REVIEWING RISK ALLOCATION FOR INFRASTRUCTURE PFI: BETWEEN THEORY AND PRACTICE

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Risk allocation (RA) in PFI infrastructures resides in a complex milieu. Tackling this issue from both theoretical and practical perspectives is important in order to understand its complexities. It is claimed that PFI deals can result in better value for money through proper RA. However, the common notion of the public sector transferring ALL risks to the private sector does not describe the reality nor define the optimum way of dealing with risks in infrastructure PFIs. In order to analyse the process of RA, an extensive literature review is undertaken to compare the theory and the practice of the process. It is concluded that a considerable gap exists and the main reason for that is the absence of consensus around the logic/theory of the PFI itself.

Keywords: infrastructure, PFI, risk allocation, risk identification, uncertainty.

INTRODUCTION

The pressure on governments to absorb the growth of cities and provide advanced services through building mega infrastructure projects contributed to the movement towards using private capital in the provision of public services. This approach, named Private Finance Initiative (PFI), officially started in the 1990s in the UK. It is argued that infrastructure projects are the only projects open to PFI arrangements (Mountain 1998 in Bing *et al.* 2005). Thus, the paper is concerned with RA in PFI infrastructure which involves financing projects from private money. The PFI approach has come with many promised fruits of fast delivery, advanced technology, innovative designs and high quality. It is claimed that it can deliver value for money through proper RA (Akintoye 1998; Treasury 1997). The paper aims to investigate the issue of RA in PFI infrastructure through an extensive literature review on the theory and practice of the subject. This is part of a research attempting to design an informed decision support model for RA. Therefore, the methodology is to track the process of RA from the outset; i.e. risk definition through risk identification and allocation. The word theory used in the paper includes both the risk management theory as stemming from project management and the logic (theory/rational) of PFI. The word practice includes

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professional bodies' recommendations, case studies, and surveys conducted and cited in the literature.

RISK DEFINITION

Generally, the word risk can be directly linked to danger or harm that should be avoided. However, in the world of project management, risk has two sides; danger (negative event) and opportunity (positive event). This is reflected in the objective of risk management as to increase the probability and impact of positive events and decrease the probability and impact of negative events in a project (PMI 2008). This idea of looking at risk is at the core of the private sector's thinking of risk bearing involved in delivering infrastructures. The link between risk and uncertainty is evident in various definitions of risk by various authors who see risk as derived from uncertainty or as a result of lack of certainty (Hillson 2002; PMI 2008). Thus, risk is defined as the effect of uncertainty on a project's objectives. Froud (2003) gave a comprehensive overview on the concepts of risk and uncertainty. She summarized the approaches towards the uses of risk and uncertainty as "technicist concepts", "post-modernist concepts", and "radical concepts". She linked them to the process of RA in PFI projects. The first and third concepts are discussed below, given their relation to the PFI infrastructure context.

Technicist concepts

This approach looks at risks as quantifiable using probabilistic techniques. Thus, it does not take uncertainty into consideration, or as Froud (2003) puts it "risk and uncertainty are conflated". A similar approach towards risk management is criticised by Holt (2004) who argued that seeing risks in terms of technical reasoning ignores many aspects of risk. This is due to ignoring risks when probabilities are uncertain (i.e. unknowable) (Froud 2003). Holt (2004) referred to the idea that the risk management process deals only with "tame" problems where it should deal with "wicked" problems which can better describe the project environment. The technicist approach also corresponds with the cognitive science perspective on risks (Lupton 1999) which is concerned with the calculation of the probability and impact of risk events. This makes it convenient for use in the cost benefit analysis usually used in PFIs (Hood & Mcgarvey 2002).

