Globalization of Risk Management in Public Private Partnerships

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Abstract

Previous research on Public Private Partnerships (PPP) regarding risk management issues has concentrated predominately on the relationship between the Procuring Authority and the Special Purpose Vehicle (SPV) often ignoring the fact that SPVs are made up of different organisations with different interests and objectives. This paper makes an important contribution to literature in that we argue that the different skillsets of both the international partners in terms of their experience, and the domestic partners with regard to their local knowledge of the markets seems to enable the SPV to manage risks more effectively in a globalised PPP market.

Keywords:

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INTRODUCTION

Public Private Partnerships (PPPs) have grown in prominence worldwide since their origination in the United Kingdom in 1992 (Wall and Connolly 2009) and incorporate the private sector funding infrastructure projects traditionally provided by the public sector (Grimsey and Lewis 2005). It involves the sharing of risk and rewards between the public and private sectors with achieving Value for Money (VFM) in PPPs arguably predicated upon allocating risk to the party that is most capable at managing it (Shen et al. 2006; Ng and Loosemore 2007; Demirag et al. 2012). The National Audit Office (NAO) (2011) contend that the public sector is less equipped to manage risk due to their lack of skills and expertise. The central motivation for the public sector therefore may be to transfer risk to the Special Purpose Vehicle (SPV) in order to utilise their expertise in risk management (Tallman et al. 2010). However within the SPV, many contractors are incapable at managing certain risks, thus the risks transferred to the SPV (Demirag et al. 2012) and allocated between the SPV partners in PPPs need to be carefully considered (Dey and Ogunlana 2004; Levitt and Eriksson 2016). This paper contributes to this area of research by providing empirical evidence on how risk is managed and the techniques used by the SPV's international and domestic partners in Irish toll road PPPs.

The majority of empirical work to date on risk management in PPPs has largely ignored how risk is managed in the relationship between the SPV partners, but has examined the relationship between the public sector and the SPV (Van Ham and Koppenjan 2001; Edwards and Shaoul 2003; Burke and Demirag 2017) or the relationship between the public sector and equity and senior debt financiers (Demirag et al. 2012). Edwards and Shaoul (2003) found that the intended level of risk transfer failed to occur from the public to the private sector in Information Technology PPPs, while Demirag et al. (2012) who examined a number of sectors found that following risk transfer from the public to the private sector, it tended to be diffused by the equity and senior debt financiers through a variety of techniques such as insurance, risk-sharing between SPV members, hedging and subcontracting. Carpintero (2015) argues that existing PPP research fails to address how risks are allocated within the SPV which is a notable shortcoming in the literature as the SPV are required to manage risk once it is transferred to them (Shen et al. 2006; Demirag et al. 2012).

PPP projects can be difficult to manage as they involve a multitude of stakeholders who may have conflicting views (Klijn 2009). Loosemore and Cheung (2015) highlight that these stakeholders are often treated in isolation regarding how they manage risk hence the interdependencies between each group in PPP projects may be ignored. Furthermore, the partners within SPVs often have complex international relationships (Siemiatycki 2011) and the relationships between international partners can be collaborative or adversarial (Siemiatycki 2012a). This could affect how risk is managed, transferred and who is ultimately held responsible for these risks in a PPP project. Although Siemiatycki (2012b) examined the structure of consortiums (otherwise known as an SPV) in terms of their domestic and international partners across international PPPs, they did not explore the specific role of international SPV partners in terms of how they may influence domestic partners in their PPP risk management strategies and policies, something which this study strives to address.

This paper therefore attempts to address the following research questions:

1. Whether, and if so, how risks are managed in the relationships between the domestic and international SPV partners in Irish toll road PPPs?

2. What techniques and mechanisms are used by the domestic and international SPV partners to manage risk in Irish toll road PPPs?

The remainder of this paper is structured as follows. The first section describes how the SPV is formed and outlines the roles and objectives of the partners within the SPV. Next, the internationalisation of PPP markets is discussed and using existing secondary data, the major SPV partners in both international and Irish transportation PPP markets are identified. International and domestic expertise in PPP projects is then discussed. We then examine the techniques and mechanisms used by the SPV to manage risk before an overview of the research methods used in the study is provided. The empirical findings from the in-depth semi-structured interviews with SPV partners from the three case studies are then presented. Finally, there is a discussion of the findings in the context of previous empirical work and their implications in terms of how the SPV is formed and how they attempt to manage risk in PPPs through the relationships between domestic and international partners. We also discuss the potential implications of the findings in terms of VFM.

FORMING THE SPV CONSORTIUM AND SPV PARTNERS OBJECTIVES IN PPPS

Due to the complexity of PPP projects, it is often very problematic for an individual construction company to negotiate all the tasks in PPPs; hence an SPV which comprises of a number of different companies is normally formed (Kyei and Chan 2015).

