Gordon Institute of Business Science
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Risk management in project finance: A financier's assessment framework

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ABSTRACT

Infrastructure development represents one of the major hindrances to economic growth and social development across all countries worldwide. A one percent increase in GDP is expected in a country with an estimated ten percent increase in infrastructure assets. Private project and structured financing is identified as the most effective tool for the provision of the required infrastructure.

The complexity, formidable risks and highly leveraged nature of project and structured financing transactions account for the mismatch between the numbers of infrastructure financing transactions that reach financial close compared to the available pipeline. Increased literature focusing on the public sector procurer and private sector contractor is available in project and structured financing transactions, but scarce research focuses on the risk assessment processes applied by financiers to the due diligence of transactions.

In this study, 15 in-depth semi-structured interviews were conducted with financing experts representing a diverse set of expertise with varying levels of experience in different markets. ATLAS.ti was used to analyse, code and identify themes in the data collected.

The findings indicate a wide range of risks and scenarios are considered by financiers with the top risks being political or sovereign risk followed by construction risk. From the findings discussed, a financiers generalized risk assessment framework is created that can be applied to a wide range of project financing transactions and markets in context.

Keywords: Project finance, risk management, Public Private Partnerships, project management

DECLARATION

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

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CHAPTER ONE: INTRODUCTION TO THE RESEARCH PROBLEM

1.1 Introduction to the Research Problem

Infrastructure development represents one of the major hindrances to economic growth and social development across all countries worldwide (World Bank Group, 2014). A one percent increase in Gross Domestic Product (GDP) is expected in a country with an estimated ten percent increase in infrastructure assets (McKinsey & Company, 2013). Policymakers worldwide understand that increasing the needed infrastructure has a long term impact on economic growth. What then is the impediment to greater infrastructure provision?

Infrastructure development has traditionally been funded by governments using taxation revenues. Over the last decade, the rapid increase in urbanisation, coupled with the increasing public debt to GDP ratios, as well as the inability of the public sector to deliver on infrastructure projects efficiently, has led to a major shortage in capital investments (OECD, 2014). Several different data sources agree that by 2030, the total global infrastructure spending for transportation, as well as electricity generation, transmission and distribution is estimated at $57-67 trillion; while water and telecommunications is estimated at $71 trillion (European Union, 2013; McKinsey Global Institute, 2013; OECD, 2007).

Modern infrastructure projects have become larger in volume and increasingly more complex which create project execution problems. Such problems include delays in project timelines, cost overruns, failed procurement practices, unavailability of financing and a complete failure in the project risk management processes (Calderon, Moral-Benito, & Serven, 2009). Due to the high technical, legal and regulatory complexity, these long-term, high value infrastructure investment projects have increasingly taken the form of project financing which has proven to be the most effective form of attracting private capital for infrastructure investments (Bank for International Settlements, 2014).

The main contributing factor to the mismatch between the need for infrastructure investment and attracting the interest of private infrastructure investment is that infrastructure investment entails complex legal, financial and technical expertise which

is costly. Private investors are willing to incur the high levels of fixed cost necessary to build up the project financing expertise only if there is a pipeline of bankable infrastructure projects (Bank for International Settlements, 2014).

Project financing is a specialised and structured financing tool that relies on the future cash flows from the completed facility to service the debt provided to the Special Purpose Vehicle (SPV) or Project Company and holds the project assets as collateral security for the debt funding provided (Carbonara, Costantino, & Pellegrino, 2014). This type of debt financing is referred to as non- or limited recourse financing where the lenders have limited or no recourse to the sponsors of the SPV or Project Company. Another characteristic unique to project financing is the high gearing involved where typically projects are funded with 10-30% equity while debt financing can be as high as 70-90% (The Green Book, 2003).

The complexity involved in project financing inherently creates a formidable set of risks to the parties involved. These risks are mainly related to the complexity of the project financing arrangement in terms of documentation, taxation, financing, technical specifications, subcontracting agreements, guarantees and credit lines (Demirag, Khadaroo, Stapleton, & Stevenson, 2011). Taking the long term tenor of project financing arrangements into consideration, as well as the high levels of debt financing provided by the financiers with no or limited recourse to the SPV or Project Company, the major risk of the forecasted cash flows not materialising over the long term is borne by the financiers. Project financing structures can take on several different forms, most often senior debt and equity. Typically, project financing arrangements are highly leveraged resulting in lenders being interested in the risk mitigation strategies that can be implemented before they are willing to provide financing (Carbonara et al., 2014).

Senior debt, being debt that takes priority before any other subordinated debt financing, is generally provided by investment and commercial banks or via the issue of bonds for larger projects (Istemi Demirag, Khadaroo, Stapleton, & Stevenson, 2010). During the mid-to-late 1990's to the early 2000's, the sustained economic growth allowed for the facilitation of readily available senior debt financing from the banks and capital markets. This was a period of risk taking and extended due

diligences by the commercial banks were not always performed to the quality or standard that it should have been to accommodate the rapidly changing markets.

The 2008 global financial crisis highlighted the fact that senior debt financing of highly leveraged project financing arrangements were exposed to the major negative impact of the credit crunch and therefore heightened the risk aversion of investment and commercial banks (Bailey, Asenova, & Beck, 2009). The impact of the financial crisis on financiers include more risk-averse policies that may require government guarantees in the event of sponsor difficulties to service debt, higher loan margins in place as a risk mitigation strategy, an increase in risk taking from the public sector, a lack of availability of project financing in the market as well as government intervention in long term high value infrastructure projects (Bailey et al., 2009).

Prior to the financial crisis, large projects financed via project financing would attract low investment grade financing due to the nature of project financing. This required the purchase of credit enhancements that were available from triple-A rated mono-line insurers who then carried the credit risk of the project. Prior to the 2008 global financial crisis, there existed a small number of such insurers worldwide, which were mainly American and European. During the credit crunch era, the available market for new credit enhancement deals collapsed leaving commercial bank financing as virtually the only means of project financing (Demirag, 2009). The increased risk aversion of the commercial banks means fewer infrastructure financing arrangements being closed.

In addition to the risk aversion created by the financial crisis, Basel III has created further hurdles for commercial banks that provide project financing. Basel III was created as a direct result of the financial crisis and aims to provide more stability to the banking institutions globally by regulating capital and liquidity (Lee, 2014). The major impact to banks will be the increase in the quantity of common equity capital that will need to be maintained. Basel III requires that a bank's capital ratio must be at eight percent at all times. In addition to the change in the requirements of the capital ratio, Basel III imposes a gross leverage ratio of 33.33 times that of capital. These stricter capital requirements will create cost pressures for financiers and therefore borrowers increasing the cost of debt for long tenor project financing arrangements (Chan & Worth, 2011).

1.2 Purpose of the Study

The aim of this research study is to identify a risk assessment framework for project financing from the perspective of the financier. Although each project is different in scope, complexity and implementation, it is imperative to ensure that appropriate due diligences of deals are carried out before financial close, to identify the key risk factors that impact financiers and that these risks are appropriately assessed and documented (Demirag et al., 2011). With project financing placing high levels of risk with the debt providers and the risk aversion of financial institutions since the global financial crisis, visibility and clarification of the due diligence and risk management processes that financiers apply to long term high value projects is necessary for sponsors and stakeholders.

There are increasing literature focusing on “what” risk is allocated between the project financing participants and “how” this risk is allocated concentrating on construction, operations and financial risks (Demirag, Khadaroo, Stapleton, & Stevenson, 2012) but literature regarding risk identification, assessment, allocation and mitigation strategies from the financiers point of view is minimal. Being an important party to these long term contracts, the risk appetites of the financiers may differ from that of the contracting authority and private entity.

1.3 Research Problem

The importance of continuous infrastructure development for the long term economic growth and social development of markets is evident with governments worldwide not being able to meet the growing infrastructure needs that rapid urbanization demands. Furthermore, the size, scope and technical complexity of such long term high value infrastructure projects creates a barrier for attracting private capital investment required for effective risk management over the long tenor of such projects. Compounding the dilemma is the subjective nature of the risk identification, assessment and mitigation strategies utilised by financiers for each different project financing transaction.

This study seeks to understand the process applied by financiers during the due diligence phase for project financial close as well as the risk assessment processes during the various stages during the life cycle of the project.

1.4 Research Objectives

This research study will attempt to:

- Explore the risk identification, assessment and mitigation strategies used by financiers for project financing;
- Examine the risk management processes during the life cycle of the project; and
- Create a risk framework that encapsulates the due diligence and risk management processes applied by financiers.

Insights obtained from this research study will contribute to the scarce body of knowledge, as seen in the literature review in Chapter 2, which exists regarding the financiers perspective of project financing.

1.5 Conceptual Framework

Table 1: Conceptual Framework

Increased economic and social development requires increased country infrastructure	1. Why then is there minimal infrastructure investment? 2. Private sector financing used as an alternative? 3. Why are private financiers reluctant?	2.1.
Private financing of public infrastructure is complex and risky for financiers	1. What do we know about the processes that financiers apply to identify and assess risk? 2. Are there specific selection criteria? 3. Do financier's perceptions impact decision making?	2.2.
Financiers only consider bankable transactions to finance	1. What risk allocation strategies do financiers apply? 2. Are there specific risk mitigation strategies?	2.3
How do financiers assess a bankable project financing transaction?	**Research Questions** 1. *What risks are considered and assessed?* 2. *What strategies are used to allocate and mitigate financier's risks?* 3. *What are financier's top 5 risks?*	3
Semi-structure in-depth interviews of financing experts undertaken	Data collected via voice recordings and transcribed for analysis	4
The results of which	Data analysed and coded with themes emerging	5&6

provide some new insights		
Allowing for the creation of a generalised financiers assessment framework	The framework, when applied in context, provides value add to project sponsors and the public sector in their decision making process	6.4

CHAPTER TWO: LITERATURE REVIEW

2.1 Project Financing Arrangements

2.1.1 Defining Project Financing

Project financing is defined as a method that allows for the financing of long term, high value capital projects where the debt of the lender is serviced via the cash flows generated almost exclusively from the operations of the facility (Basel Committee on Banking Supervision, 2006). The borrower is generally a Special Purpose Vehicle (SPV) or Project Company which is only permitted to develop, own and operate the completed installation. The major difference inherent in a project finance construct from traditional borrowing is that the lender usually has no or limited recourse to the non-project assets of the borrower making the credit risk of the borrower not as important as the risk identification, risk assessment, risk allocation and risk mitigation of the entire project (Finnerty, 2007).

The definitions above highlight the following unique qualities of a project financing transaction; First, the financing provided is for a specific capital intensive project that requires execution within the contractually agreed upon specifications, budget and time. The cash flows generated during the operations are required to service the debt of the lenders. Second, the assets are owned by the SPV or Project Company. Third, the project financing transaction requires at least two parties; the party that raises the required funding, known as the Project Sponsor, and the party providing the funding being the financier. Fourth, the understanding of the contractual parties that the Sponsor has limited risk to non-project assets in the event of a default in payment by the SPV or Project Company and the financier accepts the capital assets of the SPV or Project Company as collateral (Kayser, 2013).

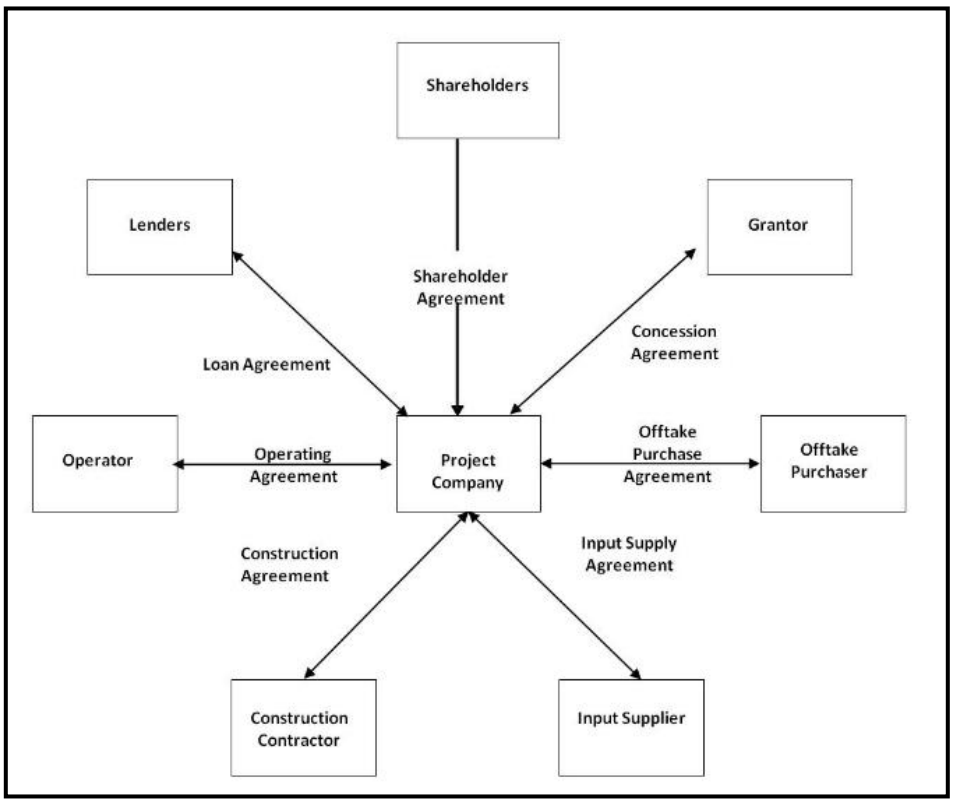
Gatti (2013) adds the deferring types of financial instruments utilised by financiers and borrowers to the above definition, while Esty and Sesia (2011) expand upon the definition by specifying the unique features of project financing as a means of differentiating it from other structured financing instruments. Investment targets of the financiers are added by Dewar (2011) to the above definition as a further differentiator.

In summary, there is no single definition of project finance as offered in the literature. Some of the defining characteristics are the construction, renovation and operation of long term, high value capital intensive projects that include projects such as power stations, onshore and offshore wind farms, hospitals, schools and pipelines.

2.1.2 Structure and Principles of Project Finance

Project financing has origins dating back to the 13th century, where the Florentine merchant bank financed the exploration of the Devon silver mines for reimbursement via the output from the mine (Hoffman, 2007). Prior to the 1990's, project financing was utilised for long term, high value capital intensive projects generally in excess of several millions of United States Dollars (USD) with a shift seen in the mid to late 1990's to the financing of medium sized projects (Finnerty, 2007). The practice and concept has grown since then in terms of a funding instrument in the face of budgetary restrictions of governments worldwide. The basic structure and agreements put in place are illustrated in Figure 1 below.

Figure 1: Basic Structure and Agreements in Project Financing



Source: Project Finance - Key Concepts (2015).

The concept of project financing stems from the bundling of several different contracts, that of design, construct and operate, into a single contract with a single SPV or Project Company to affect investment efficiency (Hoppe, Kusterer, & Schmitz, 2013). In recent years, there has been a trend in developed as well as developing markets of governments focusing on providing the necessary development in infrastructure through long term, high value project financing arrangements (Iossa & Martimort, 2012). Project financing arrangements have become the preferred mechanism of developing capital intensive infrastructure as they are regarded as being highly effective and cost efficient (Torchia, Calabrò, & Morner, 2013). The added whole-of-life benefit of bundling maintenance agreements for the contract term ensures that efficient design and cost efficiencies are built into the contract from the start by the contracting parties (Poocharoen & Ting, 2013).

Each project financing transaction is uniquely designed with the following key elements present. High value, capital intensive requiring debt and equity funding in excess of several hundreds of millions USD, highly leverage arrangements with debt funding of 65% - 80%, long term tenor which can range in excess of 20 years, specially created SPV or Project Company with a finite life, non or limited recourse financing provided by the financiers, the presence of several participants to which appropriate risks are matched to their ability to manage those risks and the high costs of raising project finance funding (Project Finance - Key Concepts, 2015).

There are increasing literature focusing on “what” risk is allocated between the project financing participants and “how” this risk is allocated dealing with construction, operations and project management risks (Bing, Akintoye, Edwards, & Hardcastle, 2005a; Bing, Akintoye, Edwards, & Hardcastle, 2005b; Broadbent & Laughlin, 2005; Demirag & Khadaroo, 2008; Khadaroo, 2005; Khadaroo, 2008) but literature regarding risk appetites from the debt and equity financiers point of view is minimal. Being an important party to these long term contracts, the risk appetites of the financiers may differ from that of the contracting authority and private entity (Froud, 2003).

With the concept of limited or no recourse financing, the main priority of the financier is to minimise or mitigate all possible risks that could result in the project not being completed on time, within budget or not being completed at all; the facility constructed

not operating at its full capacity which impacts cash flows and the SPV's ability to service the debt or the project coming to a halt prematurely (Project Finance - Key Concepts, 2015).

2.2 Risk Identification and Assessment

There are many definitions of what risk is, spanning across several different disciplines and is most often considered an uncertain event that could have either positive or negative impacts on the project (Hillson & Simon, 2012; Project Management Institute, 2008; Renn, 1998). However, economists see risks as the probability of gains and losses being made (Kahneman & Tversky, 1979) with the famous prospect theory where a certain amount of arrogance is applied to decisions involving risk. Research in the arena of entrepreneurships suggests that some degree of risky behaviour leads to innovation especially in the public sector (Brown & Osborne, 2013). For the purposes of this research the definition of risk will be understood as the possibility of losing something of value e.g. financial wealth weighted against the possibility of gaining something of value (Catalan & Demekas, 2015).

2.2.1 Financier's Risk Identification

The success of long term, high value often technologically sophisticated project financing arrangements, can never be fully guaranteed with tenors extending to periods commonly in excess of 15-20 years. The identification process of probable risks is further complicated by huge financial investments, long project execution cycles, several types of resources and stakeholders involved in the process as well as unstable political and economic environments add to the complexity of the due diligence (Guofeng, Min, & Weiwei, 2011).

Since the 1990's, several risk management processes have been developed over different disciplines employing a systematic approach. Hillson & Simon (2012) propose the Active Threat and Opportunity Management Process, Seyedhoseini & Hatefi (2009) describe the Two-pillar Risk Management Process while Risk Analysis and Management for Projects is defined by The Institution of Civil Engineers and the Faculty and Institute of Actuaries (2005). Project Uncertainty Management (del Cano & del la Cruz, 2002), Project Risk Analysis and Management (Association for Project Management, 2004) and Shape, Harness and Manage Project Uncertainty (Chapman

& Ward, 2003) contain very similar criteria. The main thrust of the above literature is separating the risk management process into three phases. First phase aims to understand the project characteristics and goals and identify risk management efforts based on level and scope. The next phase concentrates on identification of the actual risks, their possible causes and impacts to the project, assessing how each risk relates to each other, create an assessment of the probabilities they will materialise, assign priority levels to each risk, create mitigation strategies and put in place appropriate contingencies. The final phase is one of implementation of the risk mitigation strategies as well as the monitoring for new possible risks.

In contrast, there are some risk management processes identified in the literature that apply a more simplified process, such as the Risk Management Process developed by the Project Management Institute (2008) and the Multi-Party Risk Management Process (Pipattanapiwong & Watanabe, 2000). The simplified approach includes activities of risk identification, financial and non-financial risk analysis and the risk mitigation strategies. The two approaches above only broach the surface of the reality of the inherent risks present in long term project financing and the identification of risks in the whole life cycle of the long term, high value project with continuous risk monitoring during these phases.

Financiers indicate willingness to invest in highly leveraged transactions such as project finance only in the instance where there is assurance that the output of the facility will produce sufficient cash flows to service the debt (Finnerty, 2007). Financiers apply complex and rigorous due diligence assessments to project financing arrangements and should be involved in the process at the beginning stages of the bid phase (Dixon, Pottinger, & Jordan, 2005). However, at this stage financiers are in a position of some power and are able to exert sufficient pressure on the Sponsors to ensure that guarantees are put in place for certain contractor obligations (Alonso-Conde, Brown, & Rojo-Suarez, 2007).

The risk aversion created by the financial crisis has tightened the due diligence process applied by commercial banking institutions. Coupled with the increased requirements of Basel III further controls have been put in place on the global banking

fraternity which hampers the provision of long term high value project financing (Chan & Worth, 2011).

As indicated, it is impossible to eliminate all risk which then requires a form of risk management via due diligence to be applied. Miller, Kurunmäki and O'Leary (2008) argue that risk management is a way of making the future uncertainties manageable in the present. (Froud, 2003) also applies a 'technicist' approach rather than a radical or post-modern approach where he explains the concept of risk management as being a process of identifying, measuring and responding to possible loss that may occur. This 'technicist' approach to risk management is also posited by Akintoye and Chinyio (2005). There are several generic approaches to risk identification which include intuition and personal experience of the experts involved in the process, surveys, checklists, interviews, brainstorming, legal and technical expert opinions, HAZOP studies and event and fault trees (McKim, 2005). This means that managing risks requires the development of appropriate tools and techniques to either avoid or repair the risks involved (Miller et al., 2008). From the literature, the approach utilised by the SPV Project Sponsors and Consortium Members seeking financing is one of focusing on foreseeable and manageable risks which include interest rates, rates of exchange of foreign currencies and inflation whereas the financiers are applying a 'technicist' approach (Asenova & Hood, 2006).