Radical concepts

This approach recognises uncertainty and differentiates it, conceptually, from risk. It suggests that the term risk (i.e. the ability to use probabilistic techniques) can cover the types of risks insurable by the private insurance, such as accidents. This is due to the ability to process information (i.e. experiences) from the past to forecast future outcomes. In PFI terms, safety, fire and security are all types of risks the private sector can transfer to insurance companies. Outside these types of risks, Froud (2003) argues, "uncertainty rather than risk becomes the relevant category". Again, in PFI terms, interest rates and demand levels over a period of 20-50 years are examples of uncertainties. Not only it is the long time frame that makes them uncertainties, but it is also the time gap between decision making and the occurrence of these outcomes. It is suggested that these decisions, taken in the present time and reflected in contracts, will partially shape the uncertain future outcomes (Froud 2003). Ultimately, attempting to deal with uncertainties as risks will, at least, result in a non objective probabilistic distribution. However, Hood and McGarvey (2002) argue that any discussion on the meaning of risk in a PFI project is 'rendered redundant'.

RISK IDENTIFICATION

The theory

Risk identification (classifying risks into categories and sub-categories) is the first step in RA. There are different ways of risk classification in literature. Some classifications are done in relation to project phases (e.g. design and construction, operation), others describe the environment of the project (e.g. political, economical, environmental, and financial) or they perceive risks as occurring at levels (e.g. macro level, meso level, micro level).

The theory of risk management provides a systematic approach towards risk management in general and risk identification in particular. The PMBOK (PMI 2008) uses the Risk Breakdown Structure (RBS) framework where risks are shown in categories and sub-categories that identify the main causes of risky events in a project (PMI 2008). Information on risks are gathered through a number of techniques, such as brainstorming, checklists, and Delphi performed by a team of experts and key stakeholders, to produce joint views on potential risks (Ghazali and Kabir 2009; PMI 2008). It is most important that identifying risks should be an iterative process that takes place over the project life cycle (PMI 2008; Boussabaine 2007).

In relation to the PFI context, from another theoretical point of view, Froud (2003) argues that risk identification is confined by the imagination of the parties to a contract. Thus techniques like brainstorming are not adequate, and a contract will definitely exclude some risks and/or create new risks. From a similar perspective, Hart and Moor (1988) described the situation of information asymmetry where not all parties to the contract can observe the state of the world. In a PFI, this situation stems from three factors; unacknowledged uncertainty, PFI complexity and long duration. Due to the use of the technicisit approach in defining and dealing with risks, the unknown will not be identified, thus some risks will not be allocated (Froud 2003). Moreover, the complexity of the PFI arrangement can generate new risks (Grimsey and Lewis 2002; Spackman 2002). Risks can emerge in a complex system (Brookfield and Boussabaine 2009).

The issue of contract incompleteness joins the above factors to create further difficulties in risk identification. Incompleteness of a contract is defined as the failure of a contract to specify parties' obligations when contingencies are realized (De Fraja 2002). In long term contracts, such as PFI agreements, incompleteness is magnified. Hart and Moor (1988) differentiated between information asymmetry and contractual incompleteness. The latter is due to the higher transaction costs that are incurred from trying to process information and reflect it in contractual statements. Thus, it is nearly impossible to anticipate all the possible contingencies that are needed in a contract.

Checherita and Gifford (2007) have a relatively similar view to that of Froud (2003) in relation to the specificity of PFIs in creating their own particular risks. They propose an interesting classification of risks as common and specific. Common risks are those which are usually encountered in infrastructure projects. Specific risks are those created or intensely stimulated by the PFI structure (i.e. PFI complexity). They are caused by the distinctive relationships between the public and the private and the way their economic interests are bundled. The risk of opportunistic behaviour is one of these specific risks.

Opportunistic behaviour is a result of contract incompleteness and institutional complexity (Williamson 1976). Opportunistic behaviour is manifested in the case of

contract renegotiation which is the direct product of either contract incompleteness or information asymmetries or both. Apart from additional costs, delay and potential disputes; contract renegotiation is obnoxious to the public sector as it shifts the power in the private company's favour. Weaknesses in the bidding process stemming from non objective assumptions and unrealistic estimates of future demand/production stated in the bidding documents (i.e. information asymmetry) can result in the less prepared firm winning the bid. After signing the contract and when the project becomes clearer and risks are realized and faced, the private firm will seek contract renegotiation.