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A lead sponsor is typically included in the SPV and a major contractor or engineering firm within the consortium tends to assume this role. The SPV also consists of a number of firms with different competencies such as facilities management, project finance and risk management expertise. A lot of the tasks will be undertaken by the SPV with further tasks subcontracted to other companies (Siemiatycki 2011). In PPPs, many of the contractors and engineering companies have also become equity investors and generally the equity will equate to 10% of the total investment with the remaining 90% comprising of debt

(Siemiatycki 2011). Specialist financial institutions, including private equity and investment groups may also invest equity specifically in infrastructure (Demirag et al. 2011). The composition of the SPV can alter over time, as SPV partners may leave or sell their stake to another entity. Also, the subcontractors used by the SPV may change (Shaoul et al. 2012a). Figure 1 above from Demirag et al. (2012) illustrates the typical ownership structure of an SPV with an insight into how risk is transferred in PPPs. Our research contributes to this literature in that we examine the domestic and international relationships between SPV members with regard to how they manage risk.

In terms of forming the SPV, Ahadzi and Bowles (2004) found that the SPV viewed the previous experience of its partners in delivering projects as very important. SPV partners are normally selected based on the expertise that they bring to the consortium (Siering et al. 2013), with expertise in risk management being particularly important (Gomez and Gambo 2016). Carpintero (2015) found that large international Spanish SPVs operating in Canada tended to have innovative construction and design practices in PPPs, strong financial expertise and access to finance due to pre-established relationships with financiers from previous projects. Demirag et al. (2012) note that the senior debt financiers are very particular regarding the companies that form the SPV as they do not want to ultimately assume risks should problems arise during the project. It is therefore important to assess the strength of the different partners in terms of their capabilities and previous experience (Boeing-Singh and Kalidindi 2009). Moreover, forming a strong SPV is identified in the literature as one of the main critical success factors in PPPs (Kyei and Chan 2015), consequently if the [1]Procuring Authority, choose an unsuitable concessionaire it can impact negatively on VFM and the PPP projects success (Soomro and Zhang 2013).

[1] The Procuring Authority is a state body responsible for tendering the PPP and choosing a successful consortium.

SPV partners may have conflicting objectives in PPPs which can exacerbate the difficulties in managing risk (Van Ham and Koppenjan 2001). Senior debt financiers have a greater propensity to try avoid risk (Demirag et al. 2012) while the equity investors tend to be more receptive to taking risk (NAO 2012) (See table 1 below for an overview of the key partners roles and their objectives in the SPV) and demand a higher premium for their investment (Siemiatycki 2012a). Contractors tend to be primarily interested in making money from their construction tasks as well as through any equity they may have invested in the project (Demirag et al. 2015). The bundling of operations, maintenance, design and construction within the SPV provides an incentive for the SPV to produce a project of the requisite quality within time and budgetary constraints (Siemiatycki 2012a).

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TOWARDS AN INTERNATIONAL PPP MARKET AND RELATIONSHIPS BETWEEN DOMESTIC AND INTERNATIONAL SPV PARTNERS

PPP markets are becoming more international with the transport sector the most vibrant (KPMG 2015), dominated by a few international contractors, financiers and engineering companies (Siemiatycki (2012b) who command the worldwide transportation[2] market (see table 2) and utilise their knowledge on an international scale (Public Works Financing 2013) (The composition of SPV partners in Irish road PPPs is examined later on in this section and can be seen in table 2 below). The supremacy of Spanish firms is notable in that five of the top ten transportation developers are from Spain (Public Works Financing 2013).

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[2] Much of this transportation investment has been in the roads sector.

International expertise in PPP projects

Examining 67 transportation Private Finance Initiative (PFI) projects in the UK between 1987-2009, Siemiatycki (2011) found that UK firms dominated the PFI market and the role of international firms in SPVs has been less pronounced. Finance is, however, sourced internationally in many cases. Where international firms have entered the UK PFI market, in half of the contracts, they have formed a relationship with a large domestic UK contractor with wholly international owned consortiums only evident in six cases. Also, no design and build contractor entered into business in more than four PPP projects and in only one third of the Highways Agency's PFIs did the SPV consist of two or more of the same contractors (Siemiatycki 2011). Shaoul et al. (2008) found that some markets are more closed to international companies than others. The Spanish, French and Italian market tends to be dominated by the major domestic companies. In contrast, Belgium, Germany and the Netherlands appear to be more receptive towards international consortiums.

Local expertise in PPP projects

For the major international PPP companies that are going overseas, the task of finding an appropriate domestic company to partner with is an important entry strategy to that PPP market (Shaoul et al. 2008). Physical and cultural proximity was also found to be very significant and is manifest in terms of the major international consortiums entry strategies into the UK. International firms have entered the UK PPP market through acquiring UK companies or partnering with prominent UK contractors in projects. In over half of the projects, international firms have tended to amalgamate with experienced UK contractors that have been involved in at least five major UK domestic projects. The acquisition of domestic companies provided an astute entry strategy for international companies as they are able to leverage the domestic brand and create a physical presence in the marketplace (Siemiatycki

2011). In contrast, in the United States there has been resistance to international SPVs operating toll road PPPs (Ortiz and Buxbaum 2008).