Asenova and Beck (2003) carried out a survey of 14 financial institutions in the UK, interviewing senior financial experts to ascertain the way in which they identify, assess and manage risks associated with long term high value project financing. The authors found that the financiers interviewed rely on both external consultants' opinions as well as their own experience in project financing to identify risks; utilise technical experts and sophisticated financial modelling that use "what if" quantitative scenarios to evaluate risk; and manage risks by mitigating them through contractual agreements with the various parties involved and insisting on volume caps on liability being put in place for the construction and facilities management partners. Asenova (2009) finds in a later study that the 14 financial institutions interviewed in the earlier study in 2003 show that the institutions remain risk averse; base project financing decisions of risk on their prior experience in similar projects; ensure that major risks are allocated to the project partners; and even attempt to manage risks that relate to third parties in the

project financing arrangement. The author goes on to conclude that these financial institutions utilise a standardised approach to risk identification and assessment.

In the study performed by Akintoye and Chinyio (2005) on two UK hospital case studies, findings were consistent with the banks not placing too much concern on the probabilities of the risks taking place but instead on what mitigating factors can be implemented. In the two hospital cases, the authors found that experience in the type of PPP proved to be quite effective in managing risk with the use of checklists and risk registers.

Even with the most sophisticated risk analysis and assessment tools, not all risks can be mitigated at contract bid and inception phase. Based on pervading logic, only risks that can be measured are quantified and assessed whilst risks that are non-financial in nature (e.g., reputational damage in the case of the project financing being unsuccessful), is not given as much consideration (Broadbent, Gill, & Laughlin, 2008). Further to this argument, Ng and Loosemore (2007) propose that due to the high complexity, the various participants involved in the contractual agreements in project financing and the uncertainty present over such a long term contract, the financing costs of private sector financing will be much higher costing government more over the life of the contract.

There is no definitive content provided for what type of risk areas are analysed in the standardised approach identified by the literature above that commercial and investment banks are utilizing for the selection of which long term high value projects will be financed. Are the risks that are assessed related to the country the project is to be executed in; the Consortium or Project Sponsors; the project industry or related to the type of investment, such as Greenfield or Brownfield.

Although the literature makes a strong argument for the presence of risk assessment tools and techniques, very little information is available on the risk perceptions of the private debt and equity financiers and what possible mitigation requirements they deem necessary.

2.2.2 Project Selection Methods

The need for decision making models utilised by commercial and investment banks to evolve is essential to take into consideration the constantly changing business environment. As financiers take the lead for providing financing for long term high value projects, Cheng, Chiang and Tang (2007) argue that the many credit assessment tools need to be regularly re-calibrated.

Loan interest rate spreads that relate to political risk of the countries in which project financing arrangements are being assessed by financiers, were investigated by Girardone and Snaith (2011). Using a dataset of 1 190 project finance loans which were split into three categories; developed economies, emerging economies and developing economies; the authors found that the cost of financing has a strong relationship to the quality and effectiveness of the country's legal and regulatory framework. Loan guarantees provided by the government of a developing country with a stable and effective legal and regulatory framework allow for the provision of lower cost project financing than for developed economies. Rather counter-intuitively, the authors find that the cost of project financing is higher in developed economies due to established governments with strong regulatory frameworks imposing stricter thresholds and allowing fewer concessions. Corielli, Gatti and Steffanoni (2010) add to these findings by analysing 1 093 project finance loans were not only are the political climates analysed but prior to project finance being raised, clearly defined non-financial contracts are closed with the project sponsors. These non-financial contracts as well as the legal and regulatory framework provide the benefit of lower cost of debt financing which enables the SPV to realise higher debt to equity ratios. The political climate, legal and regulatory environment as well as the non-financial factors related to the project impact the decision making process applied by financiers for the provision of long term high value projects.

Laishram and Kalidindi (2009), however, propose a desirability rating analysis for infrastructure road projects that are financed via PPP's. The authors have developed the Desirability Rating Analytical Tool (DRAT) using Choquet Fuzzy Integral, where various parameters that financiers take into consideration is fed into the analytical tool that allows for a decision to be reached. The authors agree that the model has high data requirements and requires a thorough knowledge of the project conditions. While

value adding, are such sophisticated analytical tools being applied by financiers to make decisions on project financing that is not a one size fits all?

Buscaino, Caselli, Corielli and Gatti (2012) investigated the ways in which banking institutions can remain active in the project financing arena with the tighter controls that have been imposed on them by Basel III. The authors present a model of collateralised debt obligations where underlying risk in project portfolios such as market and completion risks play an important role in collateralizing debt obligations. With the pressures being applied on the global banking fraternity by the requirements of Basel III, are banking institutions utilizing more innovative ways to stay competitive in the infrastructure financing arena?

The application of sensitivity analysis is proposed by Borgonovo, Gatti and Peccati, 2010), which allows the use of project key performance drivers. Using a model of 428 inputs, they indicate how sensitivity analysis allows financiers to ascertain the robustness of the model being used in the decision making process, it highlights changes to variables and the consequential impact on the valuation criteria.

In another study, Popović, Stanujkić and Stojanović (2012) propose the quantitative method using the Complex Proportional Assessment Model (COPRAS) extended to also use interval data (COPRAS-G). The authors posit that for reliable data and decision making both exact and interval data have to be combined into a single model. They argue that the multi-criteria decision making methods applied by financiers have no real life application. What is evident with the proposed model is that the subjectivity applied in determining the weights and risk levels is still required by the financier.

The long term nature of project financing requires more dynamic financial analysis methods of project selection than quantitative methods alone which may not cater for the various risk factors that are present in long term high value project financing arrangements.

2.3 Risk Allocation and Mitigation

As is the nature of project financing, risks are shared between the contractual parties of the project financing arrangement although there is no consideration in decision

making based on shared risks (Broadbent & Laughlin, 2005). According to the principles of PPP's, financial risks should be transferred in its entirety to the private sector (Asenova & Hood, 2006), although the position taken by Her Majesty's Treasury is that risk should be allocated to the party best suited to manage such risk (The Green Book, 2003). There are other perspectives offered as well, that of risks should be allocated to the parties that have the most information regarding those risks (De Palma, Leruth, & Prunier, 2012).

The norm in the UK has been that the SPV or the Project Company is funded by approximately 10% equity and the remaining 90% via senior debt. However the equity proportion of funding contained only a small portion of true equity funding, around 1%, with the remaining portion being subordinated debt (PFI : Meeting the investment challenge, 2003).

Looking at the financial structure of the SPV, it contains no real assets of its own and subcontracts for design, construct and operate to construction and facilities management companies. The high proportion of senior debt carried by financiers with limited or no recourse against the SPV, has prompted financiers to require equity funding from the subcontractors also to reduce the risks (Ezulike, Perry, & Hawwash, 1997). These risk management strategies of financiers create barriers to entry by small companies into the infrastructure development market as they cannot compete with the financing requirements of commercial and investment banks.

The risks borne by the debt financiers are similar in nature to the risks that are faced by the SPV which is why there is a direct relationship between the costs of financing the SPV and the project risks borne by the SPV (Dixon et al., 2005). Having limited risk carrying capacity due to the high levels of debt financing, the SPV tends to pass on the risk to the sub-contractors in an effort to reduce financing costs (Demirag et al., 2010).

Due to infrastructure development projects being high value and large scale projects that are rather specific in nature e.g. hospitals, the risks associated with a SPV or Project Company are far greater than that of traditional procurement contracts (Shen, Platten, & Deng, 2006). The involvement of multiple stakeholders with deferring

objectives and goals increases the already high levels of risk (Demirag & Khadaroo, 2010, 2011). While government's preference for the project financing structure attempts to pass the design, construction and operational risk to the private sector, the high levels of debt financing in such contracts and the risk-aversion of debt financiers makes the management of significant financial risk factors for debt financiers of paramount importance (De Palma et al., 2012).

Prior studies that have focused on "what" type of risks are inherent in project financing arrangements and "who" is most suitable to carry these risks; have also identified the complex structure of contract arrangements that are closed and the enormous amount of effort that private investors will go to in maximizing the risk transfer (Hodge & Greve, 2005). Two studies conducted have argued that the complex contract structures that are implemented in a project financing arrangement is a tool utilised by financiers to avoid the risks that are transferred to them by transferring these risks to the subcontractors via the SPV (Asenova & Beck, 2010; Keating, 2004). Neither study, however, provided evidence or an explanation of how this is achieved in practice. In a recent study conducted by Demirag et al. (2011), the authors found that financiers have become increasingly risk-averse and use the complex project financing contract arrangements to transfer risks. This study also did not provide clarification of how the risk is diffused. What then are the risk allocation and mitigation strategies that are employed by financiers to ensure effective risk transfer?

2.3.1 Methods of Risk Allocation

Ng and Loosemore (2007) argue that the major project financing risks are those that include political, construction and operations and financial risks and they further argue which parties these risks should be allocated to. While several studies conducted argue the optimal allocation of project risks, Quiggin (2005) posit that optimal allocation of risk is not present in standard project financing contracts. Bing et al. (2005b) however, argue that in general the macro-level risks such as political, social, economic, legal and other "exogenous" risks should be allocated to the public sector while micro-level risks such as, project operational related and other "endogenous" risks should be allocated to the private sector. The authors go on to argue that due to the risk aversion of the private financiers, the high risk premium that is charged by the

private financiers is reduced in practice by the public sector's willingness to absorb more project related and endogenous risks to reduce the cost of private financing.

In a further study, however, Shen et al. (2006) posit the "effective" allocation of risk is achieved by allocating legal, regulatory and site acquisition risks to the public sector while allocating design, construction, operations and human resource availability risks to the private sector participants. The authors further argue that risks which are related to the market, financial changes and force majeure should be allocated to both the private and public participants. In a study conducted in the school's sector examining the allocation of financing risks associated with project financing initiatives, Reeves and Ryan (2007) expound on the complexity involved in the risk allocation process. The complexities, the authors found, were threefold; first related to the shared risks that include statutory planning and business risks, second included certain risks that could be renegotiated during the life of the contract such as technical obsolescence which the private sector only bore the risk for the first three years and third being that finance risk allocations were based on performance. The authors conclude that although risk is allocated to the private sector, on default of the SPV or Project Company, the public sector becomes liable for the senior debt payable to the financiers. In this case, via the complex contract arrangements put in place by the financiers, the risk allocation did not effectively allow for the public sector to transfer risk effectively to the private sector (Reeves & Ryan, 2007).

In contrast to the above argument, Abednego and Ogunlana (2006) posit that good governance systems are a requirement for the risk allocation to be appropriate and that it is essential for the ultimate success of the project. With good governance practices in place, the contracting parties are more inclined to be satisfied with the risk allocations assigned to them as long as there are minimization clauses in place. The authors further argue that when good governance practices are not present, risks are only considered when they materialise and corresponding solutions are put in place to only to minimise the unforeseen risks that have materialised. The authors conclude that in the absence of good governance, risk management is reactive and based on solving problems that arise rather than proactively assessing and reviewing risks on an ongoing basis (Abednego & Ogunlana, 2006).

Risk transfer has been proposed in literature as an important element of project financing and the benefits that appropriate risk allocation brings include improved project execution and on time delivery, better infrastructure maintenance over the whole life of the project, over-specifications are eliminated and better service delivery is experienced (Dixon et al., 2005). Although the intention of project financing is to provide the required infrastructure development while transferring risks to the private sector away from the public sector, finding the optimal balance is elusive taking into consideration the changing economic landscape and the specificity of each project (Demirag et al., 2012). Keating (2004) argues that prior to the financial crisis the government in Australia was trying to shift increasing risk away from the public sector to the private sector using project financing structures. However, the private financiers were, even before the financial crisis, utilizing the contract arrangements to shift the corresponding risk away from themselves to the construction companies. Jupe (2011) supports this argument with the London Underground Private Finance Initiative (PFI) project where a complex set of arrangements were closed which made structure and governance of the PFI difficult and problematic. Further support of this argument is provided by Demirag et al. (2010) who assert that due to the commercial and investment banks unwillingness to accept the high risks associated with project financing, the public sector accepted more risks in an attempt to facilitate closing of the project financing deals.

For effective allocation of risks in project financing, both the public and private sectors have to work together to ensure the risks are borne by the party most suited to carry such risks. It is, however, unclear in practice whether this type of agreement is reached in project financing arrangements (Demirag et al., 2012). The many parties involved have deferring perceptions of risks (Abednego & Ogunlana, 2006). The commercial and investment banks providing the senior debt financing are risk averse and prefer to pass through the risks (Laishram & Kalidindi, 2009). Are the risks in project financing appropriately allocated to the correct parties in the arrangement in practice?

2.3.2 Measurement and Pricing of Risks

Risks that are allocated to the deferring parties to the project and structured financing arrangement must be measured and priced appropriately. As is the nature and

complexity of long term high value project financing transactions, it is possible that not all risks will be identified and measured during the due diligence phase (Demirag et al., 2012). Broadbent et al. (2008) argue that due to the quantitative approach of "accounting logic" all risks that can be measured and given quantification in terms of value are assigned importance whereas risks that cannot be quantified are not listed as important due to no value assigned to the risk. Further to this argument, Rodney and Gallimore (2002) point out that in practice simple sensitivity analysis is utilised in financial models to base decisions which the authors describe as a "limited technique" that does not provide a suitable analysis and measurement of risk.

Due to the complexities in measuring risk, the possibility of risk being mispriced in the project and structured financing transaction is relatively high. Keating (2004) argues that, when considering PFI deals in Australia, there could be deliberate mispricing of project deals due to the high levels of competition in that market and the perception held by the government that low price equates to value for money. However, Edwards, Shaoul, Stafford and Arblaster (2004) show that the PFI, being a specific type of project financing transaction, is in fact a more expensive option for the public sector. Pollock and Price (2004) point out, rather significantly, that the risk transfer by the public sector to the private sector, and the corresponding risk premium charged by the private sector for this risk transfer, is somehow concealed via the complex web of contracts that are closed. These authors argue that project financing transaction may in fact not be the most cost effective but the lack of transparency in the contracts provides a false sense of security by the public sector. Due to the SPV or Project Company being in effective an empty shell, risks are of necessity passed to the various parties of the project financing arrangement via a complex web of contracts and subcontracts making it extremely difficult, without detailed knowledge and experience, to assess the value for money being provided by such a transaction or the risk premium being charged for the risk transfer (Demirag et al., 2012).

Furthermore, Keating (2004) posits that the project financing structure and risk transfer strategy protects financiers from impacts of risks materializing as well as allows financiers to demand high risk premiums for the inherent risks present in long term high value project financing transactions (Ng & Loosemore, 2007). The argument put forward by governments that the benefits of efficiency and risk transfer justifies the risk

premiums charged by the private sector is unsubstantiated (Pollock & Price, 2004), while Ng and Loosemore (2007) go so far as to suggest that public sector risk is in fact increased due to the complexity of the risk transfer contracts and the high bidding costs required of the SPV or Project Company. In the study conducted by Jupe (2011) of the Metronet Infrastructure SPV in London, the author found that 95% of the debt financing was covered by the government indicating marginal risk transfer to the private sector.

While the above literature has addressed how to best find a solution to the allocation, measurement and pricing of project financing transactions in its many forms, Asenova and Beck (2010) provide a deferring perspective. The authors argue that project financing transactions such as PFI is not necessarily about creating the appropriate value for money for the public sector but more focused on creating a pipeline of bankable infrastructure projects for the private sector thereby ensuring the risk-return ratios of the financiers are met.

Such a perspective then creates the question as to what are the motivations of the financiers as well as how they go about the allocation and mitigation of risks away from themselves to ensure high levels of return on project and structured financing transactions.

2.3.3 Impact of Financiers Risk Perceptions

For the concept of attitude, the field of psychology puts forward an explanation that it is a tendency to exhibit either favourable or unfavourable behaviour (Eagly & Chaiken, 1993) which describes an association with objects, people, entities or an environment (Fazio, Roskos-Ewoldsen, & Powell, 1993). Financial risk attitude is the degree of risk uncertainty that an investor is willing to accept in a certain context. The risk scale varies from risk averse, risk paranoid, risk neutral, risk seeking or risk addicted (Grable, 2000). Risk attitude, which is a psychological concept, is closely linked with risk tolerance, which is generally used interchangeably (Roszkowski, Davey, & Grable, 2005). Risk attitude, as with risk tolerance is made up of both emotional and cognitive aspects which leads to the argument that financial risk decisions are not based purely on conscious thought processes (Greenwald & Banaji, 1995). Risk behaviour is, in

most cases, dependent on perceptions of risk in the markets (Netemeyer, Ryn, & Ajzen, 1991).

Financiers are one of the most important parties to project financing arrangements with their objectives being different from the other parties to the arrangement (Broadbent, Gill, & Laughlin, 2004). Financiers views of risks and returns associated with the project financing arrangement may differ from the other stakeholders (Gallimore, Williams, & Woodward, 1997). Risk, as defined earlier in this research, is understood to be the possibility of losing something of value e.g. financial wealth weighted against the possibility of gaining something of value (Catalan & Demekas, 2015), but it also contains an element where the outcome is uncertain which is acknowledged and explained as risk being the possibility of something going wrong whilst uncertainty can be described as the outcome of an action or event that is doubtful (HM Treasury, 2003). There is little agreement in literature on what risk and uncertainty mean with the difference being explained at its basic level as the distinction of “calculable probabilities” (Froud, 2003).

Broadbent et al. (2008)argue that uncertainty is an unclear future state and there is no possibility of calculating a financial impact whereas risk allows for the calculation of a financial impact in the event the risk materialises. Helliar, Lonie, Power and Sinclair (2001), however, argue in contrast that managers with decision making power show loss aversion rather than risk aversion focusing on the size of any possible loss rather than calculating different outcomes of decisions.

During the financial crisis, debt and equity financiers were exposed to the global market economic downturn with some cases major impact to the ability to secure debt repayments (Asenova & Hood, 2006). During the financial crisis, debt and equity financiers were faced with higher loan margins, risk aversion to providing debt financing especially not to long term high value projects that require high debt financing (Bailey et al., 2009).

Prior to the credit crunch, senior debt financing for PPP contracts was provided mainly by commercial and investment banks with majority of the debt risk passed on to an insurer via a credit enhancement purchase (Demirag, 2009). This market all but

collapsed after the financial crisis causing debt financiers to take more stringent measures in securing the repayment of the senior debt. The financial crisis shaped the lending criteria used by debt financiers in project financing contracts to the point where the risk aversion to such high levels of debt come at higher financing costs.

2.4 Conclusion

While increasing literature is available that focuses on “what” risks are allocated between project and structured financing participants and “how” these are allocated, the focus has been predominantly on the impact to public sector and the contracting parties involved. Risks such as construction, operations as well as financial risks and their impact to the public sector and SPV or Project Company participants have been researched.

The focus of this study is the risk identification, assessment, allocation and mitigation strategies that are employed by financiers. With project financing placing high levels of risk with financiers who exhibit risk-averse tendencies, the risk analysis and due diligence process applied by financiers is the focus of this study with the aim of creating a generalised assessment framework utilised by financiers that will add value to the decisions making process of project sponsors and public sector stakeholders when raising project and structured finance for infrastructure projects.

CHAPTER THREE: RESEARCH QUESTIONS

The literature review conducted in Chapter 2 highlights the scarcity of academic literature in the area of project finance. Project financing is at best an art form applied by financing experts drawing from multidisciplinary fields. The complexity, subjectivity and confidential nature of the data in this area of study have led the researcher to apply an exploratory approach to understanding the risk management approach utilised by financiers.

With the exploratory approach, as discussed in Chapter 4, the main objective was to identify the risk assessment, allocation and mitigation strategies applied by banking institutes to long term, high value project financing arrangements thereby answering the research questions posed in this paper and translating the findings into a meaningful framework.

3.1 Research Question 1

From a financier's point of view, what risks are considered and assessed before the provision of debt/equity project financing?

3.2 Research Question 2

What strategies are used in the allocation and mitigation of financing risks during the life cycle of the project?

3.3 Research Question 3

What are the top five risks in a project finance arrangement from the point of view of the lender?

CHAPTER FOUR: RESEARCH METHODOLOGY

4.1 Introduction

The purpose of this chapter is to discuss in more detail the data collection methodology and analysis techniques that were applied in answering the research questions set out in Chapter 3 of this research paper.

The field of study researched was the risk management processes utilised by debt and equity financiers when assessing long term high value project financing arrangements. Saunders and Lewis (2012) provide the following three deferring types of research methods that could be used for research:

- Exploratory studies which focus on gathering general information on relatively new phenomena with a view to providing new insights.
- Descriptive studies that seek to describe a situation rather than explain it which answers the question of "what?" using mainly quantitative methods.
- Explanatory studies which aim to provide an explanation to "why?" situations occur which can take the form of either qualitative or quantitative depending on the research objectives.