The practice

In practice, specifically in the UK, risk identification relies heavily on standard risk registers recommended by official bodies, e.g. National Audit Office (NAO) and Office of Government Commerce (OGC) (Boussabaine 2007). A risk register is the output of the risk identification process. Its application is similar to the checklist technique described in the PMBOK (PMI 2008). However, Ghazali and Kabir (2009) criticized the use of a single technique in risk identification. They found that the NHS Trust uses only the brainstorming technique and they concluded that this technique is not adequate and other established techniques, such as Delphi, should be also used because they offer expert feedback and controlled views on risks.

The reflection of the theory of contract incompleteness in the practice of PFIs has some implications. Firstly, remedies to contract incompleteness are not applicable in the case of a PFI (Froud 2003). Interestingly, one of the remedies involves the ownership of assets which implies abandoning PFI concession as a mean of infrastructure delivery (Deakin and Mitchie 1997 in Froud 2003). Secondly, from a partnership viewpoint, PFIs should promote flexibility and transparency. In this regard, the Treasury Taskforce (1997) recommends that projects should not be over specified to allow for private sector's innovation. In fact, private sector innovation is one of the most sought 'fruits' for private participation in infrastructure delivery. However, there is a paradox between the need for quasi- complete contracts to avoid renegotiation and to limit the complexity of a contract as Hart and Moor (1988) stated, and the need for flexible contracts to encourage innovation. Complete contracts, apart from their impracticality in general, are not encouraged in practice under a partnership agreement.

The logic of PFIs, as stemming from a partnership approach and residing between traditional procurement and complete privatization, should not result in, theoretically, a dramatic effect on the position of the state as the ruling and controlling authority. This is because it is not privatization or a selling of governmental assets but a long-term 'partnership', although some authors such as Asenova and Beck (2010) argued that PFIs are mere capital investments.

In practice, the issue of governance is not attracting the required attention (Hodge 2004). PFI projects tend to focus on commercial risks which can be specified in the contract. However, governance risks that can undermine the role of the state in maintaining public interest are overlooked. Commercial risks are those which can be priced and quantified, thus reflected in the contract. On contrary, governance risks are usually intangible, referring to a possible deficiency in the government's role of protecting social interests. Therefore, it can be easily overlooked in the midst of rigid economic figures.

The case study of City Link Toll way project in Melbourne (Hodge 2004) is a clear example of poorly managed governance risks as opposed to well-managed commercial risks. Firstly, the concession, which has been granted for 54 years, is seen as considerably long due to the restrictions it applies on government's decisions. The Special Purpose Vehicle (SPV) claimed damages from the state government under a provision in the concession agreements that prevent the state from taking any actions that damages the toll-way revenues, as a result of poor demand (Hodge 2004). Thus, the SPV claimed $35.8 million when the state built another nearby public road. This implies two issues. Firstly, a contractual provision can be vague in such a way that enables an SPV to claim damages whenever it 'perceives' the situation is harmful to revenue. Secondly, a 54-year concession with such a provision would completely lock-in the state and prevent it from initiating any similar projects in the surrounding area. This idea is supported by Lonsdale (2005) who, furthermore, concluded that contractual balance between the state and its supplier under a PFI is difficult to achieve, thus a state being locked-in is highly probable. However, the author believes that long term concessions and vague provisions in the contract can maximise the imbalance.

A similar problem was faced in the delivery of a bridge in Lisbon, Portugal (de Lemos *et al.* 2004). The initial project was to deliver the "Vasco Da Gama" bridge as a toll crossing the river Tagus. However, the government included the maintenance and operation of an existing bridge "25 de Abril", serving the same area, in the concession agreement in order to mitigate traffic risk for the private company. "25 de Abril" was originally a toll under a 20-year concession after which it would be free for the public. The government did not accomplish that and furthermore it raised the tolls on a bridge that had been already paid for, to make it viable for the private investor. This resulted in a huge public outcry and increased media scrutiny and, consequently, this created a political risk. The government became unpopular and this contributed to its failure in the subsequent elections.