Relationship between domestic and international SPV partners in Irish road PPPs

There are a number of domestic and international partners involved in Irish PPPs with Spanish firms dominating the Irish marketplace. There are between two to six consortium partners in each of these PPPs including contractors, operators, equity financiers and debt financiers (see Table 3). These include financiers and companies of Spanish, French, Dutch, Austrian and English origin. It also appears that in contrast to the UK which was described earlier in the paper, repeat collaborations between the SPV partners are evident in Irish road PPPs with one consortium having been successful in winning six of the tenders. Two other consortiums operate three and two of these schemes respectively (The findings section attempts to shed light on how the international and domestic partners of these consortiums manage risk in PPPs).

The European Investment Bank (EIB) are also involved in financing each of these PPPs, while the amount of finance from foreign institutions and particularly Spanish banks has been significant (see table 3). The more recent changes in how PPPs are financed is highlighted through the use of a standby credit facility to help finance the N11 Arklow/Rathnew scheme while the N25 New Ross scheme utilised the EIB's 2020 Project Bond Credit Enhancement Scheme with Allianz Global Investors and a pension fund investor helping to finance the project.

INSERT TABLE 3 ABOUT HERE

Having described the internationalisation of PPP markets and identified the main SPV consortium partners in both international and Irish PPPs within this section, the next part of the paper reviews the extant literature on how risk is managed by these domestic and international partners in PPPs.

Techniques and mechanisms used by the SPV to manage risk in PPPs

Risks in PPPs can be managed through risk-sharing and transferring risk to other parties (Demirag et al. 2010), or by using hedging, insurance or syndication (Demirag et al. 2012). It is also possible in a PPP for the SPV to transfer a multitude of risks to subcontractors (Asenova and Beck 2010; Chung et al. 2010; Demirag et al. 2010, 2011, 2012) such as design and construction risk, thus the SPV have become very reliant on subcontractors in PPPs (Shaoul et al. 2012a). These subcontractors are then required to ensure that various project requirements are met (Demirag et al. 2012), hence they play a critical role in the risk management process. Similarly the empirical work of Akintoye and Chinyio (2005) on healthcare PPPs found that subcontracting and insurance tended to be mostly used to manage risk. The authors detail some of the main techniques used by different SPV partners to manage different risks and they found that the banks are inclined to use hedging strategies with respect to managing interest rate risk and inflation risk. Contractors and equity investors tended to rely on their prior experiences in projects which corresponds with the work of Shaoul et al. (2007), who found that acquired experience was important in terms of managing risk. Moreover, Vining et al. (2005) posit that international firms are superior at managing risk and they have the capacity to leverage their expertise on an international scale, while Chung and Hensher (2015) found that relational skills can contribute towards risk management.

Equity may be used to share risk among the SPV partners in PPPs and Boeing-Singh and Kalidindi (2009) indicated that the senior debt financiers will want equity invested from a variety of sources as encouraging equity investment from the companies involved in the PPP helps to spread risk among the partners (Siemiatycki 2012b) which potentially makes it easier to manage.

Dey and Ogunlana (2004) examined risk management in Build Operate Transfer projects and found that the tools used to manage risk depends on the individual project, project partners attitudes and resources the company has at its disposal. The authors outline that different risks will be more applicable to certain SPV partners such as financiers and project companies as they may have conflicting objectives. It is argued that it would be helpful if risk analysis was applied from the viewpoint of the individual stakeholders as they may have different perceptions of risk. Operational and construction risk are important for the project companies, therefore perhaps some form of network scheduling or cost prediction models may be most relevant in terms of risk analysis. The financiers are primarily concerned with the ability of the project to generate cashflow, hence sensitivity analysis may need to be used (Dey and Ogunlana 2004).

The literature outlines that many techniques and mechanisms may be used to manage risk such as hedging, risk-sharing, syndication and subcontracting risk to subcontractors. Previous experience of managing risk was also found to be important. The next section outlines the research methods and describes the rationale behind the case study approach employed in this study.

RESEARCH METHODS

This study utilised both secondary data and semi-structured interviews through the development of case studies. One of the most salient features of case studies is the in-depth analysis that they provide (Yin 1989; Robson 2007) and this was a major motivation behind choosing a case study approach (a brief background to the three case studies used in this study is provided in Appendix A). The use of case studies allows a deeper and richer examination (Yin 1989; Creswell 1998) of risk and stakeholder issues in Irish road PPPs, which was the main rationale for choosing this approach.

Initially, a number of PPP, Irish Government and private sector databases were examined in order to ascertain the composition of the SPV consortiums in both Irish and international PPPs. Interviewees across the three case studies were then asked questions with regard to the relationships between partners within the SPV and how they manage risk in the PPP process. The interview data from the case studies was analysed through the use of Nvivo 9.