The research problem and aim of this research was best served by utilizing an exploratory approach which seeks insights into the phenomenon (Struwig & Stead, 2001) to discover general information about the topic that the researcher did not clearly understand (Saunders & Lewis, 2012). From the literature review presented in Chapter 2, there is evidence of increasing literature in the area of what financial risks are identified in a financing arrangement such as a Public Private Partnership (PPP) and how those risks are allocated to the parties in the SPV or Project Company. There is, however, scarce literature providing clarity on the financial risk management processes utilised by the financiers of the project financing (Demirag et al., 2011). Taking into consideration that this area of research is still relatively underexplored, an exploratory study was deemed most appropriate by the researcher.

"In qualitative research, we do indeed dig deep: We collect numerous forms of data and examine them from various angles to construct a rich meaningful picture of a complex, multifaceted situation" (Leedy & Ormrod, 2001).

Utilizing the qualitative research design, exploratory research techniques provided a basis for understanding concepts and providing clarity regarding the research questions, rather than providing precise measurements and quantifications (Zikmund, Babin, Carr, & Griffin, 2010). The subjective nature of the risk assessment process used by financing experts when concluding whether project financing will be provided or not is best researched using a qualitative, exploratory approach. Another clear benefit of utilizing this approach is the understanding gained of the context within which such decisions are taken (Myers, 2013).

For the collection of data, semi-structured interviews were conducted using the research questions as the topic guides. Project and structured financing experts in different countries were interviewed from the company chosen. The interviews carried out were semi-structured and contained an unstructured element. The interviews were conducted via Microsoft Live Meeting due to the location of the experts being dispersed in various countries around the world. For this type of research methodology, there are multiple data collection methods indicated, including but not limited to photography, unstructured note taking and electronic recordings of interviews (Cassell & Symon, 2004).

For quality assurance purposes, electronic recordings of the interviews were made with a combination of manual note taking by the researcher. Overall consent from the global Chief Executive Officer of Project and Structured Finance of the company chosen has been obtained to interview the relevant experts. Individual consent from each participant was also secured. The interviews averaged around 1 to 1.25 hours each due to the semi-structured approach that was used. Each recorded interview was then transcribed into written format by a professional transcription service provider. The researcher performed an additional quality assurance check by comparing the recordings to the transcripts provided. This additional step was carried out to ensure the appropriate quality of the transcripts that were analysed.

Exploratory research has 3 interrelated purposes; to diagnose a problem, to check for alternatives and to discover new possibilities and ideas (Zikmund et al., 2010). The above mentioned research design allows for all three of these purposes to be addressed.

4.2 Population

Zikmund et al. (2010) provide that a population is a complete set of data that includes all possible respondents in the research being carried out that is then used to draw a sample for testing. The population of the research that was carried out comprised all project and structured finance experts in the multinational bank chosen where long term high value project financing arrangements across several industries have been financed. The industries include oil and gas, on and off shore wind power plants, hospitals, rail infrastructure and roads.

This very large multinational bank has its operations arm of the business located in 162 countries around the world, covering both developed and emerging markets. This spread of expertise allows for a more comprehensive understanding of the risk assessment process applied by the financier chosen.

For this research, the definition of emerging markets is taken from Bloomberg's Markets, a magazine that provides up to date financial market information (The Top 20 Emerging Markets, 2013). Various criteria are used to ascertain what an emerging market is and cover criteria such as Gross Domestic Product (GDP) Growth, Inflation rates, government debt and ease of doing business.

4.3 Unit of Analysis

Unit of analysis specifies at what level the data will be analysed (Zikmund et al., 2010). The unit of analysis most appropriate will be the individual project and structured financing experts chosen as part of the sample set. This includes the experience of the expert interviewees coupled with their interpretations of the financing contracts and risk methodologies employed.

4.4 Sampling Method and Size

The non-probability sampling technique of purposive sampling was used in this research based on the researcher's judgement. Saunders and Lewis (2012) point out that the criteria used to select the sample using purposive sampling must be clear with supporting reasons and premises provided.

Qualitative research is embarked on to gather quality data and the focus is not on solving the problems identified. To this end, purposive sampling is being used to ensure a high standard of relevant data is collected for analysis using expert criteria to achieve the purpose of identifying a financial risk assessment framework for project financing (Struwig & Stead, 2001).

When contemplating sample size of expert interviews, two criteria should be covered; firstly, the interviews should be enough to cover the range of participants and sites within the population and secondly, saturation of information should be achieved (Guest, Bunce, & Johnson, 2006). Saturation is explained as no new responses received to the questions posed. To this end, a sample size of 15 was targeted and was dependant on data saturation. Data saturation was reached when no new themes and concepts emerged from the interviews being carried out (Saunders & Lewis, 2012). The details of the sample are provided in Table 2 below:

Table 2: Sample Participants and Descriptions

Sample Participant	**Area of Responsibility**	**Base Country**	**Region of Responsibility**
Bob H.	Equity Financing	Boston, MA; USA	North and South Americas
Dan N.	Risk Management	Atlanta, GA; USA	North and South Americas
James K.	Debt Financing	Atlanta, GA; USA	North and South Americas
Bill J.	Risk Management Leveraged Finance	Iselin, NJ; USA	North and South Americas
Alasdair C.	Debt Financing	Macquarie Park, NSW; Australia	Asia Australia
William H.	Financial Advisory and Structuring	Orlando, FL; USA	US & Canada
Pinak S.	Debt Financing	Singapore	Asia Australia
Stephan M.	Risk Management	Munich, Germany	Europe Middle East

			and Africa
Carsten H.	Risk Rating Project and Structured Financing	Munich, Germany	Global
. Hans-Joachim S.	Risk Management	Erlangen, Germany	Europe Middle East and Africa
. Katja T.	Risk Rating Project and Structured Financing	Munich, Germany	Global
. Hugo T.	Transaction and Portfolio Management Debt	London, UK	Europe Middle East and Africa
. David H.	Risk Management	Atlanta, GA; USA	North and South Americas
. Kerstin S.	Financial Advisory and Structuring Equity Financing	Erlangen, Germany	Europe Middle East and Africa
. Markus G.	Transaction and Portfolio Management Debt	Munich, Germany	Europe Middle East and Africa

4.5 Measurement Instrument

Computer aided qualitative data analysis tool, ATLAS.ti was used to assist the researcher in systematically analysing the transcripts of the interviews with the aim of locating, coding and annotating findings in the data.

4.6 Pre-Test

Prior to the data gathering process, a pilot testing of the semi-structured interview guide questions was carried out to test the clarity and viability of the questions being posed. The pilot was affected with two local experts within the multinational bank chosen in the area of Project and Structured Financing. The pre-test interviews were carried out via Microsoft Live Meeting to simulate the interview environment. Due to telephonic conferencing contact only, the researcher had to adjust the way questions

were posed and allow for the discussion to flow. Being unable to gage body language and facial expressions created a different dimension to the interviews.

4.7 Interview Process and Interview Guide

Unstructured interviews provide an enormous amount of data that is difficult to take manual note of during the interview and this is the main reason for the interviews having been recorded (Blumberg, Cooper, & Schindler, 2008). This approach also extends to semi-structured interviews where an interview guide is used to ensure all relevant topics are covered.

A total of 15 Microsoft Office Live Meeting Conference calls were carried out with the chosen project and structured financing experts. This method of the interview process was selected as the participants are widely dispersed around the world, which does not allow for face-to-face interviews with the researcher. Each interview averaged at around 1 to 1.25 hours in length and varied due to the level of detail provided and the conversational flow. Due to the time difference between the location of the expert being interviewed and the researcher, some interviews were carried out either very early or very late in the day to accommodate the most convenient time for the interviewee. Each interview was recorded for transcription purposes.

Before each interview, the researcher forwarded via email the Informed Consent Letter (Appendix 1) as well as the Semi-structured Interview Guide (Appendix 2) to each interviewee. This allowed each project and structured financing expert to peruse the themes to be covered in the interview and prepare appropriately. The semi-structured interview guide was designed to guide the conversation to ensure all required topics and themes were consistently covered and assist to ensure that the interviewer remained neutral (Denzin & Lincoln, 2005).

The experts chosen represent a diverse set of expertise with varying levels of experience in different markets. This spread of knowledge and expertise allowed for a varied discussion during each interview with each expert elaborating their own understanding and experiences with practical examples. In some interviews, probing techniques were used to arrive at the heart of a topic (Blumberg et al., 2008). The interview questions were not always asked in a sequential manner and were adjusted

to accommodate the flow of conversation where some questions were answered before they were asked. Additional questions were interjected by the researcher to explore further topics or themes raised in the interview where no specific question was listed in the semi-structured interview guide.

An iterative data collection and management process was used to ensure that the appropriate topics were covered and that data saturation was reached. The following data collection and management process was utilised (Gillham, 2005; Leedy & Ormrod, 2001):

- First interview was conducted using the interview guide attached.
- Recording of interview was forwarded for professional transcription.
- All transcripts were checked by researcher for quality by reading the transcript while listening to the recordings. Any typing errors were corrected at this stage.
- Transcripts were uploaded to ATLAS.ti.
- Commonalities were attempted to be identified at this early stage via the words, phrases used by the interviewee.
- An overall understanding of the initial data was obtained.
- The above steps were repeated with all remaining interviews that were carried out until “theoretical data saturation” was achieved.

4.8 Analysis Approach

The following three main types of qualitative analysis processes can be used for the analysis of data; summarization of meanings, categorization of meanings and ordering of meanings (Saunders, Lewis, & Thornhill, 2009). This process allows for the researcher to be able to understand the data, be able to incorporate data from different transcripts, identify patterns in the data and draw and verify any conclusions.

Identification of themes in the data is a fundamental task of qualitative research. Theme identification techniques can take the form of keywords and word repetitions in context and comparing and contrasting texts (Welman, Kruger, & Mitchell, 2005).

ATLAS.ti was used for the coding process which can be seen as the first step in the analysis phase. Two complementary types of coding were used namely; open and axial coding. Open coding allows the raw data to be “attributed” providing high level

"categorised" information while axial coding then allows a lower level clarity by relating concepts or groupings of data to each other (Corbin & Strauss, 2008).

4.9 Limitations

The limitations of this research methodology and scope are:

- Qualitative research is exploratory in nature providing preliminary findings which require more rigorous follow up (Saunders & Lewis, 2012).
- The use of non-probability sampling based on the researcher's judgment may indicate that the sample may not be representative of the population (Saunders & Lewis, 2012).
- The subjective nature of qualitative exploratory research can be easily bias based on the views of the researcher (Saunders & Lewis, 2012).
- In all markets and countries discussed, not all countries have comparable risks.
- While the iterative process of data collection and analysis has many advantages, subsequent interviews may have been influenced by the way in which the researcher structured questions and prompts during the interview.

CHAPTER FIVE: RESULTS

The results presented in this chapter are in alignment with the research questions identified in Chapter 3. Key observations from the analysis of the data collected are set out under each research question. As indicated in Chapter 4, the research methodology used was qualitative and exploratory in nature with semi structured interviews utilised as the most appropriate data collection tool that allows unearthing of insights.

A systematic content analysis approach was used to analyse the responses to the interviews that were conducted. Following the generation of a thorough list of codes (Appendix 3) that appeared to comprehensively cover the responses of the participants, each participant's responses were subsequently re-examined to provide certainty that all participants' responses could be placed into at least one code. Supplementary codes were created for responses that, upon re-examination, did not appear to coincide with previously generated codes. Each of the participant's responses were re-examined relative to the previously identified novel codes and were assigned a numerical value corresponding to the particular code that responses conceptually fit. More than one numerical value, corresponding to the codes, was assigned to responses that fit conceptually into more than one code.

Following the complete generation of relevant codes, the coded responses were then examined to provide certainty that the responses that were previously coded were conceptually relevant. Upon examination, any responses that were not conceptually relevant to the code or codes were re-coded or removed from the analysis. For response frequency determination, the number of references to each code is reported, with each participant's responses able to be coded more than once into the same code provided that the response formed part of a new or separate discussion point which was not a continuation of a preceding response or point of discussion.

5.1 Research Question 1

From a financier's point of view, what risks are considered and assessed before the provision of debt/equity project financing?

5.1.1 Successfully Financed Projects

Table 3: Number of Financed Projects Considered Successful

Code	References
Majority of Projects Successful	6
Perspective Dependent	4
Return of Funds	3
Risk Return Ratio	2
Government	2

According to the respondents, the majority of the projects that they have engaged in have been successful. In fact, many indicated that it was rare that a project was unsuccessful. Some reported different criteria for success depending on the perspective of interest, such as debt or equity. The benefits anticipated or garnered for the country in which the project is done was also considered one factor to consider as part of success. In terms of unsuccessful projects, this is typically based on a combination of factors as opposed to a single issue alone. Some of the issues related to having greater expectations in terms of revenue or return than feasible, the inability for the country to operate the facility once it is complete, the absence of sufficient risk consideration at the outset, changes in the market or economy, and bankruptcy of one or more key partners at critical stages of the project. Some of the respondent's views are indicated below:

- *"In general I would say for the majority of projects I looked at you can say they were successful and disregard that the bank didn't lose any money on them and made a decent return because this is obviously the business model of a bank."*
- *"I think that the ratio is in excess of 80% or so because the organisation is rather picky on which transactions to enter into and which not to enter into."*
- *"You can look at this from different angles obviously and each player within the project finance will have different definitions of success."*

- *"There's only one thing from a risk manager point of view. If the loan has been repaid, it was successful."*
- *"I think that the ones that I would call 'unsuccessful' have been those which have been unable to provide sufficient return to its equity providers."*
- *"The government's inability to understand what it means to hedge the foreign currency list and interest rate list."*

5.1.2 Declined Project Financing

Table 4: Reasons for Project Financing Transactions Being Declined

Code	References
Political / Sovereign Risk / Coverage	10
Market Risk	4
Foreign Exchange Risk	4
Project Partner Assessment	4
In-country Region Assessment / Rating	3

As the participants tended to report, there are a wide variety of risk factors as well as reasons for project failure which include risks that impede successful project completion. Amongst the most prominent risk factors were political or sovereign risks, which is a critical consideration when deciding whether to engage in a particular project. In emerging markets, this was frequently cited as the key consideration that companies need to make when entering emerging markets. General market risk as well as foreign exchange risk was also reported as important risks that need to be accounted for. Assessing the participants in the projects or the project partners was outlined as an essential risk factor that needs attention, including the experience and prior success of the partners. The financial structure and the lack of anticipated returns, appear to be fundamental contractual and financial considerations that should be thoroughly identified and clarified prior to project initiation. The views of some respondents are expressed below:

- *"Countries like Uruguay, Peru and Columbia as well its only for the past couple of years have been investment grade rated so they don't have this long history of a stable, sovereign credit risk profile so for that reason we are very sceptical and*

with regular due diligence it relates transactions in markets with a very short term history of an investment grade rated profile so sovereign risk as a whole, it's of the utmost importance."

- *"I would say that the failure again would be due to political risk, that's probably the biggest thing. In areas that have a stable political system it's typically a lot easier to find financing."*
- *"Perhaps it's an industry thing we're simply not high on a particular industry set that we just don't feel comfortable with perhaps a concentration if we've got four five transaction in a particular location there may be some desire to reduce our exposure there."*
- *"...it may be that simply an exchange rate risk can kill the deal for us as an international investor."*
- *"We would look at the experience of the equity sponsors in the project, do they have a track record to develop the projects before in similar cases, how has their behaviour been in the market, what image do they have, also we would have to look at their contract structure and the legal structure of the project involved."*
- *"...financing structure so how much equity is in the project because the investor gives you a buffer, how long is the tenor of the project, how much head-room do I have for deviations from our base case because what you do in a project finance case you usually find a base case which is the assumption how the future of this project would financially look like, derive all the cash flows, calculate your debt service cover ratios and then you see how much proper you have for deviations."*

5.1.3 Consortium and Project Sponsor Risk Factors

Table 5: Risk Factors Relating to SPV Members or Project Company Sponsors

Code	References
General Experience / History of Partners	11
Financial Behaviour / Ability	9
Human Resource Capacity	4
Location of Partner Projects	4
Small Companies Require Partner	4

In terms of individual project consortium members, some of the key considerations the participants indicated were the experience and history of the partners, such as their prior success, their involvement in similar projects, and experience in the country within which the project is planned. Along these lines, the financial history of the partners, as well as their financial capabilities, was another area that was strongly reported by the participants as a key consideration. The human resource capacity and capability were outlined as important aspects of the counter party members, which also links to the technical abilities and capabilities of the partners. In the cases of smaller companies, the participants tended to indicate that, although these participants were not automatically excluded from engagement, invariably they required the involvement or partnering with a larger company who could ease the financial constraints and provide support. Some perspectives from the interviewees are listed below:

- *"We just typically look at a sponsor but what we are looking for primarily is experience, and it goes without saying that the track record is part of that experience of the principal members."*
- *'In Asia we have entered a few new markets recently because our Asian business is relatively new and the only reason why we started doing so is basically because the sponsors on those deals are basically the biggest local companies, the people know the market, they've been around for more than 100 years, they know how the politics work, they know how they make things work and they have done it before."*
- *"You want to make sure that the design builder and the facility manager are not spread too thin, that they have human resources the actual human capital to complete the project."*
- *"They have got deep pockets, that they have good debt on their balance sheets, they are providing a lot of guarantees."*
- *"...you want to make sure that they have the financial wherewithal to complete the project that, they are not going to run out of liquidity, run out of capital midway through the project."*

5.1.4 Consortium and Project Sponsor Minimum Criteria

Table 6: Minimum Requirements for SPV Members and Project Sponsors

Code	References
Ability and Experience	7
Financial History / Ability	5
No	5
Partner Rating / Credit Assessment	4
Situational Specific	3

There were mixed opinions about whether there are specific minimum requirements for consortium members. That is, some indicated that there were particular requirements, whereas others indicated that there were none and that any weaknesses would simply require consideration and some sort of mitigation. Some of the respondents reported that the consideration of consortium members depended on the situation and project type, the financial history and behaviour of the potential partner, and the financial backing and capital of the partner. Along these lines, the experience and general ability of the partners was also recognised as important and strongly considered as a basic requirement. Partners are sometimes rated and a determination made as to their appropriateness based on this rating which takes into consideration various factors the financing institution considers to be important. Some interesting views expressed are indicated below:

- *"The vast transactions that are in our portfolio have demonstrated leadership that has decades of experience with success in their past and I think that's a common theme that we've seen that has led to certainly a contributing factor in the success of the project."*
- *"So our criteria still remains the same, whether they are global partners or local partners we need to make sure that the partners are financially stable, have a history of performance of such projects, successful completion of such projects, have had integrity and background checks which have come out very clear on the company and on the individual and importantly that their values and our values meet, so basically they're not just in this for a short term and just want to get out of it."*

- *"In general there are not really minimum requirements."*
- *"We don't have that form of process saying if a project is a billion you need to have xyz."*
- *"First of all I am looking for partners who can lose something. So first of all they shouldn't be bankrupt by just this one deal if it doesn't go through and if it's a larger company for example or many companies as a holding structure I want that it really hurts if something goes wrong with the project but at the same time then in itself would survive..."*
- *"It's really so situational that's what makes energy project finances interesting as it is, is that there is no standard answer to that it depends.*
- *"Every deal is different and every country is different and so we always see it in context."*

5.1.5 SPV /Project Company Board Members

Table 7: Knowledge and Experience of the SPV/Project Company Board Members

Code	References
SPV Board Member Ability Important	3
Board Assessed, Unimportant (Secondary)	2
Dependent on Experience Level	2
Project Manager / Management Team Ability Essential	2
Individual Fraud Behaviours	2

For the most part, the actual board members themselves are not an important factor that is considered in the grand scheme of the project. This seems to be because they are not directly involved in the projects as they are run as a SPV or project company. However, there does seem to be some initial consideration that is applied to the board members, such as their prior financial history, which includes presence of fraudulent behaviour, their overall ability, and sometimes the long-term involvement of the board members which is an indication of stability. In some instances, it is required that the owners and board members of companies are known and reported in order to maintain regulatory compliance. Views provided by the respondents are listed below:

- *"Our technical advisor will normally opine on the experience and the suitability of the members of the board of the SPV to actually undertake the task and more than that we look also at the structure of the SPV if that's the case."*
- *"We are really looking at the strength of the board members to start with but it's not something that we really focused on."*
- *"Yeah, we do look at those but I must say it's probably secondary in a way."*
- *"...but I personally ensure from the beginning that I know who will be the board members and that's really the people I've been working with and not somebody completely new and that I can really trust that we can also find easy or make easy decisions, not easy decisions but fast decisions, so that we have somebody on the board who can really, first of all, decide, and also understands the business."*
- *"We're probably looking more to the specific experience of the management group the direct management group that will be operating or running the facility and that sort of thing."*
- *"We have to run it through a database and check if any members of the board are, or have been already involved in some kind of fraud or other things, and we have of course to do the nodule customs checks."*

5.1.7 Project Financing Minimum Criteria

Table 8: Minimum Criteria Before Project Financing is Provided

Code	References
Conflicting Interests	4
Counter Party History / Experience	3
Atypical to Provide Both	3
Cash Flow	3
Financial Structure / Models	2

In many instances, the participants did not report a specific type of criteria that was assessed prior to providing equity or debt. Many, however, indicated that it was not a typical process that both types were provided for a single transaction, as it is considered a conflict of interest to provide both with different perspectives on what should be the outcome or success. However, some of the more important areas that were considered included the cash flow of the entity in question, the financial structure

and model of the transaction, and the general history of the counter parties involved in the project. A number of other financial indicators were also reportedly important, which are possibly used conjunctively to make a cumulative assessment about the appropriateness of debt or equity provision. Some views of the respondents are noted below:

- *"You kind of have at least partly conflicting interest, as a shareholder you want to maximise your return on equity and as a bank you want debt service and this can conflict each other, so we would not like to do that."*
- *"We usually wouldn't do both, only in exceptional cases."*
- *"In general we decide either equity or debt and not to have both."*
- *"The primary guiding force for our transactions is cash flow what do we think is going to happen to that cash flow in the future, are they going to stay just stable operator, are they going to see significant upside."*
- *"...for sure we look at the financial model and run the different scenarios and first of all check whether the assumptions make sense for me or check whether we need to make a down side case to the base case I've presented and then run the different scenarios and see ok what happens if the interest rates increase or what happens if the inflation rate changes, just to play around a bit and understand where are the risks financially in this project."*

5.1.8 Greenfield vs. Brownfield Project Financing

Table 9: Preference for Greenfield or Brownfield Financing

Code	References
No	6
Green Fields	2
Green Field Challenges	2
Lower Brown Field Risk	2
Brown Field Preference	2

Generally, there seems to be little preferential distinction between Brownfield and Greenfield type project financing, though there were different perspectives on which one seems to be more appropriate. For instance, some indicated that Greenfield has

greater challenges and there are some minimum requirements associated with such, whereas others indicated that Brownfield are preferred because, for the most part, the project is likely to be established and under way. In essence, the two types seem to have different types of risks associated with them, and it would appear that an assessment of which risks need to be considered and how they might impact the project in question is the key consideration that needs to be made. Some deferring perspectives provided below:

- *"I think there's no preference."*
- *"I would be say we don't care we do both green and brown field established projects, so it doesn't matter at all."*
- *"From the banks point of view it doesn't make a difference on the credit side."*
- *"In these emerging markets you typically see green field because you have to establish the infrastructure."*
- *"If you have a green field project in a really weaker country with really high infrastructure of stakeholders it makes it more complicated."*
- *"Some lenders might still prefer more on the brown field but the competition is quite fierce at the moment."*
- *"I would say it's brown field because then you have already something you can rely on, and you have seen how the project has worked so far, what risks, operational and construction risks, have arisen through the whole project. So I think brown field, it gives more comfort to the lenders."*

5.2 Research Question 2

What strategies are used in the allocation and mitigation of financing risks during the life cycle of the project?