Conflict and legal disputes were characteristics of the Melbourne Toll-way and "Vasco De Gama" project. The effect of litigation on a state government is considerably different from that on a corporate because any legal case involving the government "makes good newspaper" (Hodge 2004). So, a central government, in deciding to avoid litigation, might settle for terms that restrict its future control and threaten its sovereign position.

RISK ALLOCATION IN PFI

Who to allocate to?

Parties of PFI deals, generally, include the public entity, the private sector, senior lenders and end users. However, the inclusion of end users as a stakeholder is not usually observed in practice and is under debate in theory. There exist two approaches towards dealing with end users or 'citizens'. One view sees them as distinct or 'peripheral' stakeholders who should be consulted during the development phase as they can influence RA outcomes (Chen and Hubbard 2012). On the contrary, others (Bing *et al.* 2005) defined RA as an assignment of risks between the project's direct participants; the public and the private. The latter view can be the output of two elements. First, the government should inherently take citizens' interests into consideration. Second, it is impractical and nearly impossible to include 'citizens', as an absolute party, to any commercial contract. This issue is also reflected in theoretical decision support systems which attempt to model the RA process between

PFI's parties. Yun and Wei (2008), in formulating their model for RA in BOT expressways, considered the 'product buyer' as a participator in RA. However, most models (Lam *et al.* 2007; Medda 2007; Li and Ren 2009) seek the optimal allocation of risks between the public client and the private company. Eventually, risk in practice is allocated between the contracting parties. Nevertheless, many argue (e.g. Ng and Loosemore 2007; Cooper and Tylor 2005) that risk will eventually be transferred to the end-user.

Principles of risk allocation

A common principle is to allocate risks to the party best able to manage it. However, the term 'manage it' is relatively broad, thus this principle is decomposed into two general principles (Medda 2007; Hood and McGarvey 2002). First, risk is borne by the party best able to influence and control the outcomes of risk. Second, risk is borne by the party able to bear it at lowest cost. However, adopting these principles in practice has two main implications. Firstly, these two principles are usually in conflict as the party that can control a risk source and influence it is usually not the same party that can manage this risk efficiently at a lower cost (Medda 2007; Boussabaine 2007). This is apparent in a concession-based PFI where the government has the overall control over demand levels of a toll road, but at the same time the private company has the capacity (resources) required to manage this risk. Secondly, these principles imply subjective judgment and are not easily reflected in a decision support model or in a real contract (Lam *et al.* 2007; Khazaeni *et al.* 2011). Jin (2011) proposed a theoretical framework for RA that interprets the RA decision making in terms of theories behind these two principles. He looked at the transaction cost economics and the resource-based view of organizations' capacity. However, in practice, value for money (VfM) assessment excludes the transaction costs from the Public Sector Comparator (PSC) calculations, which has been criticized by Cooper and Taylor (2005), mainly because transaction cost is high in PFI projects given the lengthy time required to negotiate and the cost of experts' participation (Bing 2003).

Risk allocation and its implications

In theory, it has become a common notion that a PFI's core aspect is to transfer risk from the public to the private sector (Bing *et al.* 2005), although it is argued that risk transfer has arrived only as a 'fortunate' by-product (Froud 2003). Thus, theoretically, the majority of risks should be transferred to the private sector which is responsible for the financing, designing, construction and operation of the infrastructure project. However, the so-called 'advantage' of risk transfer is a controversial issue both in the academic literature and in practice (Boussabaine 2007; Froud 2003; Pollok *et al.* 2002; Spackman 2002) due to three main factors. First, risk transfer is strongly linked to achieving VfM in PFIs. Second, the underlying theoretical base that makes a PFI deal 'good at' transferring risks is questionable in practice. Third, RA relies heavily on the context. These factors are discussed below.

