INCOMPLETE CONTRACT THEORY AND THE MANAGEMENT OF RISKS IN LONG TERM CONTRACTS

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Abstract

The perception of risk in contracts with very long terms like Power Purchase Agreements (PPAs) and other public private partnership concession contracts are uniquely different from typical short term contracts. The reason for this is the greater chance of an unforeseen event occurring during the tenure of long term contracts than short term ones. Parties to long term contracts therefore tend to spend a remarkable amount of time guessing and protesting against every conceivable risk that might eventuate during the intervening years between the commencement of the agreement and contract end. However, it is very unlikely that a contract can be designed to cover all eventualities, it is therefore left to the parties to find a sensible strategy for filling in the inevitable gaps that are likely to occur in future, otherwise they leave room for third parties (judges) to exercise "discretionary" powers over their contracts. It is the position of this paper that the best strategy for filling these gaps is to draft contracts in a manner that appropriately allocates and mitigates risks in a broad manner. This paper looks at the unique nature of long term contracts which are generally regarded as incomplete. It evaluates the likely sources and types of issues that arise from these contracts and suggests the best risk-mitigating strategies available to the parties involved in negotiating such contracts.

Key words: Incomplete Contract Theory; Risk; Risk Management; Long-term Contracts

1. Introduction

Long term contracts are usually more complex than short term ones, principally because of their duration. After detailing the principal contractual terms, parties then have to take a voyage into the future to imagine different scenarios of possible events that might take place during the intervening years between the contract commencement and its end. This process of course also takes place in short term contracts but in a more limited manner. This is the reason why long term contracts are generally considered to be incomplete, since it is not possible to draft for all possible scenarios that might occur in future. Parties might employ 'comprehensive' or 'general clauses', but even these very wide, all-encompassing clauses, could never provide for all possible scenarios and prevent projects from failing. Take for instance, the problem of technology obsolesce risk; most times, new technology developments during the term of a contract demand significant investments or alternative methods of delivering a service and this has serious or sometimes even catastrophic effects on the sustainability of a project. This risk may of course be allocated to a party, but parties would not be able to predict with all certainty the effect future changes in technology might have on the project and therefore the actual cost to the party to whom this risk is allocated. When this risk eventuates, it might lead to the abandonment of the project, which was never the intention of the parties to the contract.

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In the context of this paper, long term contracts are contracts with very long durations like power purchase agreements and other concession contracts. The most common long term contracts are Public Private Partnerships (PPP) contracts which usually have an average term of 25 years and this paper will use these types of contracts to discuss the typical nature of long term contracts. This is contrasted with typically short term contracts like ordinary commercial contracts with terms of 7 years and below.

2. What Are Incomplete Contracts?

There are no clear definitions of incomplete contracts.[1] An incomplete contract has however been defined as one whose contractual obligations are observable to a certain degree by contractual parties but not verifiable *ex post* by third parties, like a judge or arbitrator whom parties might eventually refer to when disputes arise.[2] A complete contract is therefore one for which the list of conditions on which the actions are based is expressly exhaustive.[3] Care must be taken to emphasize that there are slight dissimilarities between the nature of the incompleteness referred to by the economist and the perspective from which a lawyer would view an incomplete contract. Whilst an economist views a contract as being incomplete or complete from an efficiency viewpoint, a lawyer looks at an incomplete contract strictly as one which has gaps regarding the obligations of the parties. This difference has been aptly analysed:

> The incompleteness of a contract has a different meaning to an economist than to a lawyer. To a lawyer, a contract may be incomplete in failing to describe the obligations of the parties in each possible state of the world. Should a state of the world materialize that falls within the gap, the enforcing court must choose either to decline to enforce the contract or to fill the gap with a default obligation… Economists use incompleteness in a different sense. A contract is incomplete, if it fails to provide for the *efficient* set of obligations in *each* possible state of the world. Such a contract is "informationally incomplete" even though it is "obligationally complete" in the sense that it does not contain any gaps.[4]

The discussions that follow below combine both the legal and economic interpretations of incompleteness. Firstly, the paper contends that it is rarely possible to provide for all possible scenarios in long term contracts through contractual clauses (legal incompleteness). Secondly, the paper is also premised on the assumption that it is, impossible to optimally allocate risks amongst the parties to a long term contract (legal and economic incompleteness). Finally, that due to this non-optimal allocation of risks, parties to long term contracts are opportunistic in the manner in which they deal with one another (economic incompleteness).

2.1 The Origin of the Incomplete Contract Theory

The incomplete contract theory has its foundations firmly rooted in the theory of the firm. The

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[1] P Schmitz, 'The Hold Up Problem and Incomplete Contracts: A Survey of Recent Topics in Contract Theory' [2001] 53 (1) *Bulletin of Economic Research* 1, 1-17

[2] A Nicita and U Pagano, 'Incomplete Contracts and Institutions' in F Cafaggi , A Nicita and U Pagano (eds), *Legal Ordering and Economic Institutions* (Routledge, London 2002)145

[3] ibid

[4] RE Scott and GG Trantis, 'Incomplete Contracts and the Theory of Contract Design', [2005] 56(1) *Case Western Law Review* 1,1-15. <http://law.bepress.com/uvalwps/olin/art23> accessed 6 October 2012