In-depth interviews were conducted between February 2009 and July 2012 with key domestic and international SPV stakeholders including operators, contractors, equity investors, senior debt financiers, technical advisors and traffic advisers in three Irish toll road PPP case studies (see table 4 below). We also spoke with public sector representatives and interest groups which gave us an insight into how the SPV manage risk in PPPs. The table categorises the wide range of stakeholders based on whether they are international or domestically based which proved to be very useful in terms of further exploring the potential international/domestic relationships in the risk management process. A letter explaining the research was sent in advance to the interviewees, to assure them that their responses would be confidential and their anonymity would be preserved.

In a semi-structured interview, flexibility is allowed regarding the topics to be covered (Bryman and Bell 2011). In keeping with Easterby-Smith et al. (1991), and Robson (2007), the interviewer was flexible with the question order and steered the interview to elicit answers pertaining to the research questions, while also allowing the interviewees to speak freely or elaborate on areas of personal interest.

Kelliher (2005) acknowledges that many people are sceptical of interpretive research due to validity, reliability and the difficulty with making generalisations, and the researchers were cognisant of this throughout the study. Yin (1989) argues however that case studies, in contrast to experiments, are generalisable to theoretical propositions and not populations. In essence the objective is to evolve theories and not to generate the level of frequency by which it occurs and this is reflective of this study. The use of multiple case studies which are used in this study can make the findings more robust (Remenyi et al. 1998) and Eisenhardt (1989) describes how multiple case studies can enable analysis both within and across case studies, which can help address validity and reliability concerns (Yin 1989).

INSERT TABLE 4 ABOUT HERE

The research findings are presented in the next section.

FINDINGS OF THE STUDY

This section presents the empirical findings from the case studies with the first part exploring the first research question in terms of whether, and if so, how risks are managed in the relationships between the domestic and international SPV partners in Irish toll road PPPs. The subsequent section examines the second research question in terms of the techniques and mechanisms that are used by the international and domestic SPV partners to manage risk in PPPs.

Managing risk through the international and domestic SPV relationships in Irish toll road PPPs.

Forming the SPV

Senior debt financiers indicated that they are very cautious when deciding on which companies should be included when forming the consortium. Financiers seemed particularly concerned regarding the financial strength, capabilities and previous experience of the partners in the SPV:

> I think for the Irish deals, you know, if we did not have a big international contractor, we would be worried about the strength of the local contractors…We want experienced companies that are solid enough so that if the project goes wrong they won't end up bankrupt…We don't have a problem if it is just pure international contractors but I think we were comfortable with the idea of having local teamed up with a big international company.

A contractor/equity investor outlined how collaboration with the international SPV partners was critical towards getting the project financed. This was an important consideration when forming the SPV:

> I suppose what we identified a long time ago, back as far as 2002-2003, was that by bringing in Company A and Company B, we opened up the doors to the International Banking System and that is what we did…The job was an almighty success and it's down to the team....

The importance of forming a strong team which leads to a stronger financial position and allows risk to be shared more evenly between the SPV partners was alluded to by an Irish contractor/equity investor:

> Bringing Company D and Company E in significantly strengthens your balance sheet as a team because they are world players and that therefore makes you very attractive from the point of view of the Procuring Authority and also at the end of the day to the funders, that there is a strong team there.

The need for international expertise in PPP projects

Irish companies are very much in their infancy at managing toll road PPPs, hence they have integrated many international companies with the requisite expertise of managing risks in toll road PPPs into their consortiums (earlier in the literature review we looked at the breakdown of ownership within the consortiums across Irish road PPPs). A recurring theme throughout the findings was the skills and knowledge that the international partners provide. The Irish firms realised that by approaching it single handedly, they simply did not have the expertise to manage all the risks involved but through collaboration with the international companies a strong relationship was established and risks and resources were shared as was explained by a contractor/equity investor on one of the schemes:

> ...We could not say as a team with hand on heart that we have experience of operating PFI projects or operating toll roads as a team. So we had to get someone who had toll road experience and that tended at the time to be the continental contractors and clearly from a PFI point of view Company D added to that as well.

Similarly, another equity investor insisted that due to the skills they possess, international companies need to be involved in the process:

> There is a huge level of skills required to put together a PPP and to deliver them... if for instance every contractor in the country is too busy or whether they are not busy so basically have they work on, do they really need the work, are the skills available you know and for some, many of the big international companies have to be involved.

A public sector representative also acknowledged the project management skills that the international contractors have brought to the market:

> Many local contractors would obviously prefer to have the contracts but the foreign firms have beaten them. The foreign firms have brought project management skills and a level of discipline that was not evident before in the construction of roads.

It would appear that the composition of the consortiums across all the schemes is very strong. The strength of the relationships and the trust evident between the private sector organisations that make up the SPVs has seen them develop long term relationships and deliver projects ahead of schedule and without any major problems with both the domestic and international partners contributing as a senior debt financier outlined:

> I think there was obviously the capacity of company A with both local labour force but also local industry contacts, say political contacts in the Irish framework, with then the real international skill set that Company B bring to the table…There was a construction programme timetable to meet, and they blew that out of the water.