In the UK practice, VfM assessment is undertaken through a PSC based on the Net Present Value (NPV) technique. VfM is only observed when risk transfer is made, therefore if risks are not transferred this value will be diminished (Shaoul 2005; Boussabaine 2007). The output of the comparison between publicly-funded infrastructure (PSC) and a privately-funded one is always in favour of the PSC unless risks are added to the PSC. The private capital cost is usually higher than the public cost in infrastructure projects mainly because governments can borrow money for lower interest rates. However, when risks are incorporated into the NPV, the private

option appears to be the cheapest. Boussabaine (2007), Pollock *et al.* (2002) and Froud (2003) noticed that even when calculations show that the PFI is the better option, the differences between numbers are marginal and sometimes are not enough to make a decision in favour of PFI. Moreover, it is doubted that risks, to be transferred, are priced in a way that make the PFI option seem cheaper.

The advantage of risk transfer in a PFI comes mainly from a strategy in dealing with risks; called risk spreading. It involves the ability to spread risk to a relatively high number of bearers, thus, theoretically eliminating it. Checherita and Gifford (2007) believe that PFI deals provide the required environment for risk spreading and diversification to multiple parties. However, from a practical viewpoint, diversifying risks down the project supply chain implies that each bearer will need compensation in a form of risk premium. Premiums will accumulate and a higher cost would be incurred (Ng and Loosemore 2007). Furthermore, some public risks, e.g. risks involved in environmental-related goods, cannot be easily quantified and consequently cannot be widely spread (Spackman 2002).

Context-related issues can evidently contribute to the failure of the RA process. Context is concerned with the project's external environment through which different levels of power and influence are reflected. Power relations between a PFI's stakeholders have the ability of distorting RA in favour of the strongest party (Chen and Hubbard 2012), where generally a partnership between two parties should, in theory, imply a power balance, the practice of PFIs suggests different situation. The delivery of a BOT toll road project in China is a good example (Chen and Hubbard 2012). The private company, the public authority, and citizens have all played their role in the power shift over the project's phases. The public authority did not satisfy its obligations regarding certain compensation when demand was below expected. End users exerted their power through not using the road and relying on other alternatives. Three main conclusions can be observed. First, RA, although done through contractual agreements, does not reflect the reality where risks are shifted to the less powerful party. The power a specific party can exert depends on the project phase; i.e. pre-contract and post-contract phases. The power possessed by a party can be exerted only if allowed by a juridical system. Therefore, the public sector's power in developing countries is more evident since judiciaries are not independent compared with western developed countries. Another problematic point is the relative power of different governmental departments. A well-documented government guarantee could be of no value when it contradicts with a higher policy or a sovereign law. Such a problem was encountered by the private company in the Bangkok Second Stage Expressway (Checherita and Gifford 2007).

Government support

Government support in PFIs is seen through governments' guarantees and subsidies. From a theoretical viewpoint, government support is required to mitigate for risks outside the private sector's control, such as political risks that can affect demand and/or revenue levels. However, guarantees should be balanced to keep the private contractor incentivised and reduce risk exposure. Brandao *et al.* (2011) developed a model for determining an optimal incentive mechanism for transportation projects. They concluded that for a given risk reduction level, the lower cost alternative for government results from increasing the Minimum Demand Guarantee (MDG) and decreasing the amount of subsidy. However, in practice, government guarantees are dependent on the economic and political context. As Ozdoganm and Birgonul (2000)

put it "A government guarantee against political risks is always as good as the government itself". Moreover, a government operating in an unstable environment may need to provide excessive guarantees to convince private investors, to the extent that a traditional way of procurement would be cheaper (Singh Bajaj 2007). Moerover, in practice, when the guarantees' value is larger than the financial loss related to the risk, the private partner would prefer that the risky event will occur in order to gain profit (Medda 2007).