5.2.1 Country Lending Limits

Table 10: Applicability of Country Lending Limits as a Bank

Code	References
Yes	8
Individual Project Assessment	7
No	4

Credit Limit Committee Assessment	3
Determined by Particular Teams/ Management	3

Although some of the participants reported that there are no country lending limits that are applied, many reported the presence of some criteria that are applied when considering providing funding. Those who reported YES, however, differed in that some indicated that there are more particular criteria, whereas others suggested that although the criteria are applied, there appears to be some flexibility in the application of such. Many also reported that the assessment of lending limits is dependent on individual projects, with consideration devoted towards the amount of money already present in a particular country or market, the type of companies or partners involved in the transaction, and whether these parties are involved in similar transactions with the company. In instances where country lending limits appear to apply, the participants indicated that management approval applications may be submitted to potentially obtain increases to country lending limits. This, however, seems to be at the discretion of the credit limit assessment committee, management team or board, depending on the value. Below are some respondent's views:

- *"We have country limits for each and every country we are acting in*
- *"I usually make decisions based on what I think is a good investment, I think those credit risk limits are, if they are defined they're able to be dealt with on a case by case basis anyway."*
- *"I have to say, so we don't have any given limits for sure we wouldn't invest billions in one country without going into other countries first but usually we've never hit any ceilings as where we weren't allowed to go into a country because we already too big exposure."*
- *"Country limits are set by our main credit authority, which is the so-called credit committee, and they are setting country limits being reflective of the risk appetite of our organisation in these countries."*
- *"In situations where we are reaching or might be in danger to even cross these country limits, we need to call our credit committee and ask if they are willing to extend these limits or not. If they are going to extend, then we basically get the budget available to do the business we were thinking about at present. If they are not going to extend because they feel the organisation is not able to bare more*

than this limit amount as set at present, we basically need to decline the transaction.

- *"We do look for example not to have all projects in construction with the same construction company at the same time so that's something to look out for between the projects to ensure that if we run into a problem with one deal it doesn't affect all the deals we are looking at or working at."*

5.2.2 Non-Financial Risk Assessment

Table 11: Assessment and Mitigation of Non-Financial Risks

Code	References
In-country / Political Regulations / Risk / Legal	12
Contracts	4
Assess Various Partners	5
Use of Political Insurance	3
Market Dependent / Stability	3

Most notably, the critical non-financial risk appeared to be in-country particulars associated with legal, regulatory, and political influences or changes. The issues are typically mitigated through the use of political insurance or other types of guarantees, as indicated by the participants. The types of contracts and the contents of the contracts also appear to be an important factor, along with the types of partners and their background and experience. The risk of repayment by the project was another factor outlined, along with whether the project had some tangible value or use in the country or market in which it is to be built. The technical risk as well as construction risk was also reportedly primary non-financial considerations, which may be placed into some formula in order to quantify the prospective implications of such risks if they were to occur. Some respondent's views are articulated as follows:

- *"We have to do what we call as a lending due diligence or a due diligence where we look at the country; we look at the regulatory environment, the tax environment and if it all creates a permanent establishment situation for the bank."*
- *"For instance if you are in a kind of dictatorship if there are a lot of protests/riots ongoing they will also be rather difficult because you always have that fear of a*

drastic political change that could of course interrupt the economics of your project."

- *"...are there any restrictions I have to watch or other special regulations in the country which require that you have to establish a branch, so this is something where you would look to your legal guys and say, is such a transaction possible or not from out of Germany or out of the location or branches, is this legally possible what are the fundamental rules then you look of course in the regulatory framework of the industry, how reliable is this framework, how many transactions have been there, is this most likely subject to change, have there been changes to the framework recently, is the governmental notorious for doing such changes."*
- *"Who's going to be doing the drilling, what's their history, it's a continual drilling down on who's actually responsible for what and what their history in handling that is."*
- *"The contracts they have entered into you know if there are liquidated damages or something like that."*
- *"You would look at all of those contractual relationships."*
- *"...sometimes the risk is so high we will only do the deal with political risk insurance or export credit agency or similar."*
- *"Political instability financially often can be insured here, Hermes who are an expert credit agency so that we in principle are covered if a country simply decides that there is a change in law and the minister of health simply says we no longer want to pay for this, so political risk can often be insured that we only don't do in all the countries its more the emerging countries."*

5.2.3 Guarantees/Securities

Table 12: Typical Guarantees and Securities and the Mitigation of Gaps

Code	**References**
Sponsor / Parent Company Guarantee / Pledge	5
Performance Guarantees	4
Similar Guarantees Across Markets	4
Ensure Security Prior to Project Initiation / When Identified	3
Political Risk	3

The participants reported a host of different types of securities and guarantees that may be implemented to mitigate or to reduce the influence of risks. Some reported placing performance guarantees onto the different parties involved, particularly during the construction phase. Different types of guarantees, including export lender guarantees and government lender guarantees, were also reported as key forms of security. Interestingly, many participants reported similar types of guarantees across markets, but that some additional securities one would have to take within emerging markets pertains to maintaining off-shore accounts and political risk insurance. Some respondent's views are provided below:

- *"...also guarantees of current companies often useful, so basically if you are lending to a subsidiary of a big company or somehow a big company is involved then you often would get parent company guarantees, so that they would back their subsidiary or they would back the project and this is also very helpful."*
- *'the share pledge, so the sponsors normally have, is the owner of all the shares of the SPV and we want to have them pledged*
- *"The LCs that we have may be related to some type of performance, whether it be liquidated damages for not hitting enough certain amounts of performance of the plan."*
- *"It depends if you really have a technical difficult project you may have some completion guarantees for the construction phase because you cannot accept the risk."*
- *"Within project financing, you have a typical package of securities like pledge of accounts and pledge of shares and all those kinds of things. I think this is typically almost all over the world."*
- *"In addition to that if we were to land a project in an emerging market then we talk about the kind of instruments that I mentioned to you. So we were looking with the export credit agency covers all multilateral covers so lieges guarantees and typically to cover mainly political risks per often they are comprehensive that will cover political and commercial risk and you have like multilaterals as I mentioned."*
- *"One of the most important thing you can do is perfect your security and finance transactions so you have to ensure before you enter into a transaction that there are no leaks or gaps in your security and if there are is all you can do is appeal for a revision of the documentation to perfect that security."*

- *"...gives you for example protection against political risk but also for the fault risk or commercial cover or the World Bank gives some protection. So I think the key difference between a emerging and a developed market with regard to guarantees and securities usually is you have the export credit agency however often involved."*

5.2.4 Frequency of Risk Assessments

Table 13: The Frequency of Risk Assessments During the Life Cycle of the Project

Code	References
Quarterly Performance Measurement / Reporting	5
Monthly Reporting	4
On-going Basis	4
Yearly Ratings / Reporting	4
Construction Phase	3

For the most part, assessments continue throughout the life span of the projects, but tend to be more critical during the construction phase, seemingly an area that is more susceptible to issues. Particularly in the construction phase reporting seems to range from weekly to monthly through to quarterly. Following construction, the reporting frequency seems to decline to a quarterly or yearly basis, unless there are any major issues identified during particular periods of the project. These reports are typically compared to one another as well as to projections and the financial models that have been developed for monitoring purposes. Below are a few interesting respondent's views:

- *"During construction you are of course constantly monitoring of the construction process of all your own engineers, own engineer on the project which checks on the performance of the contract and tries to mitigate potential problems."*
- *"There is information requirements that the borrowers are required to provide you on a regular basis and that would include typically construction reports often monthly."*

- *"You then turn into construction phase after financial close; you actually do a very close monitoring on the actual construction process on a monthly basis."*
- *"It's in construction generally there is a construction report that are provided on a monthly as well as quarterly."*
- *"It's continuous, once you have gotten it credit approved and it goes in the portfolio and they are monitoring the transaction from beginning to end."*
- *"You're assessing the performance of the design builder and the performance of the facility manager on a regular basis throughout the project."*
- *"On a quarterly basis we are actually measuring the performance of the company against our management case base case and downside case."*
- *"When the project then turns into operation, you probably have a little bit more intensive, let's say quarterly monitoring on these projects for the first one to 2 years just to see the project stabilising in its business case."*
- *"...bank we have requirements and also we wouldn't have the requirements, we need to web your every transaction at least once a year. So for the rating side, we are formally required to do a rating review once a year, this is the formal requirement."*
- *"If the project is deep into the operational phase, let's say after one year, and all the things, let's say all the project is performing well I have to say, then you can check it only once a year."*

5.2.5 Exit Strategies

Table 14: Application of Exit Strategies

Code	References
Sale of Project	6
Perspective to Remain Till Project Close / No Strategy	5
Exit Strategy Conditions of Contract	4
Exit Dependent on Highest Profitability Point	4
Issue of Sale Ability	3

Generally, the participants indicated that specific exit strategies, particularly devised at the beginning of a project, are not part of their initial assessment. The tendency is to anticipate remaining in the project for long-term periods or until the close of projects, or

at a minimum until construction is complete. Some of this related to retaining a reputation, as the institution does not want to be considered one that decides to exit as soon as issues are experienced. If exits are required, it typically depends on the highest profitability point and one option is to sell the project. However, this is often difficult and requires the correct type of pricing structure in order to be appropriate for the institution. That is, an assessment is typically made in terms of which option is best to take, either exit now and take initial loss or exit later and hope the project stabilises. There are also some up-front contract conditions that allow the institution to automatically exit once selected issues arise, but it depends on the applicability of such to the situation under consideration. Below is a selection of respondent's views:

- *"Only way you can get out is by selling your debt and if the project is going okay you should be able to sell it at maybe a small discount, if it's not going well then it's a bigger discount or you might not be able to sell it at all."*
- *"Whether the philosophy of the investor is basically exiting out of two years but is taking debt of five years it means that he might put it for sale and the existing facility will come up for re-financing again because somebody will acquire this company is going to require debt financing."*
- *"We as banks can sell our commitment to other banks, it's usually possible, we don't do that a lot, other banks do it more we don't do it a lot. We use it rather when we deem the risk very high, basically if we the find a guy who is willing to buy the project or buy your stake in the project and you are quite happy of course, but we don't do that a lot."*
- *"Within the project agreement there a different termination provisions. The state can terminate at its convenience and as I mentioned it can pay us debt out and equity out. There is also termination under force majeure and where debt normally gets paid out and termination, people termination where most of the debt should be paid out, there are mechanisms in place to get market values and things like that may not cover all of your debt but it might cover a full amount of your debt."*
- *"Within the financing contracts, you typically have some sort of covenants embedded, can be financial, can be non-financial, so minimum cover ratios that the project needs to maintain, or some sort of minimum reporting that the project needs to provide in case that these covenants ratios are not fulfilled by the project*

there are some consequences within the contract which could lead to an early termination of the contact then."

- *"Then by the way who's going to buy it that's the other thing. Do you sell it to someone for full value, do you sell it for 50% of what they owe you, all these things are factors that weigh into the analysis."*
- *"The financing community for project finance is rather narrow, so if you have a project that is not performing, you can expect that the currency is rather quick in picking up this information. And if you then start, for example, to try and sell, you don't want to trigger the full causal chain as I was just describing it to the customer where you just want to get out of the transaction we always have the chance to sell it in the secondary market, but in the second that the market realises that you're doing it because of a performance issue in the project, you're probably easily ending up in the amount of 40 or 50% or so. So this can be rally expensive then."*
- *"In a PPP in strategic investors like SFS we don't have in our mind that we have to exit up seven years or eight years after construction or build up or operation, we have kept in mind that we have to go till the end."*
- *"We don't necessarily have a strategy to exit like you would have in private equity or stuff like that, we don't have that. I know other lenders have but those are more traders, they buy from one and sell to another with making a progress in between, we don't have that."*
- *"We normally do not have a let's say, a strategy like oh we just go into this deal and sell it in two or three years no matter what happens. No, this is not our point of view; we are long-term holders of loans, at least in the debt business."*
- *"At the end it's a business decision because it's a trade-off but lose more than 20% or you could get rid of it immediately and have to take the hit on your books, yes. So one exit strategy is to sell it to other market participants."*

5.2.6 Risk Mitigation Strategies

Table 15: Types of Risk Mitigation Strategies and Tolerance for Gaps

Code	References
Knowledge and Understanding of Partners	2
Political Risk Insurance / Cover	2
Flexibility Required	2

Project Dependent	1
Market Dependent	1

In terms of tolerance thresholds, it would appear as though there aren't any particular thresholds that are set, with some degree or flexibility required. The minimum risk mitigation strategies, however, pertain to obtaining political risk insurance or coverage, particular because of the seemingly major issue associated with political risk, as well as having a thorough knowledge and understanding of the partners, both in terms of background and what their expectations are. Some indicated that the strategies are contextually specific, depending on factors such as the market type and the type of project. Some specific respondent's views are listed below:

- *"You would of course look at parties very closely, I think you would look at the rating of the off-taker suppliers of other project participants and then the minimum requirement would be that those companies are financially solvent and they have a good track record."*
- *"We have discovered is that you really have to do your homework on that guy and often times that guy failed the test and he's never build a power plant before he's that guy in the know now, but guess what he's not going to win the next election and that's going to make his project way down on the list of projects to get done."*
- *"Another key element I would say is the political risk cover I was talking about a little bit earlier, because only a limited amount of the lender is willing and able to accept political risk within his financings so that is something that I would say is also a key element in here."*
- *"So in a place where there in an emerging market sometimes you can take out political risk insurance."*
- *"Mitigating risk is definitely what we try to do if we are doing it on a direct basis, we are one of the way you mitigate risk is by lessening the amount that you lend in the first place, because if you have a 1.2 times that surface coverage for lending $100 million but lending $60 million you have a two times less surface coverage ratio then you have mitigated your risk right there by lending less."*
- *"Maybe the government is backing the project in some way, that the project is important for the country so that you can see that the importance of the project makes it more secure basically because it can't be cancelled so easily."*

- *"You would limit the tenor of the loan; usually in an emerging market you would limit the tenor to a few years and not like a very long tenor."*
- *"In the end such project finance is a risk sharing between different parties, the equity investors taking something on the upside, on the profitability side you take something as bank but you don't have an upside you know what you will earn. And so everyone takes a bit of the risk."*
- *"Again you have to look at really the specific project, how likely the gap or the risk is and what is the impact and where you likely you need to find some kind of mitigation to make it bankable."*
- *"We shouldn't forget that we play in the market now we need to adapt one way or another to what the market is doing."*
- *"...to say that they are hard and fast , I always hate saying that anything is hard and fast because you want to look at that in terms of the overall or project, the risk of the project, the government that you may be working with in a less stable and more dynamic government , you may want that a little higher."*

5.2.7 Newly Identified Project Risks

Table 16: Handling of Newly Identified Risks

Code	References
Based on Appropriate Option	5
Advanced Agreement Structure	4
Importance of Pre-transaction Assessment	4
Partner Engagement / Decision-making	2
Option to Sell	2

In terms of the identification of novel risks during the course of a project, many indicated that the important aspect is to ensure that any risks are attended to prior to the start of a project and before the initial agreement is signed and completed. This seems to be the point at which all the necessary effort and work is required and needs to be thoroughly completed and all risks identified in order to ensure that they are adequately covered in the contract. Beyond this, however, it would appear that there are several options available, which typically depend on the type of risk identified and the best option available. Some include providing waivers, selling the project, or

making financial adjustments such as reduced margins. Below are some respondent's comments:

- *"Within all of these transactions you have you can waive certain things legally; you can amend credit agreements to provide for certain things."*
- *I have been told are termed highly negotiated contracts, there are a lot of very smart people, very smart various people who look at this. They mitigate the risk in terms of that are not so specific that a new risk would pop up, but what you are really looking at is the effect of that risk in terms of debt cover service ratio, dividend, to the extent that something may come up that the project company bares, it steps down with the contracts. Then you begin to look to the facility agreement to look for a certain fault and then what remedies you might have under that. Because risks that are assessed are got from the specific, which would include delivery of the hospital or abatement under the availability based service payment to something as general as change of control to change of law, so there really are just about every risk that you could imagine."*
- *"We would have to basically deal with that ad hoc situation in that point in time by basically bringing our heads together and find a way to mitigate it because right now we are dealing with a critical situation."*
- *"If there is a new risk and if it materialises we just have to deal with it, there's nothing you can really do."*
- *"But if you fundamentally overlook some issues should not happen to be honest. I mean somehow for instance I would base my input from other advisors for instance a technical advisor, if a technical advisor has made a mistake in his assessment and I base my assessment on his because I'm not an engineer then it is not your fault. But to mitigate this risk is rather difficult because usually see those risks when they jump in your face right?"*
- *"You would need to talk to the sponsors and see what the company can do to fight the risk in the end, obviously we have some cash resources, they can improve the power plant by adding some technical equipment to reduce it, in the end as a finance bank you own the company and the sponsor knows this so rather easily take it over in contrast to corporate finance. So you need to talk to the company and say what can we do and may be you will need to give some money to ensure the mitigation measures are implemented by the company."*

- *"If it gets to a situation where somehow it can affect the ability of the borrower to service the debt then you either enter negotiations with the sponsors and the borrower."*
- *"The normal way is it is dependent on the risk, what we do. Normally, because we are not experts let's say in technique, if something happens in the technique or in the insurance environment, then we go to our advisors and ask them for their opinion about it. And they tell us what they think, what is market standard, what risks could arise, and then we agree to the waiver or we do not agree to the waiver."*

5.2.8 Impact of Financiers' Perceptions

Table 17: Financiers Perception and Restriction on Provision of Financing

Code	References
Dependent on Market Experience of Financier	4
Confidence in Developed Markets	2
Insurance / Coverage Require	1
Additional Effort and Awareness Required in Emerging Markets	1
Institutionally Dependent	1

There was a sense that, generally, there is some reservation about providing financing to emerging market types of projects, typically because of the political risk and the additional effort that is associated with entering an emerging market project. However, there was also a tendency for some participants to overlook that additional risk and effort, with suggestions of the availability of insurance and other mitigation strategies to overcome these issues. There also seems to be higher levels of confidence in developed markets, which may relate to the greater level of experience in these markets. Hence, preference for certain markets may depend on prior experience of financiers and institutions in markets in question. Below are the views of some of the respondents:

- *"So I think the experience a financier has done in the market clearly will drive this future behaviour so, for example, if somebody was picking up a transaction, let's*

say in the refining industry, in the emerging markets and then just losing money on it, this organisation might probably behave a little bit more cautious or even may decide not to touch this industry in emerging markets anymore. So this will for sure have a clear impact. The other way around if you have an asset or an investment in a market where you don't really feel 100% comfortable enough to do the investment and to go smoothly and nicely, so that institution might be much more willing to re-enter the market or do a comparable project in the same market in the future."