The need for domestic expertise in PPP projects:

The general consensus from the SPV partners is that the local expertise of the domestic partners is also important in terms of managing risk. This was explained by an international contractor/equity investor:

> We had a lot of expertise but we had never worked in Ireland... We merged perfectly with the local company; we were able to combine the international experience of our firm and the local experience of the Irish firm…We are still together and we are performing and tendering together well in other contracts.

The Irish companies have a better knowledge of the local market. A contractor/equity investor described how the experience of the domestic partner was essential in terms of mitigating landowner risk after it had been transferred in one of the case studies:

> Well I think in that particular scenario, it was risky from Company A's point of view so it was key to have local people. Landowners are usually very Irish. They are not happy when Spanish people come and talk to them…The relationship was very good, but I think it is key to have local people and to have a local partner in Company B.

This was echoed by the international senior debt financiers who also outlined how they rely on the local partners:

> We manage it within the various parties that sit on the SPV board and so where issues crop up the parties are able to deal with them…They will look after any risks that arise. If it's our relationships in Ireland that are to be dealt with, you tend to find that our Irish parties on the board will deal with those.

> The importance I suppose on those projects was that there were strong international companies along with domestic companies and I suppose that mix would have been really important for us when we were looking to decide who we would support as the bidder because we wanted to have the local input

The findings indicate that the relationship between the domestic and international SPV partners contributes positively towards managing risk in PPPs. The skills, resources and experience of the international partners and the local knowledge of the domestic companies were pertinent in terms of enabling the management of risk.

Techniques and mechanisms used by the domestic and international SPV partners to manage risk in Irish toll road PPPs

Transfer of Risks to subcontractors

The reliance on subcontractors also emerged as a significant theme throughout the findings in terms of the mechanisms that are used to manage risk by both the international and domestic partners of the SPV. A contractor/equity investor explained how construction and design risk are mediated as they can be transferred to subcontractors:

> Yes we transfer risk all over the place. The SPV transferred all design and construction risk down to the construction joint venture. And in turn the construction joint venture would have transferred risks such as construction risks to subcontractors and design risk to our designers….

We found that in some instances across the schemes, certain risks may be subcontracted to international or domestic subcontractors, and both provided their expertise for different aspects of the PPP contracts. For example on one of the schemes an international subcontractor was subcontracted significant work with regard to structural elements of the project.

> Our organisation as part of the construction team employed broad resources from outside …In the end these all proved to be a success, in fact one of the best contracts we had was an International subcontractor for the structures.

On another scheme, an international tolling company who formed a subsidiary in Ireland, which was sourced by one of the international SPV partners, was subcontracted the tolling operations of the project as they had the requisite expertise in terms of managing the project. Nonetheless the consortium viewed the Irish contractors as more important in terms of the subcontracting of construction risk:

> Company B have experience across the world... It is definitely them that have brought the most contacts if you like to the project in terms of providing contacts for operational, the tolling operations whereas your Irish builders who are involved there are good at managing Irish construction risk aspects or are better than what Company B would be.

On a different scheme it was suggested that international contractors or subcontractors are obtained in order to help manage specific risks:

> Experience. And competition and so if they don’t have experience they can hire somebody in on contract, but generally these are international companies as well who have seen many many project across many locations.

Capacity of subcontractors to manage risk

The capacity of subcontractors to manage risk was alluded to throughout the interviews. Although the subcontractors will take some parts of programme risk, risks such as protestor and trespasser risk appear difficult to subcontract as explained by an SPV partner:

> We have to bear in mind that subcontractors are not likely to accept certain risks… For example the subcontractor will accept certain programme risks... some risks that they will not accept for example are protestor and trespasser risk**.**

The SPV partners on all the schemes suggested that there is no point in transferring risks to subcontractors if they cannot manage them. In essence it is in the SPV's best interests to be aware of the credit quality of its subcontractors and their ability to absorb risk as an SPV partner explained. The risks passed on to the subcontractors may come back to the SPV partners if they are not able to manage them:

> Like the classic example with us sometimes, is that you get these huge PPP company risks and you try to pass them to a small subcontractor, and they either are not aware of them or they are naive and take on risks that they do not even understand. But if you make the subcontractor aware of it, or they are incapable of managing, dealing or coping with it, it ends up back as your risk at the end of the day because the subcontractor either folds or runs. There is no point in been smart about passing risk to somebody who can't handle it.

Another SPV partner on a different scheme explained how the subcontractors also have limited capacity to deal with all the risks in PPPs:

> We tried to subcontract and transfer as much risk as possible, but it is impossible for you to transfer all the risk… The construction company may have penalties as a result of a delay to opening. These are huge risks and could not be absorbed by any of the subcontractors. So therefore irrespective of what risk is transferred the risk is ours.