Critical risks and risk preferences in different contexts

There is a consensus that in concession-based, stand-alone PFIs, revenue risk, as dependent on demand risk, would be considered as the most critical since it is the only source for the private company to service its debt and to generate profit to satisfy shareholders (Checherita and Gifford 2007; Thomas *et al.* 2003). It should be noted, however, that revenue risks are not always dependent on demand risks. Certain payment mechanisms exist to reduce the demand risk on the private service provider who would be paid for the availability of the facility itself regardless of its real use (e.g. water treatment, power generation stations).

RA preferences vary depending mainly on the context. In relation to the controversial demand risk, some believe demand risk should be transferred to the private sector (Li and Ren 2009). In fact, transferring demand risk to the private sector would be the biggest motive for governments to deliver transit projects through PFIs (Siemiatycki and Friedman 2012). Others believe that this risk should be a matter of negotiation (Forrer and Kee 2002). However, not only does practice show that transferring this risk to the private is not feasible but it also indicates that stand-alone transit projects perform poorly when the private provider is compensated merely through end-users fairs (Siemiatycki and Friedman 2012).

The influence of context on RA can be seen in the politically-stable UK where the government retain political risks as it is cheaper and there is "little to be gained" from trying to transfer them (Bing *et al.* 2005). The UK-based survey conducted by Bing *et al.* (2005) showed that demand risk is allocated to the private sector but with perceived opportunity for sharing. Risks such as interest rate volatility, availability of finance and geotechnical conditions were preferred to be retained solely by the private sector. On contrary, in China, the results of a survey on RA preferences conducted by Ke *et al.* (2010b) showed that most risk categories are either retained by the public or shared with the private sector and no risks were preferred to be transferred completely to the private sector. Ke *et al.* (2010a) compared RA preferences in Hong Kong and China with those of UK and Greece and concluded that UK is the best able to transfer risks to the private sector then comes Greece, Hong Kong and China. This could be related to the stable political context and the well-established PFI policy in the UK.

DISCUSSION

The theory has introduced significant advances in the approaches towards risk definition but in practice, governments and local authorities are still stuck in the traditional (technical) approach of defining risks. Recognizing uncertainty is of a great importance in a PFI environment given the long time frame. If there is substantial uncertainty concerning cost and time data, cost plans may have little value for decision making (Boussabaine 2007). The way risk is defined is reflected later on in the identification and allocation processes. When risks are not identified, they are not

allocated and thus retained by the public sector because contracts can only specify obligations for identified risks.

Infrastructures PFIs have distinctive features that affect the allocation process. Firstly, the objectives of the two contracting parties are in conflict, and not complementary as they should be in a partnership agreement (Bresnen and Marshall 2000). In a PFI, maximising profit is a priority and public need is serviced only when it generates profit during the operation phase. Moreover, an inner conflict may occur within the same party as Ozdoganm and Birgonul (2000) suggested. The contractor is playing the owner side, as a member of the SPV, whose main duty is to protect the project. At the same time the contractor side, aiming at mere profit, has a strong presence. One of the reasons for creating an SPV is to direct the stakeholders' efforts and loyalty towards the project itself rather than their own conflicting objectives. Similarly, the goal of RA, as well, is to minimize the overall risk cost of the project and not the cost for each party (Lam *et al.* 2007), but this is not observed in practice (Ozdoganm and Birgonul 2000). Secondly, these projects are complex from all perspectives; financially, contractually, relationally and politically. Complexity increase risks (Ng and Loosemore 2007). Thirdly, payment mechanisms play a profound role in infrastructure PFIs. The private sector, pushed by lenders, may impose payment mechanisms which lower its revenue risks at the expense of end-users. Payments for toll roads, for instance, have various forms, with each imposing a different level of risk on the private SPV and their lenders. These payments mechanisms are situated on a spectrum ranging from availability-based tolls with no demand risk, to the riskiest tariff-based user-paid tolls (Bain 2009). Between these two extremes there exist a number of arrangements; each is trying to create the balance. Therefore, it is recommended that payment mechanism reflects both the level of service and the amount of risk transferred (Akbiyikli *et al.* 2011). Fourthly, RA is highly dependent on the context. Developed countries may have entered into these deals as part of a neoliberal agenda. However, for developing countries it is only because of lack of public money and looking at PFIs as the only way to deliver crucial infrastructure. Still, it is harder for developing governments to secure balanced RA. The government would be either aggressive to protect itself, and consequently hinder the relationship, or 'negatively generous' to incentivise the private sector at the citizens' expense.