- *"I would not look forward to another transaction in Brazil based on the things that I've learned since we pushed forward in this process. Entities that have an influence from their government ownership have made moves that would not be deemed as lender friendly, so I would imagine it's not only our institution that would have that opinion given the number of entities that have been impacted I would say that their future is at risk frankly."*
- *"If something happens in a certain country, something went totally wrong because of regulatory risk, then there is at least a period of a couple of years where you are reluctant to go again into this country."*
- *"Obviously you are more willing to do projects with larger tickets in countries like Germany or US or Australia instead of Russia or Africa or Asia."*
- *"...from my point of view, my experience, there are always cycles in the market. Let's say, if in the developed markets, where often no opportunities to make really good risk-return related deals, then the banks go abroad and look for opportunities elsewhere than in their home markets or in their OECD markets and so on. And I think this always changes, and if the liquidity, let's say in the industry, is getting shorter, and then there are often retreats or the banks going back to their home markets. So there are cycles I would say."*
- *"My comfort factor with emerging markets is now at an extremely low level because I can't say that it's going to be different with other countries but it would certainly be something that would require much more up front attention and much more discussion then we've initially had."*
- *"We try to find a way around these risks through, let's say off-shore accounts for example. So all the money which comes in during the projects is immediately transferred to off-shore accounts so that the government, this insecure government*

or political system, has no longer got access to these funds. These are ways how we try to make these projects viable."

- *"The appetite to go into these emerging markets always depends on how your own institute is, does your own institute have enough funds."*

5.3 Research Question 3

What are the top five risks in a project finance arrangement from the point of view of the lender?

5.3.1 Top Five Project Financing Risks

Table 18: Financiers Top Five Risks When Providing Project Financing

Code	Reference
Political / Sovereign Risk	11
Commodity / Foreign Exchange Risk	6
Construction	6
Regulatory Risk	4
Legal / Contracts	4

Overwhelmingly, the most frequently cited top risk was political or sovereign risk, which seems to be the initial consideration that is made when deciding whether to embark on a transaction. Regulatory changes and associated risk were also outlined as important risks, as well as foreign exchange risk and changes in commodities. One major risk related to construction, including the time issues and the additional costs that are often associated with the construction phase of projects. Market and economic changes, which may relate to some of the other risks, seems to play a major role in the risk level among emerging markets, as does the risk of ensuring that supplies and transportation is available and runs appropriately to ensure that projects may be completed. The operation phase was also outlined as one frequently cited risk, particularly as it relates to ensuring that the facility is running as intended and provided the services required. Below are some respondent's views on the top risks:

- *"I'd say the top risk fundamental country political, regulatory risk I think is the most important. These are law changes and you often can't foresee it, you cannot change it, you can't mitigate the risk and its very fundamental to your project, if subsidies are cut or if somebody decides that coal is not appropriate in the future."*
- *"I think we are talking political, so what happens in the political environment, what gets done that could potentially impact the project. You know if the project was taken over by government, so that is something that must be particularly considered in these markets."*
- *"...political stability in regulatory environment, so everything related to the country."*
- *"I think political risk is and always will be an important one particular in emerging markets that is definitely a key risk."*
- *"First is country political risk in my opinion that the state will really have the money but is also willing to pay for the service they want to contract so for the long term because it's a very long term contract I have to I need to know that it's a stable country."*
- *"A big risk in the meantime which we encountered in recent years is taxation and this may be one which gets more and more fraudulent because all governments are short of funding and then they get extremely creative on taxation issues and this could really be big things so we had a case when recent projects we are talking $20 or $30 million a year and then you have to take your actions your legal action against the government."*
- *"Construction risk is second and it is huge because you can't construct it then you have got nothing and there is a long story in history of projects around the world that were great ideas but the technology just didn't work."*
- *"You have to look at interface risk during the construction phase so that you have enough guarantees in place and penalties for EPC contractors so that everyone is looking that they construct the project in the blend schedule and in the planned budget."*
- *"Its construction technology so if you go to unproven technology this is one of the high risk areas this is one."*
- *"Commodity risk foreign exchange risk is always a huge issue that you need to deal with."*
- *"Then from a financing perspective, you have got foreign exchange which you can typically hedge out, but you probably got the interest rate there."*

- *"From my own perspective would be commodity risk and how is the new environment that we're in now how is it going to impact our company."*
- *"...there is the risk of, let's say, for example, often the banks give the money in western currency like US dollar or Euro, and there is always risk of appreciation or depreciation of the currency itself because the local companies often get their revenues in local currency, but have to repay their debt in foreign currency, and if there is a depreciation in the local currency you have the problem that these companies, even when they are sound, they are not able to repay their foreign debt."*
- *"I think always it's the regulatory and legal risks that are clumped into one and the reason that is a high risk is because often times in emerging markets there is no certainty around regulatory and legal requirements."*
- *"The compliance to really ensure that we don't oversee anything just by not being in that country because we run it centrally here from Germany."*
- *"I think with some markets change with their regulatory environment with their administration , so you just need to know that they may have an established regulatory environment but do they stick to that regulatory environment are they shaped to grey with that regulatory environment and legal framework."*
- *"...contractual framework, having some contractual mechanics agreed on in economic terms saying you want to see this kind of cover, you want to see in an event like this you want to see this kind of mechanic, then this is put into the contract and then if this situation materialises your contract is not going to work the way it was intended."*
- *"Then five is maybe the legal contract because contracts can be changed."*
- *"The contractual structures and this is basically poor contractual documentation and structure, which basically I think that's a risk which is sometimes underestimated you only realise when things go wrong."*

5.4 Conclusion

The above results of the three research questions posed in this research paper, demonstrate support for some of the existing literature. Due to the subjective and highly confidential nature of the due diligence performed by financiers, all findings cannot be completely linked back to the literature. In the discussion of the results below, a better understanding of the results obtained will be detailed.

CHAPTER SIX: DISCUSSION

The research results discussed in this chapter are closely aligned with the research questions identified in Chapter 3 and are based on the results presented in Chapter 5. The research results presented in Chapter 5 and discussed in Chapter 6, utilise the literature review carried out in Chapter 2 as a lens to analyse and interpret the data. The semi-structured interview guide and research questions were based on the available literature relating to project financing in general and more specifically from the point of view of the financiers. The data collected to answer the three questions that this research sheds light on, is based on 15 in-depth, semi-structured interviews with project financing experts in several financing hubs across the world from the multi-national bank chosen. The data coding and analysis process has provided insights into the financiers risk assessment and management process during the life cycle of a project financing transaction. The content analysis and response frequency determination allowed for the identification of themes that are set out below.

The risk identification, assessment and management process applied by financiers to project financing transactions is a highly sensitive, subjective and confidential process which not only differs from one banking institution to another but also from one project to another. This research adds to the scarce literature available on the topic and provides a high level generic framework which identifies the due diligence and risk identification, assessment and mitigation process that is applied by financiers. The research relevance of results, in the context of this study, is presented below.

6.1 Research Question 1

From a financier's point of view, what risks are considered and assessed before the provision of debt/equity project financing?

Research question one was posed to understand the risk identification and assessment process that is applied by financiers when presented with a project financing transaction. The results of the 15 in-depth interviews with the project financing experts provide the generic types of risks that are identified and assessed for

all projects irrespective of the type or location as well as the factors that relate to each type of risk is discussed below.

6.1.1 Successfully Financed Projects

The results in Table 3 highlight the views of financiers when questioned about the success rate of project financing transactions. Majority of respondents indicated that debt financing was provided as opposed to equity financing. Debt financing was provided in the form of senior debt with less than one quarter of the 15 respondents indicating subordinated debt. Majority of projects financed were reported to be successful with many respondents agreeing that it was in fact rare for project financing transactions to be unsuccessful. This finding highlights the success of risk-averse strategies that are implemented by commercial and investment banks; were only viable, bankable project financing transactions are considered as indicated in the literature by Bailey et al. (2009). Respondents indicated with frequency that success was perspective driven, and dependant on which party in the transaction is being interviewed. This perspective is echoed in the literature by Torchia et al. (2013) where success of the PPP is dependent on the final outcome. As an example, the results indicate that if the infrastructure project achieved the social or economic outcome for the country that was envisioned as the objective of the infrastructure project, this is also a factor of success. There was, however, complete agreement that a SPV or Project Company not able to service the debt owed is the very definition of an unsuccessful project financing transaction.

Dewar (2011) indicates the financial targets that differentiate project financing from other types of finance arrangements. These include the internal rate of return and return on equity. From the analysis of the respondent's views, risk return ratio and debt service cover ratio is a critical consideration from the perspective of the financier. The expert financiers interviewed agree that for the classification of a project financing transaction to be considered successful, the financial targets must be met or exceeded. There has to be no loss of money on the part of the bank.

Unsuccessful projects, although rare, do occur due to a combination of factors as opposed to a single risk materializing. Project Finance - Key Concepts (2015) by the World Bank highlights individual risks that cause the failure of infrastructure projects.

Respondents indicated that single risk materialization is generally well covered via insurance and other mitigation strategies. Failures are mainly due to combined factors materializing at the same time or in close succession to each other such as the failure of the new technology to operate as envisioned, the inability of the country to operate the completed facility optimally due to lack of knowledge or skill of the local labour force. Others being inappropriate calculation or expectation of returns, risk factors not completely considered and mitigated, mismanagement of funds in the SPV or Project Company and the dynamic changing economic, political and regulatory environment of countries that are not fully understood or appropriately analysed.

6.1.2 Declined Project Financing Transactions

Froud (2003) posits that financiers are an important part of the project financing arrangement with the objectives being different from other parties to the transaction. The impact of the financial crisis on commercial and investment banks was substantial enough to cause a fundamental shift in risk appetites. Prior to the financial crisis, credit enhancements could be purchased from triple-A rated mono-line insurers who carried the credit risk. This credit enhancement market collapsed after the global financial crisis leaving commercial and investment banks as the only source of private infrastructure financing. Coupled with the increased risk aversion by financiers meant that fewer infrastructure financing arrangements are being closed (Demirag, 2009).

From the responses analysed in Table 4, there are a wide variety of risks that are considered before financing can be provided. From the prompted question of what are the reasons for declining project financing transactions, 10 out of the 15 financiers indicated that the most prominent risk factors are the political or sovereign risk that is inherent in the country under consideration. This is more evident in emerging markets, being the initial key consideration, before other factors are even considered. The increasing literature available addresses the type of risks such as construction, operations and project governance risks and who these risks are allocated to. In the prominent journals reviewed by the researcher, political or sovereign risk as a key consideration for financiers when assessing provision of project financing is relatively new.

Finnerty (2007) provides the financial aspects considered part of the life cycle of the project, such as the cash flow projections, whereas Borgonovo et al. (2010) indicate sensitivity analysis and the use of key performance indicators to assess the robustness of the financial models provided to the financiers by the SPV or Project Company requesting the finance. The findings of this research corroborate the academic literature available in this regard where the respondents agree that the financial metrics need to be verifiable and auditable for consideration. In addition to these factors, general market risk assessments, foreign exchange risk and country credit worthiness assessments are also reviewed as indicators of whether financiers are comfortable with the inherent risks. As indicated by Project Finance - Key Concepts (2015), the World Bank concurs that all risks cannot be completely mitigated and financiers do indeed accept certain risks. The success of long term, high value often technologically sophisticated project financing arrangements, can never be fully guaranteed with tenors extending to periods commonly in excess of 15-20 years.

Around 25% of the respondents provided that the assessment of the participants or project partners was a key deciding factor when providing project financing. If the criteria utilised by financiers are not met by the project partners, the probability of the project financing transaction being declined is significantly higher. The details of the criteria used will be discussed in the section below.

6.1.3 Consortium and Project Sponsor Risk Factors

The risk identification process is complicated by huge financial investments, long project execution cycles, several types of resources and stakeholders involved in the process as well as unstable political and economic environments (Guofeng et al., 2011). The line of questioning to the interviewees was intended to discover the criteria utilised to assess the SPV and Project Company members. Asenova and Hood (2006) explore the reasons why such arrangements like an SPV or Project Company fail. In the context of the Project Finance Initiative (PFI), a type of project financing arrangement applied in the United Kingdom (UK), the authors found that failure to perform a rigorous assessment of the project participants was a reason for project failure. However, the criteria used for the assessment was beyond the scope of the study conducted.

The respondents in this research study, presented in Table 5, concur that such an assessment of project participants is important. What the respondents also provide is the criteria used from a financier's point of view with 11 out of the 15 respondents citing general knowledge, experience and prior history of project participants as important assessment factors. External consultants, corporate knowledge base of the financing institutions and experience in the industry guide this assessment. The key criteria provided are the experience and history of the project participants in the industry as well as a proven track record with the technology of the project. Prior successes are rigorously analysed as well as their presence in the country of project execution. Majority of interviewees argued that prior successes in other countries and markets is not an automatic advantage as each country has local political, legal and regulatory specificities that can only be understood by a local presence and history. Furthermore, the financial robustness of the balance sheet to absorb possible negative impacts is tested as well as prior behaviour in the event of project problems.

The respondents indicated the importance of the human resource capacity and capabilities of the contractors in the project execution country. With labour laws deferring per country, consistent access to the required skill set over the long tenor of the project is paramount. With the criteria provided by the expert financiers interviewed, when questioned if these practices are creating barriers of entry into the project execution market for smaller contractors, financiers did agree that the criteria is very restrictive and does not allow for smaller companies to be considered as project partners. What was strongly indicated by around 25% of the respondents was that smaller companies will need to partner with larger more robust partners that have the financial might, market experience and knowledge as well as rigour to withstand project penalties if they arise.

Laishram and Kalidindi (2009) have developed the Desirability Rating Analytical Tool (DRAT) using Choquet Fuzzy Integral, where various parameters that financiers take into consideration are input that allows for a decision to be reached. While value adding, such sophisticated analytical tools are not, in fact, being utilised by the financiers interviewed to make decisions on project financing. External consultants are relied upon to gather the data on the SPV and Project Company members as well as the knowledge and experience of the financing experts in the organization based on

prior knowledge and experience with the participants under consideration is utilised to base financing decisions. This indicates a level of subjectivity applied to decision making but also allows for a generalization of the identified criteria to be applied to project participants.

6.1.4 Consortium and Project Sponsor Minimum Criteria

Helliar et al. (2001) argue that managers with decision making power show loss aversion rather than risk aversion focusing on the size of any possible loss rather than calculating different outcomes of decisions while Miller et al. (2008) argue that risk management is a way of making the future uncertainties manageable in the present. The findings to this question, presented in Table 6, viewed through the lens of the above literature, provide mixed opinions about whether specific minimum requirements are applied to SPV or Project Company participants. 7 out of the 15 respondents did indicate that subjectivity is applied to the ability and experience of the potential participants but no minimum quantitative values are applied. A further one third of the participants stated that no minimum criteria are applied with any weaknesses in the participants identified requiring additional mitigation measures which is substantiated in the literature with Alonso-Conde et al. (2007) arguing that financiers are in a position of power at this stage and are able to exert sufficient pressure to ensure appropriate mitigation measures from their perspective.

An interesting outcome that is not clearly addressed in the literature review on the topic is that of the potential participants being rated with a determination made as to their appropriateness based on the rating. The rating consists of a credit worthiness check for each participant, which is then compared to the project as a whole to ascertain acceptable levels of risk, which is subjective in nature and differs from one financing institution to another. The data consolidated includes both external credit agencies as well as internal financial institution sources. Also mentioned was the situational aspect per project. As every deal in every country is different, any general framework applied has to be viewed in context to be of value in the assessment process.

6.1.5 SPV/ Project Company Board Members

In the study performed by Akintoye and Chinyio (2005) on two UK hospital case studies, the authors found that experience in the type of PPP proved to be quite effective in managing risk with the use of checklists and risk registers. Experience in the type of market and industry as well as the required SPV or Project Company structure is the important element as opposed to the actual board members of the SPV or Project Company. This seems to be the case due to no real direct involvement of the board members with the execution of the project. However, checks are done on the board members to ascertain the individual's good standing, assessment of any fraudulent behaviour, possible involvement in money laundering, the management experience of the board member as well as the long-term involvement in the SPV or Project Company. Long term involvement of board members provides a degree of stability and affords quicker decision making processes.

What was indicated as an important consideration, as presented in Table 7, instead of the board members per se; was the knowledge and general skill set of the management team who is responsible for the construction and operations of the facility.

6.1.6 Project Financing Minimum Criteria

The results in Table 8 highlight the complex and rigorous due diligence assessments involved in financing arrangements (Dixon et al., 2005). In addition to the complexity, the impact of the financial crisis on financiers include more risk-averse policies that may require government guarantees in the event of sponsor difficulties to service debt and higher loan margins in place as a risk mitigation strategy (Bailey et al., 2009). The results regarding the provision of debt and equity align with the literature in that both debt and equity are not provided simultaneously in the same project financing transaction. The reasons cited by the experts interviewed were the increase in the risk profile by having both debt and equity in one transaction, but also the concern of a conflict of interest arising. The commercial or investment bank that provides equity financing, as a shareholder the objective is to maximise return on equity whereas as the banking institution providing senior debt financing, the objective is to ensure that the debt owed is serviced.

In general, this study has found that no specific minimum criteria are required before the provision of project financing. Broadbent et al. (2008) argue that uncertainty is an unclear future state and there is no possibility of calculating a financial impact whereas risk allows for the calculation of a financial impact in the event the risk materialises. This applies to known risks that can be quantified. These known risks that represent some important areas of consideration before project financing is approved include forecasted cash flow of the SPV or Project Company and the financial structure and contract arrangements included in the transaction. A review of the financial indicators present in the business plan provided must be robust such as the debt service reserve, liquidity reserves for maintenance and decommissioning, covenants and distribution, equity level and capitalization as well as the refinancing probabilities.

Cheng et al. (2007) argue that the many credit assessment tools need to be regularly re-calibrated to take into consideration the ever changing business environment. Minimum criteria are scenario specific and are entirely dependent on the context of the project financing transaction being considered.

6.1.7 Greenfield vs. Brownfield Investments

When considering developed, developing and emerging markets, the risk profiles in terms of financing long term high value projects differs significantly. Table 9 indicates the results of whether there is a preference of financiers to fund Greenfield or Brownfield projects. From the experts interviewed, 40% indicate no preference at all while only 13% indicate Greenfield and Brownfield preference respectively. This is rather surprising taking into consideration the risk aversion of financiers (Bailey et al., 2009). Buscaino et al. (2012) present a model of collateralised debt obligations where underlying risk in project portfolios such as market and completion risks play an important role in collateralizing debt obligations. Based on the above literature, the expectation is one of providing finance for Brownfield projects as opposed to Greenfield projects which is not the case from the results.

When providing financing for Brownfield projects, there is an established facility that is operational and is usually being renovated. The risk profile is far lower due to the facility already earning cash flow which can be assessed. The inherent risk in Brownfield, however, is possible latent defects that are present from the initial

construction that are not detected before financial close of the new project financing transaction.

The financing of Greenfield projects pose the full range of risks from initial construction, project management, operations, non-financial risks and the uncertainty present in long tenor infrastructure projects. What was found from the responses was that Brownfield projects are commonplace in developed markets while Greenfield is more prominent in developing or emerging markets due to the lack of infrastructure.

Even with the reduced risk present in Brownfield projects, majority of the financiers interviewed agree that there is no preference and both types of financing are assessed on a case by case basis.

6.2 Research Question 2

What strategies are used in the allocation and mitigation of financing risks during the life cycle of the project?

The context of the set of questions posed relating to research question 2 was to develop a clear understanding of what approaches financiers have implemented to transfer risk to other parties in the project financing arrangement. Drawing from the literature review performed in Chapter 2, risks are shared between the contractual parties of the project financing arrangement (Broadbent & Laughlin, 2005). The key principles of PPP's, being a specific type of project financing arrangement, dictate that risks should be transferred in its entirety away from the concessionaire or public granting authority to the private sector (Asenova & Hood, 2006) whereas the view of Her Majesty's Treasury is that risk should be allocated to the party best suited to manage such risk (The Green Book, 2003). De Palma et al. (2012) offer a deferring perspective where risks should be allocated to the parties that have the most information regarding those risks.

The discussion of the results found in Chapter 5 follows where approaches applied in the different contexts by financiers are investigated to add to the existing literature a clearer view from the perspective of a financier.

6.2.1 Country Lending Limits

Commercial and investment banks enter into financing transactions that are considered bankable in context of the country or market. Some markets tend to be more desirable as opposed to others and the concept of country lending limits applied by the bank was explored with the respondents.

The findings in Table 10 provide a mixed result, with 53% of respondents indicating positively that country lending limits are calculated and applied to each country the financing institution is active in. These respondents indicate the lending limits are based on three broad criteria namely; the foreign currency debt ability of the country in question, the local currency debt and the legal and regulatory risk rating. From the respondents who indicated positively that country lending limits are applied, majority agreed that these limits were more for guidance purposes rather than firm ceilings.

Seven out of the 15 interviewees report that country lending limits are project specific and depend on the significance of the project to the country's economy. In the event that there are multiple projects being financed in the same country, where there is an indication that the country lending limit could be breached, any additional project financing options need to be justified to the financing institutions Credit Committee. The respondents were firm in their view that consideration towards the amount of money already present via financing in the country or market, the type of project partners involved in the transaction are considered and with the detailed information and justification, country lending limits can be set aside to accommodate lucrative financing transactions based on the institutions management judgement being applied.