The ability of the subcontractor to perform the job and manage the risk was also referred to by another SPV partner:

> …. If the O&M contractor for example starts to suffer in other parts of his business it may not be able to perform as well…that could bring them down and cause more deductions…. they are very important for the financiers also.

Managing Risks through Hedging, Insurance and Syndication

The general consensus from the international and domestic financiers was that interest rate exposure may be reduced through hedging strategies:

> Once you agree with sponsors the hedging strategy you want because in the end we are not in the business to be lending the hard cash out of the doors and we have an open ended exposure to interest rate risks.
>
> I don't know, usually the interest rate risk is hedged at financial close and so the project is not exposed to interest rate risk, but interest rate is a risk and if it is not hedged it is a significant risk for long term projects because you got long term cash.

There was some evidence to suggest that the banks will want to transfer or insure as much risk as possible as an equity investor explained at interview:

> Our corporate structure here, it is probably driven by the banks and what they try to do is to minimise the risks to the PPP Company by passing risk or insuring risk...

Although the findings indicated that syndication has become more difficult to use in recent times, we found some evidence that it was used to mitigate risk by the financiers in PPPs:

> In simple terms you would have had, we would have taken the financing risks obviously and we would have syndicated some, some of the transactions to other banks…

Managing risk through risk-sharing between SPV partners

Risk-sharing emerged as another mechanism that may be used by the SPV to manage risk in PPPs. The importance of having strong international organisations with the requisite experience and capability to absorb risk once it is transferred to the SPV was explained by the SPV partners. Having the additional resources which these international companies can provide coupled with investors sharing equity also provides the opportunity to spread risk:

> ...They look around the table and see there is a big anchor there if things go wrong and Company D and Company E were a big anchor to be quite honest… additional resources are always a plus because it allows you to bid for more of these and potentially deliver more of these. The reality of it ultimately is that you spread all of the risk a little bit.
>
> It is a fully integrated JV and you take the good and the bad and share it 50/50… I think that it has to because if you have a system were one party in the entity is taking the risk and the other isn't then it leads to bad feelings and you know it doesn't work that way.

The findings indicate that the SPV prefer to transfer risk to the subcontractors where possible. We found evidence that certain risks were transferred to both domestic and international contractors in order to utilise their expertise thus emphasising the internationalisation of PPPs. Despite this, the consortiums felt that the ability of the subcontractors to be strong enough financially to manage risk was important as risks may be transferred back to the SPV if the subcontractors fail to manage them. Hedging, insurance and syndication are also used to help mitigate risk while the sharing of risk among SPV partners was also viewed as an important mechanism in terms of managing risk.

DISCUSSION AND SOME CONCLUDING REMARKS

The purpose of this paper was to examine how risk is managed by the SPV partners in Irish road PPPs. Although the extant literature has primarily examined the concept of risk management in terms of the relationship between the Procuring Authority and the SPV, it has ignored the fact that SPVs are made of various organisations often with different interests and objectives. This paper makes two important contributions to previous work; firstly it examines the interdependencies and relationships between SPV partners in terms of how they manage risk in PPP markets that are becoming increasingly globally. Secondly, it also adds to prior literature as it provides an insight into how risk is allocated within the SPV between both the international and domestic partners.

Reflecting the internationalisation of PPP markets, a small number of domestic contractors from Ireland are participating together with international firms on a number of PPP bids suggesting that a collaborative rather than an adversarial relationship is prevalent with three main consortiums appearing to dominate the Irish PPP market.

The findings from the case studies suggest that the SPV partners believe that the relationship between the international and domestic contractors leads to considerable synergies in the Irish PPP process and contributes in terms of managing risk. Although they contribute greatly in terms of their local knowledge, the Irish contractor's appear to lack the requisite resources, expertise and financial capabilities to do PPP deals solely by themselves. They therefore require collaboration and rely on financial support from international consortium partners in terms of their strong balance sheets which helps them to absorb and mediate risk.

There is also a tendency to believe that the international partners have increased the SPVs chances of sourcing finance internationally and are also making it a lot easier for the senior debt financiers to commit to projects. Hedging and syndication were found to be important in terms of the techniques used to manage risk. The results of this study also suggest that the SPV place a heavy reliance on subcontractors when transferring risk and many risks such as design and construction risk are typically transferred to the subcontractors. Interestingly, we found some evidence to suggest that certain specific risks may be transferred to either international or domestic contractors/ subcontractors which suggests that the internationalisation of the PPP market has facilitated the management of risk in PPPs.

Consistent with the literature, the SPV partners suggested that risk should only be transferred to the subcontractors where they have the capacity to manage and absorb the risks. The previous performance of contractors in terms of their ability to deliver projects effectively, on time and within budget on other schemes is becoming more important. Subcontractors to the SPV may not have the capacity to manage risk. Therefore the SPV, by diffusing risk to subcontractors, may be engaging in excessive risk transfer for which they may ultimately have to bear the responsibility. As PPPs are predicated upon the effective transfer of risk from the public to the private sector, it is vital that the private sector assume only those risks they can manage, and if they manage these by diffusing it to subcontractors, careful consideration needs to be afforded to the capability of these subcontractors to manage risk as it may impact on VFM being attained. The difficulty is that the most competitive bids submitted by the SPV with respect to the Public Sector Benchmark tend to be successful in the tendering process; hence the SPV may try to be too competitive in how they price risk. Notwithstanding this, the most competitive subcontractor may not be the most viable in the long-run and both the private and public sector need to be cognisant of this in the bidding process.