It would be reasonable to say that most risks, after the project is built, are passed back to the public or the citizens. The characteristics of contract incompleteness, long duration and high potential for renegotiation are inherent in any PFI deal and are enabling the private sector to pass back risks to the public through, for instance, changes in payment mechanisms. It could be said that risk is like 'energy' in physical terms. Risk is neither eliminated nor created from "scratch", rather it is transferred and converted from one form to another. This is truly evident when a demand risk can be converted into political risk if not treated properly, thus transferred back to the public sector.

The relationship between risk factors is not adequately addressed in practice. This relationship could be best described by the formation of a snowball. Risks can aggregate; the occurrence of one risk can easily lead to another risk and so on. A default in the design can lead to higher operation and management costs and/or lower performance, and consequently lower demand for the service. Similarly, the occurrence of a risky construction event would cost the SPV a significant amount of money. The private sector will seek to compensate for this through a higher tariff, possibly causing public outcry and political risks.

It is noticed that there are two gaps. A gap exists between theory and practice since a balanced RA is not observed in practice. At best, a PFI deal might be theoretically good in transferring risks to the best party to manage it; however, it creates qualitative risks which are not accounted for. Another gap exists within the theory/logic of PFI itself. A consensus on the nature of PFI's origin and its underlying objectives is missing. On one hand, some are viewing it as a procurement route for governments to rapidly deliver advanced infrastructure and satisfy its role towards society while others are seeing it as an investment-driven approach that sees profitability as its first priority (Asenova and Beck 2010).

CONCLUSION

RA has been researched between theory and practice. The methodology was to track the process of RA from the outset; i.e. risk definition through risk identification and allocation. Areas of contradictions between theory and practice have been highlighted. It is concluded that a gap between theory and practice exists and a second gap exists within the theory of PFI itself.

It is concluded that uncertainty, rather than risk, prevails in any PFI deal. Therefore, contracts are not the best way of dealing with risks in a PFI structure. Governance risks are overlooked and PFIs are criticised as hindering government positions. However, this view is the outcome of the second gap that exists in perceiving PFIs and the real objective behind these deals.

If the private sector is to commit capital over a long period of time, then it needs a considerable compensation in return. The trade-off between this compensation and the advantages claimed by this financing method is a long standing debate. On one hand, governments will benefit from off-balance sheet projects delivered faster and operated to higher standards. It will also transfer the risks associated with time, cost (financing) and quality (performance) to another party, who might actually be the end user. On the other hand, it is suggested that this method will deprive the public sector from its superior control over public services resulting in a distorted balance of power. Thus, it could be inferred that the whole argument on the viability of PFIs is founded on the way of dealing with commercial risks and governance risks. However, discussing governance risks is difficult when a consensus on the logic of PFI is absent.

Generally, what is happing in PFIs is enforcing risks to adapt to a contractual agreement (commercializing risks), under a partnership agreement that cannot in any way deal with risks over 50 years, rather than adapting the contractual context to the nature of risks in a PFI deal. Practice of PFI is controlling the way risks are defined and allocated. In theory, RA models are trying to model the allocation of quantified risks and only few quantitative models for RA exist.

Risk conservation and the snowball syndrome have been introduced to describe the nature of RA in PFI. In short, for an infrastructure PFI deal, the private sector will always seek to pass the risk back to the public even though the theory presents a 'perfect' world where balanced power and RA exist.

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