Analysing the above results together with the literature available that mentions the costs of financing (Girardone & Snaith, 2011) as opposed to the levels of possible financing provided, the above findings add to the literature by highlighting the inner considerations of financiers and the subjective nature of the analysis that is applied to each financing transaction.

6.2.2 Non-Financial Risk Assessments

As important as financial risk consideration is in any project financing arrangement, financiers are very keen on identifying the non-financial risks that could impact the

project. The results in Table 11 overwhelmingly indicate that 12 out of 15 respondents agree that the major non-financial risks to be considered are political, legal and regulatory risks in the country which aligns with the study concluded by Ng and Loosemore (2007). For financiers to be able to allocate this risk effectively, an in-depth understanding of the risk posed needs to be understood. For this purpose, external legal, technical and market consultants are retained to provide initial analysis before financial close as well as continuous reports during the life cycle of the project tenor. Retaining local consultants provides a clearer understanding of the environment in country as opposed to retaining international consultants with no local visibility.

From the results presented, the potential impact of a sudden negative shift in the political stability or the robustness of the regulatory environment is transferred by financiers to political insurance providers such as Export Credit Agencies (ECA's). Broadbent et al. (2008) indicate that even with the most sophisticated risk analysis and assessment tools, not all risks can be mitigated and transferred at contract bid and inception phase. Based on pervading logic, only risks that can be measured are quantified and assessed whilst risks that are non-financial in nature, e.g. political, legal and regulatory shifts, is not given rigorous consideration. Respondents indicated that in markets with a higher assessed risk profile; political insurance coverage of up to 95% is required for financing to be provided. The remaining 5% risk is borne by the financier.

Bing et al. (2005b) argue that in general the macro-level risks such as political, social, economic, legal and other "exogenous" risks should be allocated to the public sector while micro-level risks such as, project operational related and other "endogenous" risks should be allocated to the private sector. This study highlights that with political, legal and regulatory risk, such allocation of "exogenous" risk back to the sovereign authority in country provides very little assurance and risk transfer if the legal framework in country is not strong.

The study conducted by Corielli, Gatti and Steffanoni (2010) found that prior to financial close of project financing transactions, both political climates as well as clearly defined non-financial contracts are closed with the project sponsors. The quality and strength of the non-financial contracts as well as the legal and regulatory framework provide the benefit of lower cost of debt financing which enables the SPV or Project Company to

realise higher debt to equity ratios. The results of this study align with the above literature with 27% of respondents indicating that the non-financial contracts are reviewed for quality and enforceability.

6.2.3 Guarantees/Securities

Hodge and Greve (2005) highlight the complex structure of contract arrangements that are closed and the enormous amount of effort that commercial and investment institutions go to in allocation and mitigation of risks. In addition, Asenova and Beck (2010) and Keating (2004) found in separate studies that the complex contract structures that are implemented in a project financing arrangement is a tool utilised by financiers to avoid the risks that are transferred to them by transferring these risks to the subcontractors. How this is achieved in practice was beyond the scope of the above studies.

The results presented in Table 12, add to the knowledge base of existing literature by identifying various types of guarantees and securities utilised by financiers to achieve appropriate risk mitigation. From the participants, 33% reported using parent company guarantees of the project sponsors to mitigate any possible losses that the project sponsor as a subsidiary make incur. Performance guarantees state the milestones that need to be achieved within specified project timelines. If not met, performance guarantees are drawn down by financiers to buffer and loss of income from future cash flows due to project delays. Export Credit Agency guarantees or international bank guarantees for political risk coverage such as the World Bank. An important point to note is that these types of political risk insurances cover at maximum 95% of the project impact costs. Financial covenants are closed with the senior debt financier in the event that the appointed construction company is not able to complete construction. This covenant provides an agreed timeline for equity shareholders to find a solution before the senior debt financiers exercise their step in clauses.

A finding from this study conducted indicates that the volatility in certain markets, in particular, emerging markets creates the need for financiers to insist on off-shore bank accounts and contractual agreements in an attempt to limit the in country risk. When taking into consideration the uniqueness of every project financing transaction, the results indicate that 27% of respondents concur that the guarantees and securities that

are required by financiers across deferring project types and markets are similar in nature with additional securities required in countries rated as higher risk.

6.2.4 Frequency of Risk Assessments

An understanding of the frequency with which long term high value projects are monitored and consistently assessed for risks over the whole life cycle of a project financing transaction is provided in Table 13. Most respondents indicate that risk assessments continue throughout the life cycle of projects but provide mixed views as to the necessity during differing stages. Keating (2004) as well as Asenova and Beck (2010) provide that the complex contract structures that are implemented in a project financing arrangement is a tool utilised by financiers to avoid the risks that are transferred to them by in turn transferring these risks to the subcontractors via the SPV. With this complex web of contracts, an effective contract and risk management process needs to be put in place by the financier to assess if the risk transfer has been successful.

The results from the interviews conducted and presented in Table 13, indicate that one third of respondents agree that quarterly performance reporting and measurement of KPI's is commonplace and is dependent on the project ratings. Projects that tend to have poor project ratings have increased financier attention and reviews whilst projects that have been operational for at least one year and have no indication of problems have lower financier attention and review. The construction phase was reported as a particularly high risk phase which seems to be susceptible to increased risk. Financiers interviewed reported that risk review and monitoring during construction phase ranges from weekly to monthly through to quarterly. The frequency seems to depend on the project rating that is assigned.

Following the completion of the construction phase and successful project hand over, the frequency of review and monitoring reduces to quarterly or even annually for projects that have a record of trouble free operations. This takes usually a period of one year of operations to ascertain. In the event of issues that are of concern to the financier such as the operations facility manager becoming insolvent or the cash flows from operations are insufficient to service the debt obligation, more frequent reviews

and monitoring is carried out with pressure applied to the management team of the SPV or Project Company.

Abednego and Ogunlana (2006) posit that with good governance practices in place, the contracting parties are more inclined to be satisfied with the risk allocations assigned to them as long as there are minimization clauses in place. Good governance of such long tenor contracts is rather a difficult task as the core team that were involved in the initial stages of the contract negotiation and financial close from the financiers team tend to move on to other projects or even leave the financial institution and are not available throughout the whole life cycle of the project tenor. The risk assessment process can be hampered by the lack of stability in the team. Common practice in commercial and investment banks is to have transaction originator teams that hand over the project to the risk managers after financial close. In the absence of good governance, risk management is reactive and based on solving problems that arise rather than proactively assessing and reviewing risks on an ongoing basis.

An interesting outcome from the analysis of responses was the identification of a risk matrix that is used by the risk management team of the financier. This is however; a highly confidential and regulated document and the respondents provided generalised information only and were reluctant to provide specifics of prior or ongoing projects. This research project adds to the scarce literature available on the financiers risk management processes by creating a general risk framework that identifies the frequency with which risks are assessed over the life cycle of a project financing transaction.

6.2.5 Exit Strategies

Table 14 presents the results from the topic of exit strategies that financiers apply. Long term high value project financing transactions provide for vast uncertainty not only in terms of market dynamics that affect the project but also shifting strategies of the financial institution itself. The inherent risk levels at the beginning of the project financing transaction is very high with risk reducing after successful completion of construction and problem free operations (Zhu & Chua, 2012).

The analysis of the responses has found that targeted exit strategies at the beginning of a project financing transaction are not in scope. The financiers interviewed indicated a long term strategy approach of their financial institution rather than a short term financial gain and exit. This view is related to the institution's strong brand and reputation in the financing market as a partner rather than a profit taker. Exits are usually considered when risk assessments are done and the prognosis is dire. This puts the financial institution in a difficult position as approaching the market to sell a project is a red flag indicator that there are project problems. This then necessitates offering the project to another financial institution at a discount, sometimes significantly so. Also, 40% of the financiers interviewed indicated that an exit from the financing transaction would be considered at the highest point of profitability. In this way, the continued sustainability of the project is ensured while brand and reputation of the institution remain intact with no losses incurred.

Under certain contract clauses, exit via financing termination is possible if certain contract milestones are not being met and the risk analysis does not indicate the probability of project stability in the future. There is a mitigation step that takes place before project foreclosure which entails project restructuring. This could take the form of step in clauses where the financing institution removes the construction or operations company and replaces with another. In the vast majority of cases, the regular review and monitoring of the project allows for early detection of possible problems and allows the financier to interact with the construction or operations company to implement a restructuring plan. The results provide insight into the strategic imperatives from a financier's point of view.

6.2.6 Risk Mitigation Strategies

Asenova and Beck (2003) found in their study carried out on 14 financial institutions in the UK that the senior financial experts manage risks by mitigating them through contractual agreements with the various parties involved and insisting on volume caps on liability being put in place for the construction and facilities management partners. Asenova (2009) found in a later study of the same 14 financial institutions that the institutions remain risk averse; base project financing decisions of risk on their prior experience in similar projects; ensure that major risks are allocated to the project partners; and even attempt to manage risks that relate to third parties in the project

financing arrangement. The results presented in Table 15 indicate that to effectively transfer risks to the other parties in the financing arrangement, financiers are required to gain a detailed knowledge of the partners to the transaction. This detailed knowledge allows for the contract negotiations to be fair and ensuring that the risks that are transferred are appropriate and the contract partner is able to absorb such risk if it materialises.

Akintoye and Chinyio (2005) found in two UK hospital case studies that the financiers did not place too much concern on the probabilities of the risks taking place but instead on what mitigating factors can be implemented. In these two studies, the authors found that experience in the type of PPP proved to be quite effective in managing risk with the use of checklists and risk registers. From the respondents' responses to the question of minimum risk mitigation strategies in place, what materialised as important mitigation mechanisms were obtaining insurance coverage for political uncertainties, interest rate and foreign exchange hedging contracts closed, a reduction of the lending amount in the case of country risk being assessed as high as well as the requirement of parent company guarantees that need to be in place.

In terms of gaps in risk cover that are identified during the life of a project financing arrangement, that was not initially identified or mitigation strategies put in place at financial close, the respondents have indicated that there are no particular thresholds that are applied. Flexibility is required as the newly identified risks may not materialise and therefore may not require additional coverage.

6.2.7 Newly Identified Project Risks

Table 16 presents the results of how newly identified risks during the life cycle of the project are handled. The indication from the respondents was that such newly identified risks should not in essence happen. The reasoning provided is due to the inordinate effort that is put into the contract negotiation phase where the financiers do scenario analyses, draw on technical and legal expertise from external consultants as well as internal knowledge from prior financing transactions. In the event that a newly identified risk does materialise, which was due to an oversight, and then flexibility is required from all parties involved in the project financing transaction.

The process that was identified via the interviews would be to involve legal counsel and external consultants to provide an assessment of the probabilities of the newly identified risk materializing. These probabilities are assessed from the financier's point of view where the impact on the ability to service the debt is considered. If the financiers are of the opinion that the newly identified risk will have severe impact on debt repayments, urgent action is taken. The first step is usually to negotiate with the SPV or Project Company members and discuss the options to mitigate this risk. Various options such as additional equity from the project sponsors may be required for the financiers to agree to extend the loan tenor or contract re-negotiations can be entered into for portions of the existing contracts.

In the event that negotiations with the SPV or Project Company members are unsuccessful and the risk is not mitigated, the financiers, in the worst case scenario, have the option of either sell the project or accept financial adjustments which will result in reduced project margins for the financiers.

6.2.8 Impact of Financiers Perceptions

Risk perceptions are closely linked to the psychological concept of risk tolerance which is made up of both emotional and cognitive aspects which leads to the argument that financial risk decisions are not based purely on conscious thought processes (Greenwald & Banaji, 1995). The global financial crisis changed the face of the financing industry when debt and equity financiers were exposed to the global market economic downturn with some cases major impact to the ability to secure debt repayments (Asenova & Hood, 2006). The financial crisis shaped the lending criteria used by debt financiers in project financing contracts to the point where the risk aversion to such high levels of debt come at higher financing costs.

The results presented in Table 17 indicate that 27% of respondents agree that project financing decisions are based on the market experience of the financier. There are higher levels of confidence in developed markets as opposed to emerging markets based on prior project financing transactions that the financier has been involved in. Due to the risk aversion that has been prevalent in the commercial and investment bank arena since the financial crisis, government guarantees in the event of sponsor difficulties to service debt as well as higher loan margins in place as a risk mitigation

tool is common practice. From the responses received, the financiers interviewed did agree that with the appropriate insurance coverage, contract structure and detailed knowledge of the contract partners did provide some assurance to alleviate concerns based on prior experience.

With the additional requirements placed on commercial and investment banks by Basel III, financier's perceptions are further influenced with stricter requirements in place for project financing transactions to meet the common equity capital and capital ration requirements. The findings of this section of research add to the scarce knowledge on how financiers prior experience impact financing decisions in certain markets and industries.

6.3 Research Question 3

What are the top five risks in a project finance arrangement from the point of view of the lender?

Research question 3 was posed to provide some clarity, understanding and awareness from the point of view of project sponsors and project financing participants of what the top requirements are from a financier's point of view. This information not only adds to the knowledge pool available in academia relating to financiers views on risks in project financing but also to the drafting and development of business plans and rationale presented by project sponsors to senior debt financiers.

6.3.1 Top 5 Project Financing Risks

From the results presented in Table 18, political and sovereign risk has been the identified as the top risk that was identified by the financiers interviewed. 73% of the 15 financiers interviewed indicated that this risk is, in most cases, the deciding factor especially in emerging markets where the political environment is somewhat unstable and has been assessed as not robust or enforceable. Political or sovereign risk, especially over the long tenor of project financing transactions being the initial key consideration, before other factors are even considered is an addition to the current literature available on project financing. The increasing literature available addresses the type of risks such as construction, operations and project governance risks and who these risks are allocated to. In the prominent journals reviewed by the researcher,

political or sovereign risk as a key consideration for financiers when assessing provision of project financing is relatively new.

When probed for further details, respondent provided examples such as civil war, military coups and social unrest as major concerns in countries that do not have an extended history of political stability. Over the long tenor of such project financing transactions, the possibility of social unrest or civil war is not a predictable event and in most cases the financiers are able to insure against such political or sovereign risk via international banking institutions such as the World Bank. Not all of the risk is, however, mitigated and some risk still lies with the financiers.

Forty percent of the respondents indicated construction risk as the second highest priority from a financier's perspective. From the analysis of the information provided, if a project is not able to reach construction completion and handover for operations to begin, then the possibility of the senior debt providers recouping the financing provided is impossible. This risk is particularly evident in new technology which is still untested in the industry. With new technology that is either untested in the market or still relatively new in the country of project execution, the possibility that the construction partner is unable to get the facility to connect to the grid in the case of power plants or wind farms is very high. This is a significant construction risk as the technology then does not work. Linked to this risk is that of cost overruns and time delays which the financiers do not consider a major risk as mitigation clauses via the contracts are in place to minimise such risk via performance and parent company guarantees.

A similar 40% of respondents indicate commodity and foreign exchange risk as a top five risk factor from a financier's point of view. Commodity risk is not mentioned in the review of current literature performed by the researcher. When questioned for details, the respondents indicated that when executing projects in developed, developing and emerging markets the availability of the required materials for the completion and maintenance of the facility over the long tenor of the project financing arrangement is not guaranteed. Estimations performed of the cost factors could be greatly understated as price escalations of certain materials jeopardise the margins of the project. In the same context, foreign currency fluctuations put major strain on the viability of the project over the long term. With foreign exchange hedges in place, most of the risk is

indeed mitigated but the major concern for financiers, lies in the fact that in certain markets, the loan agreements are generally concluded in either EURO or US Dollars. The country where the project is executed in will earn revenue in the local currency but will be required to repay the loans in either EURO or US Dollars. In some case where the fluctuations in currency are significant, even though the project is sound and achieving the forecasted cash flows in the local currency, the returns in EURO or US Dollars may show lower margins than anticipated and even losses.

Legal and regulatory risks have been cited as top risk number four out of the top five risks by the expert financier interviewed. With stable environments where the legal framework has been proven to be solid, reliable and impartial, financiers place a lower risk rating while higher risk ratings where the trend or history has shown that the legal and regulatory framework is not dependable in cases of dispute in the courts.

When probed for further details, examples such as taxation changes made in the country during the life of the financing transaction as well as changes in the government's stance on subsidies provided for renewable energy have significant impact on the financier's ability to receive repayments for the senior debt owed. In some cases, losses range in the billions of US dollars.

Top risk number five has been identified by the respondents as the strength of the contracts closed. At financial close, all contractual agreements have been closed in a certain format with the legal counterparties both within the country of project execution and internationally where the financing is being provided. Poor quality legal documentation in country, or a change in the legal framework during the life of the project financing transaction, can create discrepancies or outdated contracts. This risk is usually only brought to the attention of the financiers when a risk in the project materialises and the quality or strength of the contract documentation cannot be relied on.

6.4 A Financier's Assessment Framework

On consideration of the analysis and discussion of the results above, a consolidation of the most relevant and important risks from a financiers point of view is presented in the assessment framework below.

Table 19: Financiers' Risk Assessment Framework

Risk Category	Risk Factor	Risk allocation/mitigation strategy	Assessment frequency
SPV / Project Company	• Structure and background information • Management team • Labour risks • Compliance • Ability and experience • Creditworthiness and financial robustness • Commitment to project	• Partner risk ratings • Parent company guarantee • Share pledge	• Pre-financial close • Ad-hoc based on triggering event • Annual rating review
Project Location	• Political stability • Robustness of legal system • Track record of regulatory system • Economic factors • Social impacts • Environmental conditions	• Political risk insurance • Export Credit Agency cover • Maintain off-shore project bank accounts	• Pre-financial close • Ongoing quarterly monitoring • Annual rating review
Industry	• New / unproven technology • Market growth projections • Demand / Supply analysis	• World Bank insurance coverage • Exit strategy	• Pre-financial close • Ad-hoc basis • Annual

	• Degree of competition • Inability to operate facility upon completion		review
Contracts & Agreements	• Tender documentation • Project Agreement with concessionaire • Land use rights • Facilities service provider agreements • Design and construct contractor agreements	• Performance guarantees • Licenses approved • Termination provisions	• Pre-financial close • Ad-hoc based on triggering event
Construction phase	• Level of subcontracting • Project time delays • Cost overruns • Commodity risks • Strength of balance sheet	• Completion guarantee • Step-in clauses	• Range from weekly - quarterly
Project partners	• Financial robustness of partners • Prior experience in market • Quality of technical execution of contracts • Behaviour in execution of prior	• Parent company guarantees • Letters of credit	• Pre-financial close • Intensive quarterly monitoring

	contracts • Human resource capacity and capability		
Financial	• Minimum debt service cover ratio • Combined scenario analysis modelling • Foreign exchange risk • Cash flow projections • Country lending limit	• Minimum debt provision • Refinancing • Sale of debt	• Pre-financial close • Ongoing basis – at least quarterly

CHAPTER SEVEN: CONCLUSION

7.1 Introduction

The preceding chapter discussed the findings as presented in Chapter 5 relating to the risk identification, assessment, allocation and mitigation of risks from a financiers point of view. The discussion of the findings were analysed through the lens of the literature review that was presented in chapter 2. This chapter will provide a brief review of the research problem and objectives, as set out in Chapter 1; will aim to provide a summary of the key findings of this research project; introduce the financiers assessment framework derived from the finds of the research, provide recommendations to SPV and Project Company members taking into consideration the limitations of the research study and recommendations for future research.

A summarization of the study will be provided at the end of this chapter as a conclusion.

7.2 Research Objectives and Findings

Infrastructure development has been identified as one of the major hindrances worldwide to the economic growth and social development of countries (World Bank Group, 2014). Traditionally, infrastructure development has been funded by governments using taxation revenues. However, the rapid increase in urbanization, the increasing public debt to GDP ratios as well the inability of the public sector to deliver infrastructure projects efficiently has resulted in a shortage of infrastructure spend (OECD, 2014). With the increasing technical, legal and regulatory complexity of long term high value infrastructure projects, private capital in the form of project financing has been more frequently used to bridge the gap (Bank for International Settlements, 2014). The formidable risks that are inherent in such long term high value structured financing transactions together with the risk averse nature of the financiers providing the senior debt results in deferring objectives of parties to the structured financing transaction (Carbonara et al., 2014).

Being a very important party to the structured project financing transaction, scarce information is available in literature as to the processes applied by financiers during the project financing due diligence. The objective of this study was to understand

these processes as well as the risk assessment processes during the life cycle of the project from a financier's point of view. The outcome was to create a generalised risk assessment framework that encompasses the focus areas of the due diligence and risk assessment management used by financiers in the decision making process.

For the collection of data, 15 in-depth semi-structured interviews were conducted with financing experts in several financing hubs across the world covering a range of developed and emerging markets from the multi-national bank chosen. The risk identification, assessment and management process applied by financiers to project and structured financing transactions is a highly restricted, confidential and subjective process which not only differs from one banking institution to another but also from one project transaction to another.