In many of the road PPP schemes at least three private sector contractors/operators are present and they usually also invest equity in the PPP. These include international companies which tend to be very strong financially which helps in terms of mitigating risk. By having equity in the project the equity holders can potentially diversify by spreading or sharing risk across the SPV. Since all the SPV partners are investing equity, they realise that the financial robustness of the PPP will be contingent upon how they perform as part of the SPV. For example, the contractor would expect that the operator will be performing their duties as the operator will lose out if the project performs poorly. Also, if the contractor has a delay in construction this will affect the revenue stream and the financial model for the project. This highlights the importance of our study in terms of providing an insight into the formation of the consortium and how the domestic and international SPV partners combine to manage risk and various facets of PPP projects.

The study makes an important contribution to the stakeholder literature not only because the roles played by SPV partners in PPPs have been largely ignored in prior literature but also we argue that the structure of SPVs with its global partnerships can increase the effectiveness of risk management. However, with many risks transferred to subcontractors it may be difficult to measure VFM for taxpayers.

Future research could potentially examine the role of the subcontractors in the PPP process and how risk management impacts on SPV performance in more detail. Additional research in terms of how risk is managed in SPV relationships in other countries using road PPPs such as the United Kingdom or in different sectors such as education would complement and add to the work conducted in this paper especially as PPPs are advocated based on the effective transfer of risk to the private sector, as they are perceived to be superior at managing risk, hence if the private sector or its subcontractors are incapable at managing risk it may have implications for the PPPs' performance and by implication VFM. Finally we advocate that a more longitudinal study be conducted. Although our work found that collaborative relationships were evident between the SPV partners, it is important to bear in mind that such relationships may change over time and the relationships between partners could become more adversarial if certain partners fail to perform within the SPV or if the project is subjected to financial pressures.

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APPENDIX A

Brief Overview of the Three Case Studies

All three case studies that we examined are based in the Republic of Ireland and are operated through the use of tolls and a brief description of the case studies is provided below.

Case Study one became operational in 2005 and is expected to last 30 years. It involved the design and construction of new motorway and the operation and maintenance of an existing motorway. A number of submissions were received and a shortlist of four consortiums was approved. Following the selection of the preferred bidder, the project reached financial close in 2004. The three companies in the successful consortium (one domestic and two international) all invested some equity at the outset of the project however the project is primarily financed through debt finance which has been sourced both domestically and internationally (NRA, 2009).

The second case study is a toll based scheme and involved the construction of new motorway bypass with the contract expected to last 30 years in total. (NRA, 2009). 10 submissions were received, from which a shortlist of four companies were announced. The successful consortium involved a number of domestic and international investors The construction joint venture for the project comprised of three international and two domestic companies, and the finance for the project was sourced both domestically and internationally with 80% of the overall project being financed through senior debt. The European Commission also provided some support for the scheme through its Trans-European Network Budget.

The third case study involved the construction of new motorway. There were a number of different consortiums which tendered for the scheme. The contract was awarded to a consortium which consisted of both an experienced international and Irish company. The construction joint venture was split evenly between the two companies. Finance was sourced on this project from a number of prominent international financiers (NRA, 2009).

List of Tables

Table 1: Overview and description of SPV member's roles and objectives in a PPP

Stakeholder	Description	Involvement	Objective
Contractor	Contractors typically design and construct the PPP.	May have an equity stake throughout the project but typically involved in the construction phase	Will seek to construct the project within the required timescale and may subcontract risks to subcontractors.
Operator	Operators are responsible for ensuring the effective operation of the PPP contract and deal with any operational issues or risks. For example, toll operators operate toll road PPPs.	May have an equity stake but typically involved throughout the operational phase of the PPP.	Will seek to operate the PPP effectively and deal with any operational or maintenance risks.
Equity Investor	This finance generally comes from specific equity financiers or contractors/operators. It normally equates to 10%-20% of the total project cost.	Typically invest equity at the outset of the project but may sell their stake when the project becomes more established.	Equity investors will typically want to achieve a decent return on their investment.
Senior Debt Financer	This finance generally comes from banking institutions that provide up to 90% of the finance in PPP projects.	Typically invest debt when the project reaches financial close and the debt may become subject to refinancing if the	Tend to be risk averse and are most concerned about loan obligations being met by the SPV. Financiers have a major influence on the allocation of risk between SPV partners.

		project generates stable cashflows throughout the operational phase.	
Pension Funds	This is an emerging type of funding which generally comes from pension funds who are attracted to PPP projects	A relatively new type of investor they tend to invest equity in projects that are operational for a number of years or they also may invest at the outset of the project.	They tend to be attracted to the stable returns that PPP projects can offer.

