interest for PPP projects and thereby contribute to the development.

The actual innovation and technical improvements providing value for money is varying between countries and projects. Due to lack of final evaluations of value for money at project close, it is a bit unclear why. In neither of the countries studied, formal evaluations have been made on actual outcomes of value for money. This makes the accurateness of the value for money analysis unsure. If more value for money really is achieved is what all involved in PPP are interested to know. An investigation of the gap between the value for money assessed and value for money achieved would therefore be of great importance. A difficulty is that most PPP projects are incomplete and that information during the operation phase is controlled and maybe classified by the private party. The public party although have records of quality and payments which makes evaluations possible. All of the interviewees in this study: advisors, practitioner, and professors, has pointed out the importance of evaluations to gain experiences for their future work. Evaluations is also necessary to get answers to if the value drivers identified in this

study in fact contributes to value for money. A recommendation for further studies is to study projects in the operation phase to evaluate the gap between the value for money analysis and actual outcome. The study could also evaluate the applicability of the value driver framework in PPP procurement by investigating how the value drivers are affecting the projects studied.

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Appendix

Appendix A: International Interview Template 1

Experience of PPP

- What are your experiences of PPP?
- What are your firms in [country] experiences of PPP?
- What is your firm's function in PPP projects?

PPP in [country]

- What is the main reason to use of PPP in [country]?
- Which positive effects are shown from using PPP?
- Have [country] special prerequisites affecting the usage of PPP?
- Which public authority is the main stakeholder of PPP in [country]?
- Are there any main guidelines for PPP procedures in [country]?
- How is the interest of PPP among private firms and competition in tendering?
- How are the bids evaluated and which factors are premiered?
- How well are deadlines and budget kept in the PPP projects?

Value for Money

- What is important when calculating value for money?
- Are there anything indicating if value for money actually is achieved?
- How is the value for money analysis measured and evaluated during the project and after finalisation?
- Do you receive any feedback?
- What are your advises and recommendations for further work with PPP in Sweden?

Appendix B: International Interview Template 2

Feasibility study

- How does the work procedure look like for the feasibility study?
- How is the output specification defined and by who?
- How are the performance monitoring and the choice of payment mechanism dependant on the output specification?
- How is fulfilment of the output specification measured?
- Are any technical improvements seen when using PPP?

Value for Money

- Do you use a Public Sector Comparator and a PPP reference model when calculating value for money?
- How are the PSC model and the PPP reference model developed and used?
- How is the difference of the PSC and the PPP reference model evaluated?
- Which cost components are used in the value for money calculation?
- How do you do cost assumptions?
- How do you consider and value qualitative factors?
- How do you consider expectations of future market conditions?

Risks

- What is your procedure when considering and valuing risks?
- Are you using a predefined list when identifying risks?
- Who participate in the risk analysis and what do they contribute with?
- Which are the main difficulties forming the feasibility study and the value for money analysis?
- What are your advises for evaluating value for money?

Appendix C: Interview Template Transaction Advisor

- What role/roles have you had at TAS in PPP projects?
- How is your work procedure look like for the calculations of value for money and the feasibility study?
- What value for money test is used and how does they look like?
- Which parameters is used to calculate value for money?
- What is important to consider when calculating value for money?
- What is the main difficulties with performing the value for money analysis?
- Is a follow up made as feedback after the calculations is performed?

Appendix D: Interview Template Private Concessionaire Sweden

Experience of PPP

- What are your experiences of PPP?
- What are your firms in [country] experiences of PPP?
- How do you perceive the interest for PPP in Sweden?
- What is according to you determining for the use of PPP to a greater extent in Sweden?

PPP Projects

- How does your work procedure look like in a PPP project?
- Who participates and how does the cooperation function in a consortium?
- Which are the main difficulties and risks in a PPP project?
- What is determining for you to tender in a PPP project?
- How determining is the formation of the output specification?
- Does it ease tendering with performance-based contracting?
- Is it higher demand at PPP than at traditional projects?
    - What are the demands and how are they formulated?
- How is the return on investment for PPP and what is determining for it to be good?
- Does PPP increase your innovation in PPP compared to traditional procurement?
- How are the projects evaluated and followed up when running?
    - How do you measure if value for money is achieved?
    - How common is it that deadlines and budget are kept?
    - Do deductions occur?
- What are your advises and recommendations to ease the use of PPP for the private party?

Appendix E: Interview Template Professors Sweden

Experience of PPP

- What are your experiences of PPP?
- How is your work related to PPP?
- What areas of PPP do you have knowledge within?

PPP in Sweden

- How is the interest of PPP in Sweden?
- What research has been done about PPP in Sweden?
- How do the special prerequisites affecting the usage of PPP look like?
- How do you perceive the prerequisites for PPP in other countries?
- What is according to you determining for the use of PPP to a greater extent in Sweden?
- Why should Sweden use PPP?
- How would the use of PPP affect the society?
- What are the greatest differences between PPP and traditional procurement?
- How is the standardisation of documents affect PPP in Sweden?
- How should PPP projects be evaluated?

Prospects

What are the main difficulties and challenges with PPP?

How do you think that PPP will develop during the next ten years?