The key findings of the research study show that the majority of project and structured financing transactions are indicated as being successful with only rare instances noted of transactions being unsuccessful. Unsuccessful projects have been found to be as a result of a combination of risks materializing at the same time or in close succession as opposed to one risk materializing. Political and sovereign risk, when deemed too high, is the most prominent reason for project financing transactions being declined by financiers. Both debt and equity financing is not as a norm, provided by the commercial or investment institution in the same project and structured financing transaction due to the conflict of interest that arises. In terms of financier's preference for Greenfield vs. Brownfield transactions, no preference was found in this study.

While country lending limits are calculated for each country, financiers utilise the limits as guidance and not a rule to be applied. Breaches are acceptable with approval from internal credit committees. The major non-financial risks identified in this study that impact financier's decision making process during the due diligence is the political, legal and regulatory risks of a country. The utilization of off shore banks accounts in countries with high risk profiles is another key finding of this study. The frequency of risk assessments has been found to be project dependent. Project ratings indicate the frequency of review whilst the construction phase is always deemed high risk and reviewed and monitored with higher frequency such as monthly. Project and structured financing transactions has been found to be rather subjective with the financiers

perspectives from prior transactions, knowledge and experience in the country and market being a strong player in the decision making process.

The top 5 risks from a financier's point of view, when performing a due diligence on project and structured financing transactions was found in this study to be; political or sovereign risk, construction risk, commodity and foreign currency risk, legal and regulatory risk and the strength and validity of the contracts closed. From all the information gathered and analysed and the results presented, the generalised financiers risk assessment framework was created and presented in this research study.

7.3 A Financier's Assessment Framework

The current literature in the field of project and structured financing focuses on "what" risks are allocated to which participants an "how" these risks are allocated, concentrating on the construction, operational, and financial risks that impact the contractors as well as the public sector concessionaire. Financiers providing senior debt, an important party to the transaction and being risk averse, apply stringent due diligence processes in identifying bankable transactions. Scarce literature is currently available addressing the financiers' risk identification, assessment, allocation, and mitigation strategies in long term high value project financing transactions.

As every project and structured financing transaction is unique, the general framework that was presented at the end of Chapter 6 has to be viewed in the context of particular countries and markets to which project sponsors or other interested parties, such as the public sector, apply it. This will ensure it will be of maximal value in the decision-making process.

The general framework summarises the risk identification, assessment, allocation, and mitigation processes that were identified by the financiers interviewed as important in their decision-making process. Understanding that this is not an exhaustive listing and taking into consideration that each project and structured financing transactions have specificities that require careful consideration, the presented framework provides a lens for project sponsors as well as public sector stakeholders to utilise in the

structuring of contracts to attract increased private sector financing of infrastructure projects.

7.4 Future Research Areas

From the data gathered and analysed for this research project, two interesting areas of future research can be identified. The interviewees indicated that an extensive range of risks are considered during the due diligence phase and due to the risk aversion tendencies of the financiers, these risks are transferred as well as contribute to the higher internal rate of return ratios demanded by financiers. Risk pricing is therefore an area of valuable future research in that it will not only provide transparency of the risk pricing strategies employed by financiers but also assist the project sponsors and public sector to make more tangible informed decisions around value for money when considering project and structured financing transactions.

This research study contributes to literature by identifying the criteria used by financiers when assessing project financing partners in the SPV or Project Company. This research found that financiers prefer working with familiar contracting partners with the necessary size, stability and capacity as well as a preference for familiar markets and established technology. While these preferential screening practices serve to reduce risks for the financiers, smaller companies are excluded from the project and structured financing market. The adverse impact of these practices on the competition in the project financing arena would be valuable. The ability of these smaller companies to bid for and successfully obtain project financing would also be a valuable future contribution to literature.

7.5 Limitations of the Research

As with all research methods, limitations are present. The researcher is cognisant of the fact that even though the findings of the research project can be generalised to a wide range of different project financing transactions and applied in deferring markets, financiers are not a homogenous group. The views of the experts obtained are inherently subjective in nature which is influenced individually by the knowledge and experience in this field of study.

This research study focused on the broader definition and application of project financing in a wide variety of markets. The complexities and variations inherent in the different types of project and structured financing transactions are infinite.

The financier's assessment framework presented, while general in nature provides a solid basis for application to a wide range of project financing types and markets, while viewed in context. The limitation, however, is that a select number of experts from around the world were interviewed in the field of project and structured financing from a single multi-national bank with financing interests in several markets.

7.6 Conclusion

The importance of infrastructure development for the long term economic growth and social development of countries worldwide is evident, as indicated in Chapter 1. Due to rapid urbanization, traditional government funding, via taxation revenues, for infrastructure projects is not sufficient. Private funding via project financing is increasing with financiers being an essential party to these transactions.

In this research study, the risk identification, assessment and mitigation strategies employed by financiers were explored. The risk management processes during the life cycle of the project financing transaction was examined and a resulting generalised risk framework was created that combines the due diligence and risk management process. This generalised framework is an addition to the scarce literature available on the risk processes applied by financiers.

REFERENCES

Abednego, M. P., & Ogunlana, S. O. (2006). Good project governance for proper risk allocation in public-private partnerships in Indonesia. *International Journal of Project Management*, *24*(7), 622–634. http://doi.org/10.1016/j.ijproman.2006.07.010

Akintoye, A., & Chinyio, E. (2005). Private Finance Initiative in the healthcare sector: trends and risk assessment. *Engineering, Construction and Architectural Management*, *12*(6), 601–616. http://doi.org/10.1108/09699980510634155

Alonso-Conde, A. B., Brown, C., & Rojo-Suarez, J. (2007). Public private partnerships: Incentives, risk transfer and real options. *Review of Financial Economics*, *16*(4), 335–349. http://doi.org/10.1016/j.rfe.2007.03.002

Asenova, D. (2009). *Risk management in private finance initiative projects*. Saarbrucken, Germany: Lambert Academic Publishing AG & Co.

Asenova, D., & Beck, M. (2003). The UK financial sector and risk management in PFI projects: a survey. *Public Money & Management*, (July), 195–202. http://doi.org/10.1111/1467-9302.00368

Asenova, D., & Beck, M. (2010). Crucial silences: When accountability met PFI and finance capital. *Critical Perspectives on Accounting*, *21*(1), 1–13. http://doi.org/10.1016/j.cpa.2008.09.009

Asenova, D., & Hood, J. (2006). PFI and the Implications of Introducing New Long- Term Actors into Public Service Delivery. *Public Policy and Administration*, *21*(4), 23–41. http://doi.org/10.1177/095207670602100404

Association for Project Management. (2004). *Project Risk Analysis and Management Guide* (Second). High Wycombe.

Bailey, S. J., Asenova, D., & Beck, M. (2009). UK public private partnerships and the credit crunch: a case of risk contagion. *Journal of Risk and Governance*, *1*(3), 1–11.

Bank for International Settlements. (2014). *Understanding the challenges for infrastructure finance* (No. 454).

Basel Committee on Banking Supervision. (2006). *International convergence of capital measurement and capital standards : A revised framework*. Basel, Switzerland.

Bing, L., Akintoye, a., Edwards, P. J., & Hardcastle, C. (2005a). The allocation of risk in PPP/PFI construction projects in the UK. *International Journal of Project Management*, *23*(1), 25–35. http://doi.org/10.1016/j.ijproman.2004.04.006

Bing, L., Akintoye, A., Edwards, P. J., & Hardcastle, C. (2005b). Perceptions of positive and negative factors influencing the attractiveness of PPP/PFI procurement for

construction projects in the UK. *Engineering, Construction and Architectural Management*, *12*(2), 125–148.

Blumberg, B., Cooper, D. R., & Schindler, P. S. (2008). *Business Research Methods* (2nd ed.). New York: McGraw-Hill Education.

Borgonovo, E., Gatti, S., & Peccati, L. (2010). What drives value creation in investment projects? An application of sensitivity analysis to project finance transactions. *European Journal of Operational Research*, *205*(1), 227–236. http://doi.org/10.1016/j.ejor.2009.12.006

Broadbent, J., Gill, J., & Laughlin, R. (2004). *The private finance initiative in the national health service*. London : CIMA.

Broadbent, J., Gill, J., & Laughlin, R. (2008). Identifying and controlling risk: The problem of uncertainty in the private finance initiative in the UK's National Health Service. *Critical Perspectives on Accounting*, *19*(1), 40–78. http://doi.org/10.1016/j.cpa.2006.04.006

Broadbent, J., & Laughlin, R. (2005). The Role of PFI in the UK Government's Modernisation Agenda. *Financial Accountability & Management*, *21*(1), 75–97. http://doi.org/10.1111/j.0267-4424.2005.00210.x

Brown, L., & Osborne, S. P. (2013). Risk and Innovation - Towards a framework for risk governance in public services. *Public Management Review*, *15*(2), 186–208. http://doi.org/10.2307/4090969

Buscaino, V., Caselli, S., Corielli, F., & Gatti, S. (2012). Project Finance Collateralised Debt Obligations: An Empirical Analysis of Spread Determinants. *European Financial Management*, *18*(5), 950–969. http://doi.org/10.1111/j.1468-036X.2010.00560.x

Calderon, C., Moral-Benito, E., & Serven, L. (2009). *Is infrastructure capital productive? A dynamic heterogeneous approach* (No. 5682 World Bank policy research working paper).

Carbonara, N., Costantino, N., & Pellegrino, R. (2014). Concession period for PPPs: A win-win model for a fair risk sharing. *International Journal of Project Management*, *32*(7), 1223–1232. http://doi.org/10.1016/j.ijproman.2014.01.007

Cassell, C., & Symon, G. (2004). *Essential Guide to Qualitative Methods in Organizational Research* (Eds.). Sage.

Catalan, M., & Demekas, D. G. (2015). Challenges for systemic risk assessment in low-income countries. *Journal of Risk Management in Financial Institutions*, *8*(2), 118–

130.

Chan, E., & Worth, M. (2011). Basel III and project finance. Retrieved 1 October 2015, from http://www.linklaters.com/pdfs/mkt/london/A13781114.pdf

Chapman, C., & Ward, S. (2003). *Project Risk Management. Processes, Techniques and Insights* (Second). Chichester: Wiley.

Cheng, E. W. L., Chiang, Y. H., & Tang, B. S. (2007). Alternative approach to credit scoring by DEA: Evaluating borrowers with respect to PFI projects. *Building and Environment*, *42*, 1752–1760. http://doi.org/10.1016/j.buildenv.2006.02.012

Corbin, J., & Strauss, A. (2008). *The basics of Qualitative Research* (3rd. ed.). London: Sage Publications.

Corielli, F., Gatti, S., & Steffanoni, A. (2010). *Risk shifting through nonfinancial contracts: Effects on loan spreads and capital structure of project finance deals*. *Journal of Money, Credit and Banking* (Vol. 42). http://doi.org/10.1111/j.1538-4616.2010.00342.x

De Palma, A., Leruth, L., & Prunier, G. (2012). Towards a Principal-Agent Based Typology of Risks in Public-Private Partnerships. *IMF Working Paper*, *LI*(2), 57. http://doi.org/10.3917/rpve.512.0057

del Cano, A., & del la Cruz, M. P. (2002). Integrated Methodology for Project Risk Management. *Journal of Construction Engineering and Management*, *128*(6), 473–485.

Demirag, I. (2009). Keeping PFI on course. *AgendaNI*, (28), 54–55.

Demirag, I., & Khadaroo, I. (2008). Accountability and Value for Money in Private Finance Initiative Contracts. *Financial Accountability & Management*, *24*(4), 455–478. http://doi.org/10.1111/j.1468-0408.2008.00462.x

Demirag, I., & Khadaroo, I. (2010). Costs, outputs and outcomes in school PFI contracts and the significance of project size. *Public Money & Management*, *30*(1), 13–18. http://doi.org/10.1080/09540960903492281

Demirag, I., & Khadaroo, I. (2011). Accountability and value for money: A theoretical framework for the relationship in public-private partnerships. *Journal of Management and Governance*, *15*(2), 271–296. http://doi.org/10.1007/s10997-009-9109-6

Demirag, I., Khadaroo, I., Stapleton, P., & Stevenson, C. (2010). *Public private partnership financiers ' perceptions of risks*.

Demirag, I., Khadaroo, I., Stapleton, P., & Stevenson, C. (2011). Risks and the financing

of PPP: Perspectives from the financiers. *British Accounting Review*, *43*(4), 294–310. http://doi.org/10.1016/j.bar.2011.08.006

Demirag, I., Khadaroo, I., Stapleton, P., & Stevenson, C. (2012). The diffusion of risks in public private partnership contracts. *Accounting, Auditing & Accountability Journal*, *25*(8), 1317–1339. http://doi.org/10.1108/09513571211275498

Denzin, N., & Lincoln, Y. (2005). *The Sage handbook of qualitative research*. California: Sage Publications.

Dewar, J. (2011). *International Project Finance - Law and Practice*. New York: Oxford University Press.

Dixon, T., Pottinger, G., & Jordan, A. (2005). Lessons from the private finance initiative in the UK: Benefits, problems and critical success factors. *Journal of Property Investment & Finance*, *23*(5), 412–423. http://doi.org/10.1108/14635780510616016

E.I. Ezulike, J.G. Perry, & K.Hawwash. (1997). The barriers to entry into the PFI market. *Engineering, Construction and Architectural Management*, *4*(3), 179–193.

Eagly, A. H., & Chaiken, S. (1993). *The Psychology of Attitudes*. Harcourt Brace Jovanovich College Publishers.

Edwards, P., Shaoul, J., Stafford, A., & Arblaster, L. (2004). *Evaluating the operations of PFI in roads and hospitals*. London.

Esty, B. C., & Sesia, A. An overview of Project Finance and Infrastructure Finance 2009 Update, Harvard Business School (2011).

European Union. (2013). *The Europe 2020 project bond initaitive* (No. Regulation (Eu) No 1316/2013).

Fazio, R. H., Roskos-Ewoldsen, D. R., & Powell, M. C. (1993). *Attitudes, Perceptions and Attention*.

Finnerty, J. D. (2007). *Project Financing - Asset-Based Financial Engineering* (Second). Hoboken: John Wiley & Sons.

Froud, J. (2003). The Private Finance Initiative: risk, uncertainty and the state. *Accounting, Organizations & Society*, *28*(6), 567–589.

Gallimore, P., Williams, W., & Woodward, D. (1997). Perceptions of risk in the Private Finance Initiative. *Journal of Property Finance*, *8*(2), 164–176. http://doi.org/10.1108/09588689710167852

Gatti, S. (2013). *Project fiance in theory and practice* (Second Edi). San Diego: Academic Press.

Gillham, B. (2005). *Research Interviewing: The range of techniques*. Maidenhead: Open University Press.

Girardone, C., & Snaith, S. (2011). Project finance loan spreads and disaggregated political risk. *Applied Financial Economics*, *21*(23), 1725–1734.

Grable, J. E. (2000). Financial Risk Tolerance and Additional Factors That Affect Risk Taking in Everyday. *Journal of Business and Psychology*, *14*(4), 625–630.

Greenwald, a G., & Banaji, M. R. (1995). Implicit social cognition: attitudes, self-esteem, and stereotypes. *Psychological Review*, *102*(1), 4–27. http://doi.org/10.1037/0033-295X.102.1.4

Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field Methods*, *18*(1), 59–82.

Guofeng, W., Min, W., & Weiwei, Z. (2011). Study on the existing problems and counter measures of project risk management in China. *Energy Procedia*, (13), 2726–2733.

Helliar, C., Lonie, A., Power, D., & Sinclair, D. (2001). Attitudes of UK managers to risk and uncertainty. *Balance Sheet*, *9*(4), 7–10. http://doi.org/10.1108/09657960110696717

Hillson, D., & Simon, P. (2012). *Practical Project Risk Management : The ATOM Methodology* (Second). Virginia: Management Concepts Press.

HM Treasury. (2003). Appraisal and Evaluation in Central Government. *Evaluation*, (October 2002), 118. http://doi.org/http://greenbook.treasury.gov.uk/index.htm

Hodge, G., & Greve, C. (2005). *The challenge of public-private partnerships: Learning from international experience*. *The Challenge of Public-Private Partnerships: Learning from International Experience*.

Hoffman, S. L. (2007). *The Law and Business of International Project Finance* (Third). London: Cambridge University Press.

Hoppe, E. I., Kusterer, D. J., & Schmitz, P. W. (2013). Public-private partnerships versus traditional procurement: An experimental investigation. *Journal of Economic Behavior and Organization*, *89*, 145–166. http://doi.org/10.1016/j.jebo.2011.05.001

Iossa, E., & Martimort, D. (2012). Risk allocation and the costs and benefits of public-private partnerships. *The RAND Journal of Economics*, *43*(3), 442–474. http://doi.org/10.1111/j.1756-2171.2012.00181.x

Jupe, R. (2011). The Modernisation and Fragmentation of the Uk's Transport Infrastructure. *Financial Accountability & Management*, *27*(1), 43–62.

http://doi.org/10.1111/j.1468-0408.2010.00515.x

Kahneman, D., & Tversky, A. (1979). Prospect Theory: An Analysis of Decision Under Risk. *Econometrica*, *47*(2), 263.

Kayser, D. (2013). Recent Research in Project Finance – A Commented Bibliography. *Procedia Computer Science*, *17*, 729–736. http://doi.org/10.1016/j.procs.2013.05.094

Keating, S. (2004). Public-Private brinkmanship. *Project Finance International*, (September), 27–29.

Khadaroo, I. (2008). The actual evaluation of school PFI bids for value for money in the UK public sector. *Critical Perspectives on Accounting*, *19*(8), 1321–1345. http://doi.org/10.1016/j.cpa.2007.05.001

Khadaroo, M. I. (2005). An institutional theory perspective on the UK's Private Finance Initiative (PFI) accounting standard setting process. *Public Management Review*, *7*(1), 69–94. http://doi.org/10.1080/1471903042000339428

Laishram, B. S., & Kalidindi, S. N. (2009). Desirability rating analysis for debt financing of public-private partnership road projects. *Construction Management & Economics*, *27*(9), 823–837. http://doi.org/10.1080/01446190903222387

Lee, A. (2014). How Basel III impacts ECA backed project finance. Retrieved 1 October 2015, from http://www.iflr.com/Article/3358235/How-Basel-III-impacts-ECA-backed-project-finance.html

Leedy, P. E., & Ormrod, J. E. (2001). *Practical Research : Planning and Design* (7th ed.). New Jersey: Prentice Hall.

McKim, R. A. (2005). Risk Management - back to basics. *Cost Engineering*, *34*(12), 7–12.

McKinsey & Company. (2013). *A risk-management approach to a successful infrastructure project* (No. 52).

McKinsey Global Institute. (2013). *Infrastructure productivity. How to save $1 trillion a year*.

Miller, P., Kurunmäki, L., & O'Leary, T. (2008). Accounting, hybrids and the management of risk. *Accounting, Organizations and Society*, *33*(7-8), 942–967. http://doi.org/10.1016/j.aos.2007.02.005

Myers, M. D. (2013). *Qualitative research in Business and Management*. (Sage, Ed.). California.

Netemeyer, R., Ryn, M. Van, & Ajzen, I. (1991). The theory of planned behavior. *Orgnizational Behavior and Human Decision Processes*, *50*, 179–211.

http://doi.org/10.1016/0749-5978(91)90020-T

Ng, A., & Loosemore, M. (2007). Risk allocation in the private provision of public infrastructure. *International Journal of Project Management*, *25*(1), 66–76. http://doi.org/10.1016/j.ijproman.2006.06.005

OECD. (2007). *Infrastructure to 2030: Main findings and policy reccomendations*.

OECD. (2014). *Private financing and government support to promote long-term investments in infrastructure*.

PFI : Meeting the investment challenge. (2003). Retrieved 3 May 2015, from http://www.foroinfra.com/nuevos_pdf/PFI_Meeting_Investment_Challenge.pdf

Pipattanapiwong, J., & Watanabe, T. (2000). Risk Management for an International Project: A case study of Infrastructure Construction Project Financed by the Asian Development Bank (ADB) in Thailand. In *18th Annual Forum on Construction Management related issues*. Tokyo, Japan.

Pollock, A., & Price, D. (2004). *Public risk for private gain ? The public audit implications of risk transfer and private finance*. London: Unison.

Poocharoen, O., & Ting, B. (2013). Collaboration, Co-production, Networks: Convergence of theories. *Public Management Review*, (April 2014), 1–28. http://doi.org/10.1080/14719037.2013.866479

Popović, G., Stanujkić, D., & Stojanović, S. (2012). Investment project selection by applying COPRAS method and imprecise data. *Serbian Journal of Management*, *7*(2), 257–269. http://doi.org/10.5937/sjm7-2268

Project Finance - Key Concepts. (2015). Retrieved 25 September 2015, from http://ppp.worldbank.org/public-private-partnership/financing/project-finance-concepts#_ftn1

Project Management Institute. (2008). *A guide to the Project Management Body of Knowledge* (Fourth). Newtown Square, PA: PMI.

Quiggin, J. (2005). Public-Private Partnerships: Options for Improved Risk Allocation. *The Australian Economic Review*, *38*(4), 445–450. http://doi.org/10.1111/j.1467-8462.2005.00388.x

Reeves, E., & Ryan, J. (2007). Piloting public-private partnerships: expensive lessons from Ireland's schools' sector. *Public Money and Management*, *27*(5), 331–338. http://doi.org/10.1111/j.1467-9302.2007.00604.x

Renn, O. (1998). Three decades of risk research : accomplishments and new challenges.