(Adapted from Akinyemi et al. 2009; Asenova and Beck 2003, 2010; Ortiz and Buxbaum 2008; Siemiatycki, 2011, 2012b, 2015; Chung et al. 2010; Demirag et al. 2012)

Table 2: Transportation Developers ranked by invested capital in 2013

Company	Country	Total Invested $ millions	No of projects active or sold
Ferrovial (Cintra)	Spain	73,500	55
ACS (Hochtief and Iridium)	Spain	72,000	100
Vinci	France	70,700	41
Macquarie	Australia	48,200	57
Bouygues	France	38,600	27
Egis Projects	France	26,600	26
Sacyr	Spain	21,800	41
GlobalVia (FCC+Bankia)	Spain	19,400	46
OHL	Spain	18,200	34
John Laing	UK	21,400	22

(Source: Public Works Financing, 2013)

Table 3: List of Irish PPP road schemes

PPP Scheme	SPV	Consortium partners	Financiers
N4 (T)	Eurolink	Siac, Cintra	Banco Bilbao Vizcaya Argentaria S.A, Banco Santander Hispano Bank, EIB
M1 (T)	Celtic Roads Group	BAM, NTR,Semperian	AIB, EIB, Depfa Bank, KBC/IBB, IOC, Societe Generale
M8 (T)	DirectRoute	Strabag, Lagan, KBR,Sisk, Roadbridge	HBOS, AIB,EIB,KBC,ING
N25 (T)	Celtic Roads Group	Bam, Iridium, NTR	Banco Bilbao Vizcaya Argentaria S.A, Banco Santander, Central Hispano S.A, EIB
LT (T)	DirectRoute	Lagan, Roadbridge, Sisk, Strabag, AIB, Meridiam infrastructure	HBOS, EIB, AIB, Meridiam
M3 (T)	Eurolink	Siac, Cintra	Banco Bilbao Vizcaya Argentaria Santander, Credit Agricole
N6 (T)	N6 Concession Ltd	FCC Construction, S.A, Itinere Infraestructuras, PJ Hegarty and Sons	Royal Bank of Scotland, Banesto, EIB, Fortis, MCC
M7/8 (T)	Celtic Roads Group	BAM, Iridium, NTR	EIB, Bank of Ireland, Societe Generale, ING Bank
M50U (T)	ICON	FCC Construction, S.A, Itinere Infraestructuras, PJ Hegarty and Sons	RBS, La Caixa, Fortis, MCC, EIB
N11 (A)	BAM PPP PGGM	PGGM BAM Contractors	EIB, Bank of Ireland, Standby Credit Facility, National Pension Reserve
N17/N18 (A)	DirectRoute	Margueritte Fund, Infra Red Capital Partners, Sisk, Lagan, Roadbridge, Strabag	BOI, EIB, Natixis, Societe Generale
N25 (A)	BAM PPP PGGM	BAM PPP PGGM, Iridium	EIB, Allianz Global Investors GmbH
M11 (A)	BAM PPP PGGM	BAM PPP PGGM, Iridium	EIB, Societe Generale

(Sources: National Roads Authority, 2009, 2012,)

Table 4 List of Interviewees

Case Study	Interviewee	International/ domestic
1	Toll Operator	Domestic
1	Construction Manager	Domestic
1	Contractor	International
1	Traffic Consultant	International
1	SPV Manager	Domestic
1	Senior Debt Financier	Domestic
1	Senior Debt Financier	International
2	SPV Manager	Domestic
2	SPV Partner	Domestic
2	Toll Operator	International
2	Contractor	International
2	Contractor	Domestic
2	Contractor	Domestic
2	Senior Debt Financier	Domestic
2	Senior Debt Financier	International
1+2	Senior Debt Financier	International
2	Traffic Consultant	International
3	Contractor	International
3	Contractor	International
3	Contractor	Domestic
3	Contractor	Domestic
3	Legal Advisor	Domestic
3	Traffic Consultant	International
3	Technical Consultant	International
3	Senior Debt Financier	International
All schemes	Senior Debt Financier	International
All schemes	Procuring Authority	Domestic
All schemes	Procuring Authority	Domestic
All schemes	Public Sector Policymaker	Domestic
All schemes	Public Sector Policymaker	Domestic
All schemes	Public Sector Advisor	Domestic
All schemes	Public Sector Advisor	Domestic
All schemes	Public Sector Audit Office	Domestic
All schemes	Trade Union Group	Domestic
All schemes	Business and Employers Group	Domestic
All schemes	Motorist Group	Domestic
All schemes	Accountant	Domestic
All schemes	Technical Advisor	Domestic

List of Figures

Figure 1: Overview of the SPV relationships in PPPs

Source: Demirag, Khadaroo, Stapleton and Stevenson (2012, p.1324)