Journal of Risk Research, *1*(1), 49–71. http://doi.org/10.1080/136698798377330

Rodney, W., & Gallimore, P. (2002). Risk assessment in PFI schemes for primary healthcare. *Facilities*, *20*(1/2), 52–60.

Roszkowski, M. J., Davey, G., & Grable, J. E. (2005). Insights from Psychology and Psychometrics on Measuring Risk Tolerance. *Journal of Financial Planning*, *18*(4), 66–77.

Saunders, M., & Lewis, P. (2012). *Doing research in business & management* (6th ed.). Harlow: Pearson Education Limited.

Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research Methods for Business Students* (5th. ed.). Harlow: Pearson Education Limited.

Seyedhoseini, S. M., & Hatefi, M. A. (2009). Two-Pillar Risk Management (TPRM): A generic project risk management process. *Transaction E: Industrial Engineering*, *16*(2), 138–148.

Shen, L. Y., Platten, A., & Deng, X. P. (2006). Role of public private partnerships to manage risks in public sector projects in Hong Kong. *International Journal of Project Management*, *24*(7), 587–594. http://doi.org/10.1016/j.ijproman.2006.07.006

Struwig, F., & Stead, G. (2001). *Planning, Designing and Reporting Research*. Cape Town: Pearson Education South Africa.

The Green Book. (2003). Retrieved 3 May 2015, from https://www.gov.uk/government/uploads/systems/uploads/attachment_data/file/220541/green_book_complete.pdf

The Institution of Civil Engineers and the Faculty and Institute of Actuaries. (2005). *RAMP: Risk Analysis and Management for Projects* (Second). London: Thomas Telford.

The Top 20 Emerging Markets. (2013). *Bloomberg Markets*.

Torchia, M., Calabrò, A., & Morner, M. (2013). Public–Private Partnerships in the Health Care Sector: A systematic review of the literature. *Public Management Review*, (October), 1–26. http://doi.org/10.1080/14719037.2013.792380

Welman, C., Kruger, F., & Mitchell, B. (2005). *Research Methodology* (3rd. ed.). Cape Town: Oxford University Press Southern Africa.

World Bank Group. (2014). *Overcoming constraints to the financing of infrastructure*.

Zhu, L., & Chua, D. K. H. (2012). Model for negotiation of refinancing gain from public-private partnership. *Life-Cycle and Sustainability of Civil Infrastructure Systems* -

Proceedings of the 3rd International Symposium on Life-Cycle Civil Engineering, IALCCE 2012, (2010), 710–718.

Zikmund, W., Babin, B., Carr, J., & Griffin, M. (2010). *Business Research Methods*. Dublin: Cengage Learning.

APPENDIX 1: Informed Consent Letter

I am conducting research on risk management in Project Finance, and I am trying to find out more about the processes and procedures used by debt and equity financiers for the assessment of risk in these long-term high value projects.

Our interview is expected to last for about an hour to an hour and a half and will assist me in understanding the assessment criteria used by the financier. Please note that this interview will be recorded, transcribed and used for the analysis process in an MBA research paper.

Your participation in this interview is voluntary. You are free to provide the depth of information as you deem appropriate and you can withdraw from this interview at any time without any penalty. Please note that all data will be kept confidential.

If you have any concerns, please contact myself or my supervisor. Our details are provided below.

Researcher name: Mrs. Vanesh Okanlomo

E-mail: vanesh.okanlomo@siemens.com

Phone number: +27 82 469 9398

Research Supervisor: Mrs. Priya Thakoor

E-mail: priya.thakoor@gmail.com

Phone: +27 82 495 0969

_____ _____

Signature of participant Date

_____ _____

Signature of researcher Date

APPENDIX 2: Semi-Structured Interview Guide

General Question
"Introduction to Research Topic"
Question 1: What is the frequency of providing project finance for long term high value projects?
Set 1 Context of Questions
"Risk assessment from the financier's point of view"
Question 2: How many of these long term high value projects that you have financed have been consider successful? *(Criteria used for classification of successful project financing)*
Question 3: Tell me about project financing transactions that have been reviewed and declined? What are the reasons?
Question 4: What risk factors are considered when assessing Consortium Members of the SPV (*Special Purpose Vehicle*) or Sponsors of the Project Company?
Question 5: Do you have minimum requirements of consortium members and sponsors?
Question 6: Is the experience / knowledge of board members of the SPV assessed?
Question 7: Do you have minimum criteria before you provide project debt / equity project financing?
Question 8: Is there a preference between Greenfield and Brownfield projects?
Set 2 Context of Questions
"Risk mitigation strategies used"
Question 9: Do you have country lending limits applicable in emerging markets?
Question 10: How are the non-financial risks assessed and what strategies are used to mitigate these risks?
Question 11: What guarantees / securities are typically required? How do you address gaps?
Question 12: How often do you run risk assessments on long term project contracts during the life of the project? *(Stages – Bid, Construction and Operations phases)*
Question 13: Would you have an exit strategy? Under what circumstances would you consider exercising this option?
Question 14: What are the minimum risk mitigation strategies utilized? Is there a tolerance threshold for gaps in risk mitigation strategies?

Question 15: How are newly identified risks during the life of the financed project handled?
Question 16: Does the financier's perception of emerging markets restrict the provision of project finance?
Set 3 Context of Question
"Top 5 risks"
Question 17: What are the top 5 risks when providing project finance?

APPENDIX 3: List of Qualitative Analysis Codes

Themes	
1. Frequency - Provision of Project Financing	Equity
Typical Minority Share at Construction Phase	Risk-return Ratio
Dependent on Equity Provision Opportunities	Sufficient Return
Limited Frequency	Government
Increase in Last Year	Service Provision
Investment Dependent on Consortium Wide Benefit	Social / Economic Benefits
Assessment of Partner Finances	Contractor
Assessment of Partner Abilities	Payment
Emergence of Emerging Market Opportunities	Sponsor
Less Than Five	ROI Targets
Unfamiliarity with Emerging Markets / Familiarity with Developed Markets	30% Default Rate
Opportunities in Developed Markets	Sustained Risk Profile
Return on Investment	Balance of Debt, Equity, and Government
Lengthy Tendering / Lead Process	Perspective Dependent
Country Dependent	Completed Construction
Greater Than 10	Majority of Projects Successful
Fewer in Less Developed Markets	Stringent Initial Selection Criteria
PPP's Growing in Emerging Markets	Unsuccessful
One Third of Portfolio	Combination of Factors
Distinction Between Location of Project and Risk	Over Zealous Debt Load
Higher Emerging Market Risk	Greater Expectancies
Implementation of Mitigations	Insufficient Return
Presence of Local Banks in Markets	Inability for Country to Operate
Large Lenders Primarily in Developed	Lack of Government Understanding

Markets	
Higher Emerging Market Political Risk	Lack of Risk Consideration
Fewer Transactions in Emerging Markets	Regulatory Changes
Frequent Market Activity Recently	Repayment Risk
Institution Dependent	Bankruptcy
	Market Changes
2. Successfully financed transactions	Political Issues
Assessment of Market Dynamics	Number of Credit Hits
Economic Factors	In-country Stability Rating
Regulatory Environment	Appropriately Completed Project
Other Projects	Quarterly Milestone / Progression Success
Return of Funds	In-country Benefits
Interest Attainment	Loss Given Default
Continuous Cash Flow	Similar Structures Across Markets
Return on Investment	Additional Risk Mitigation Strategies Implemented
Debt	Importance of Projects In-country
Minimize Risk	Dependent on Evaluation Timing
Repayment	Securing Deal
Operate to Serve Debt	Dependent on Risks that Arise
Structure of Contract in Case of Delays	Operational Concerns
Use of Debt Service	Primary Political Risk Concern
	High Debt Risk
3. Declined Transactions	Inability to Access Funds
In-country Region Assessment / Rating	
Credit Worthiness Comparisons	**4. Assessment of Consortium Members**
Broader In-country Market Evaluation	Assessment of Partner Technical Abilities
Presence of Competitors	Location of Partner Projects
Power Availability	General Experience / History of Partners
Regulatory Framework / Legal Issues	Local Knowledge / Partner
Construction	Political Navigation Influence of Local Partner
Land	Ratings

Transportation of Equipment	In-country Assessment
Completion Timing	Human Resource Capacity
Product Purchaser / End-user	Financial Behaviour / Ability
Environmental Risk	Lower Liquidity Requisite from Operators
Credit / Interest Change Risk	Small Companies Require Partner
Market Risk	Process of Partner Attainment
Foreign Exchange Risk	Borrowing Rate and Debt Service Ability of Smaller Companies
Political / Sovereign Risk / Coverage	Risks Dependent on Partner Type
Reduced / Insufficient Margins With Coverage	Sponsor Stake
Objective Assessment of Emerging Markets	Off-takers
Objective Credit Assessment of Emerging Markets	Power Purchase Agreements
Subjective Evaluation of Cumulative Areas	Contracts
Resource Theft	Construction / Completion Risk
Power Market Assessment	Operating Risk
Type of Market Transaction	Technology
Industry Information	Technology Factors
Technology	Supply Factors
Challenge Obtaining Out-of-country Financing	Transportation
Lack of Returns / Risk-return Profile	Facility Management
Location	Commodity Price Differential
Project Partner Assessment	ROE / Risk-reward Ratio
Technical Risk	Understanding of Partner Objectives
Legal Advice	Debt Partner Required
Financial Model / Ratio Assessment	Project Partner Return
Transaction Structure and Responsibility	Model Sensitization
Export Credit Agency Support in Emerging Markets	SPV Business Profile
Reduced Risk	Managerial Profile
Contracts	Importance in Emerging Markets

Insurance	Size of Partner
Financing Structure	Contribution Ability
Comparisons	Technical Advisor / Support
Follow Siemens Sales (Regardless of Risk)	Structurally Based Decision
Potential to Enter Any Market	Inability to Obtain Financing
5. Minimum requirements of Consortium Members	Compliance Assessment
Assessment of Partner Decisions in Challenging Circumstances	**6. Minimum criteria for debt/equity financing**
Situational Specific	Dependent on Market Needs
Attempts to Fit with any Project	Inability to Influence Debt / Equity Needs
Risk-return Key	Debt Risk Dependent on Equity Risk
Sponsor	Capacity Dependent
Project Experience / History	Dependent on Debt Hedges
Technology	Contacted Return Assessment
Debt Size / Debt Equity Ratio	Market Return Stability
Yes	Greater Equity in Emerging Market
Limited Capacity to Complete Requirements	Appropriate Debt/Equity Structure
Create Joint Venture	Counter Party History / Experience
Debt Partner Based	Involvement of Experienced Personnel
Risk as Operator	Regulation and Legal Knowledge
Ability and Experience	Greater Risk with Equity
Similar Criteria for Local and Global Partners	Greater Conservancy in Emerging Economies
Partner Rating / Credit Assessment	Assessment of Retail Revenue
No	Required Returns
Weakness Requires Greater Mitigation	Skills Needed
Strategic Interest in Project	Determine Underlying Assumptions
General Framework Application	Provide Debt and Equity Accordingly
Involvement of Key Personnel	Atypical to Provide Both
Legalities	Conflicting Interests
Ownership Details	Debt Product Market Entry and Assurance

	Driven
Historical Success	Instances of the Provision of Both
Financial History / Ability	Separate Debt and Equity Assessment
In-country Reputation	Dependent on Project Stability
Reputational Risk Important	Cash Flow
Quantitatively Based	Revenue Risk Assessment
7. Experience / Knowledge of Board Members	Operations Maintenance Costs
No Assessment of Boards	Transfer / Minimise Risk
Not Important	Contractor
Sponsors and Financial Advisors Important	Hedging
Project Manager / Management Team Ability Essential	Debt Service Ability
Board Assessed, Unimportant (Secondary)	Licensing
Advisory Purpose	Length of Financing
Dependent on Experience Level	Stability Issue in Emerging Markets
Dependent on Country Requirements	Security Package / Mitigation Requirement
Limited Access to Information	Market Comparisons
Individual Fraud Behaviours	Financial Structure / Models
SPV Board Member Ability Important	Managerial Considerations
Situational Dependent	Advisory Personnel Reports / Advice
Important in Emerging Markets	Contracts
Necessity to Know Company Owners	Payment Guarantees / Step Downs
Ability to Influence as Equity Partner	Repayment / Payment Risk
Debt Protection on Termination	In-house Legal Team
Likely Prior History in Developed Markets	Independent Consultants
Compliance Assessment	Independent Engineer
8. Country lending limits	In-house Decision
Assessment of Risk Exposure	Country Credit Rating
Historical Experience with Return Consistency	Market / Social Usability
Challenge of Exposure Comparisons	Human Resource Capacity
Different Criteria Stringency to Other	Long-term Infrastructure Sustenance

Entities	
Individual Project Assessment	Use of Political Insurance
Absence of Equity Limits	Market Dependent / Stability
Transaction / Project Lending Limits	Partner Company Management
Dependent on Market Comfort, Experience, and Familiarity	Partner Company and Management Assessment / Understanding
Yes	Financial Risk
Limits for Particular Entities	Construction
Country Rating	Technical
Credit Worthiness	Historical Records
Guidance Purposes	Standardised List of Risks Assessed
Consideration of Credit Based on Credibility of Businesses Involved	Environmental Risk
Country Dependent	Insurance Assessment
Political Risk	Commodity and Hedging
Individual Country SPV Rating Criteria Assessment	Enter with Restrictions / Limitations
Determine Debt Financing	Refinance Ability
Presence of Other Country Transactions	Licensure
Breaching	Risk Matrix
Stable Country Rating	Develop Project Assumptions
Strong Deal	Attempts to Financially Quantify
Credit Limit Committee Assessment	**10. Required guarantees / securities**
Determined by Particular Teams/ Management	Involved in Developing Guarantee
Use of Comprehensive Insurance in Challenging Markets	Contract Payment Structure
Uncertain	Performance Guarantees
Company Limits	Guarantees Sought in Selected Areas
Board Application to Extend	Profit of Profit at Risk
Avoidance of Multiple Projects with Same Partner	Collateral Ability
9. Non-financial risks	Ensure Security Prior to Project Initiation /

	When Identified
In-country / Political Regulations / Risk / Legal	Hedging
Legal Experts	Heat Rate
Contracts	Revenue Input
Technology	Construction
Assess Various Partners	Operator
ONM Risks	Provision of Human Resources
Feed Stock Risk	Power / Energy
Industry Experience Based	Government Lender Guarantee
Reputational Risk	Extensive Preceding Risk Assessment
Export Repayment Guarantees	Following Financial Closure
Large Bank Guarantees / Funding	Uninvolved in Risk Management
Project Dependent	Quarterly Performance Measurement / Reporting
Political Risk	Company Performance Ratio Assessment / Monitoring
Insurance	Company Engagement / Discussion
Credit Agency or Large Bank Guarantee	Rating Dependent
Similar Guarantees Across Markets	More Frequent with Poor Ratings
Legislation Dependent	More Frequent with Lower Project Duration
Additional Considerations in Emerging Markets	Yearly Ratings / Reporting
Group Determination of Gap Assessment / Mitigation	Report Comparisons
Sponsor / Parent Company Guarantee / Pledge	Initial Credit Report
Based on Credit Worthiness Assessment	Use of Trend Cards
Contracts / Contract Agreement Types	Top Risks Identified for Each Project Phase
Offshore Accounts	Early Identification
Volatility in Emerging Markets	Involvement of Advisors
Product Need	**11. Exit strategy**
Dependent on Criticality of Gap	Determination at Project Approval Phase

Impact	Sale of Project
Risk Sharing	Price Dependent
LC / Highly Rated Entity Guarantee	Variety of Considerations
Important for Construction Phase	Market Changes – Investor Changes
Financial Covenants	Exit Strategy Conditions of Contract
Provision of Additional Time	Repayment
12. Frequency of risk assessments	Foreclosure Avoidance
Risk Manager Support Initially	Ability to Restructure
Risk Manager Control Following Financial Close	Understanding and Knowledge of Legal History
Monthly Reporting	Lower Payment Requirements
Construction Phase	Issue of Sale Ability
Weekly Reports	Sensitivity Analysis
Assessment of Counter Parties	Provide Advisory Support to Sales
Critical Phase	Time Based
Monthly Reporting	Perspective to Remain Till Project Close / No Strategy
Quarterly Reports	Exit Dependent on Highest Profitability Point
Operation Phase	Strategy Dependent
Twice Yearly Reporting	Included in Initial Assessment
Quarterly Reporting	Ability to Obtain Additional Sponsor Support
Complete Life Cycles Assessment	Reluctant to Exit
Risk Management Monitoring	Bankruptcy Dependent
Similar Risks Assessed	Following Financing Period Completion
On-going Basis	Risk Assessment Meetings
Prior to Financial Close	
13. Mitigation strategies	Supply / Traffic Risk
Calculated Risk Conducted	Business Understanding
Comparison of Financial Returns	Advisory Personnel
Various Types of Risks	Commitment and Trust from Key Personnel
Examine Unfamiliar Market Risks	Capital Structure
Developing Market Risks	Cash Flow

Post-investment Risk Mitigation Assessment	Price / Volume Risk
Distributing Risk	Varied Types of Emerging Markets
Insurance	Retail Risk
Credit Agencies	Identification and Mitigation of Risks
Political Risk Insurance	**15. Minimum risk mitigation strategies / tolerance for gaps**
Letters of Credit for Payment	Knowledge and Understanding of Partners
Performance Guarantees	Political Risk Insurance / Cover
Conservative / Secure Structure	Interest Rate Risk Hedging
Lending Coverage	Foreign Exchange Risk Hedging
International Legal Alignment	Ability to Overcome Equity Risk
Interest Rate Risk	Realistic ROI Assessment
Partner Company Management	Increased Competition
14. Top 5 risks	In-country Project Importance
Regulatory Risk	Parent Company Guarantee
Changes to Environment	Limit Loan Tenure
Political / Sovereign Risk	Sharing of Risk in Emerging Markets
Finances	Project Dependent
Legal / Contracts	Market Dependent
Local Understanding	Flexibility Required
Mitigation Through Partner Strength	Variations in Risk Exposure
Mitigation Through Market Presence	Financial Mobility
Commodity / Foreign Exchange Risk	Dependent on Risk Type
Construction	Dependent on Risk Mitigation Ability
Cost / Time Delays	Financial Covenants
Safety	Government Guarantee
Commodity Price Risk	Construction Phase Guarantees Critical
Credit Worthiness of Off-taker	Risks in Contracts and Agreements
Each Risk Potentially Highly Problematic	Repayment
Situationally Dependent	Base Payment Cover Ratios
Operation	Dividend Cut-off
Appropriate Service Delivery	Credit Rating for Bond

Payment Risks	Market Risk
Refinancing Risk	**17. Newly identified risks**
Revenue Assumptions	Advanced Agreement Structure
In-country Resource Accessibility	Based on Appropriate Option
System of Transmission	Importance of Pre-transaction Assessment
Partners	Assessed According to Repayment Ability Risk
Project Requirements	Sensitization Assessment
Project Execution Ability	Inclusion of New Risk in Assessment
Banking Support	Partner Engagement / Decision-making
Appropriate Transaction Structure	Restructuring
Technical Risk	Various Mitigation Solutions Available
Ratio Buffers	
Dependent on Direct Project Impact	
Dependent on Covenant Applicability	
Contract Re-negotiation	
Limited Control Ability	
Option to Sell	
Request for Waiver	
Assess Ability to Grant Waiver	
Financial Adjustment	
Dependent on Ability to Influence	
Unlikely Absence of Coverage	
New Contractor Appointment	
Termination	
16. Debt financing	
Conservative Perspective	
Sufficient Developed Market Opportunities	
Greater Emerging Market Risk	
Similar Losses Across Markets	
Confidence in Developed Markets	
Dependent on Experience of Members	
Dependent on Market Experience of	

Financier	
Insurance / Coverage Require	
Additional Effort and Awareness Required in Emerging Markets	
Emerging Market Political Risk	
Mitigation Strategies	
Dependent on Market Cycles	
Institutionally Dependent	
Ensure Correct Perceptions	
Based on Due Diligence	
18. Brownfield vs. Greenfield	
No	
Case-by-case Basis	
Green Fields	
Infrastructure / Funds in Brown Field	
Green Field Challenges	
Dependent on Funder Type	
Brown Field Preference Amid Competition	
Lower Brown Field Risk	
Minimum Green Field Requirements	
Green Field Requires Experienced Partners	
Brown Field Preference	
Green Field Risk Knowledge	
Risk Profile Difference	
Dependent of Broader Business Objectives	

APPENDIX 4: Ethical Clearance Letter

Gordon Institute of Business Science
University of Pretoria

Dear Vanashree Okanlomo

Protocol Number: **Temp2015-01940**

Title: **Risk Management in Project Financing : An Assessment Framework in Emerging Markets**

Please be advised that your application for Ethical Clearance has been APPROVED.

You are therefore allowed to continue collecting your data.

We wish you everything of the best for the rest of the project.

Kind Regards,

Adele Bekker