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origin of the theory itself can be traced to a 21-year-old undergraduate student of the London School of Economics, who had asked a simple question: "why do transactions still take place between firms despite the market being an efficient method of resource allocation?" In other words, if the price mechanism was so good at allocating resources, why did firms still exist?[5] This question was later further explored in his essay written in 1937 raising questions about the boundaries of the firm.[6] An attempt was made[7] to answer this question through the use of the transaction cost theory, which is based on the principle that market transactions can become very costly when agents have to make relationship-specific investments.[8] For instance, when a strong bilateral interdependence exists in a relationship, vertical integration enables one of the parties to protect its specific investments against the potential hold up that the other party's opportunistic behaviour could generate when contracts are incomplete.[9] It is predicated on the tripod that parties to trade fear opportunistic behaviour, that insufficient contractual safeguards can result in inefficient levels of such investment, and that avoidance of such inefficiencies provide a key element in the boundaries of the firm.[10]

However, that answer raised further questions: The first is whether there are no costs to vertical integration as opposed to just benefits that could explain why firms have boundaries. Secondly, why were all transactions not taking place within a single firm?[11] These questions were answered by some eminent scholars who also extended the transaction cost theory by using the theory of incomplete contract to explain the benefits of vertical integration to a firm.[12] According to them, economic actors are only boundedly rational and cannot anticipate all possible contingencies, therefore it is possible that certain states of nature or actions cannot be verified by third parties before they arise and thus cannot be written into an enforceable contract, i.e. these contracts are incomplete.[13] Subsequently, incomplete contract theory has been extended and is used extensively for analysing economic efficiency in relationship-specific investments like Public Private Partnerships (PPPs).[14]

3. Incomplete Contract Theory and Long Term Investment Contracts like PPP Contracts

The classic examples of long term contracts are Public- Private Partnerships (PPPs), which may be defined as long term relationships between public sector agencies and private sector entities

[5] P Aghion and R Holden R, 'Incomplete Contracts and the Theory of the Firm, What Have We Learned Over the Past 25 Years' [2011] 25 (2) *Journal of Economic Perspectives* 181-197

[6] R Coase, 'The Nature of the Firm' [1937] 4(16) *Economica* 386-405

[7] O Williamson, *The Economic Institutions of Capitalism (*New York Free Press 1985); O Williamson, 'Comparative Economic Organization: The Analysis of Discrete Structural Alternatives' [1991] 36(2) *Administrative Science Quarterly 269*-296

[8] P Aghion and R Holden supra

[9] E Brousseau and M Fares, 'Incomplete Contracts and Governance Structures: Are Incomplete Contract Theory and New Institutional Economics Substitutes or Complements?' in C Menard (ed.), *Institutions, Contracts, Organisations, perspectives from New Institutional Economics* (Adelshot Edward Elgar Publishing 2000)

[10] BR Lyons, 'Incomplete Contract Theory and Contracts Between Firms: A Preliminary Empirical Study'(1996) Centre for Competition and Regulation Working Paper 1/2001 <http://competitionpolicy.ac.uk/documents/8158338/8199514/ccp1-1.pdf/0028c37c-1a57-4594-88e3-b1f9ccf82936> accessed 15 November 2017

[11] P Aghion and R Holden supra

[12] SJ Grossman and OD Hart, 'The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration' [1986] 94(4) *Journal of Political Economy* 691–719

[13] P Aghion and R Holden Supra

[14] ibid

under which the responsibility for any or all of the combination of designing, financing, construction, management and operation of public infrastructure and utilities that were traditionally undertaken by the public sector are contractually shared and jointly undertaken by both the public and private sector, usually in proportion to the kind of risks each party can best carry.[15] Incomplete contract theory has been used to analyze PPP contracts because under such contracts, public authorities cannot fully specify the quality of services provided by the private sector, nor can they write verifiable objectives for all possible contingencies occurring in the long run. Therefore, due to the fact that long term PPP contracts are incomplete, usually without a process for renegotiation, parties try to protect themselves by either deciding against making any investments in such long term projects or by requesting for guarantees and other incentives for situations not covered by *ex-ante* agreements. The problem is that sometimes these guarantees instead of eliminating the risk, merely transfer it to the other party thereby distorting the initial risk allocation framework between the parties.

PPPs involve a degree of asset specificity, which creates a lock-in effect against the private sector party once it has made the investments for the provision of infrastructure. This exposes the private sector to economic dependency.[16] This lock-in effect generates the risk of opportunistic behaviour by the public sector;[17] leading to the first hold up problem.[18] It is these risks of asset specificity and the likelihood of opportunism that would prevent the private sector from investing in a particular project without proper assurances. The private sector usually seeks protection from the likelihood of hold up or opportunistic behaviour by demanding the insertion of protective clauses in the contract. When the government consents to these clauses the risk shifts to the public sector party with the government bearing the risk now being susceptible to the opportunistic behaviour of the private sector, leading to the second hold-up situation. The public sector then attempts to manage this risk through means like political intervention, thereby shifting the risk back to the private party. These shifts in the incidence of project risks continue between the parties throughout the duration of the contract, creating inefficiencies and potential project failure.

An example of this is the MMA2 project in Nigeria which collapsed because the private sector tried to manage demand risk through the use of non-compete clauses barring the government from building a competing terminal to compete with the private sector owned/managed terminal. The government reacted a few years later to the increased demand for terminal access by airlines by renovating another terminal which was close to the private sector owned terminal, thereby

[15] Nwangwu George, 'The Legal Framework for Public-Private Partnerships (PPPs) in Nigeria: Untangling the Complex Web', *European Procurement and Public Private Partnership Law Review,* [2012] 7(4) 268-277

[16] The degree of asset specificity is defined as the degree to which an asset cannot be redeployed to alternative uses and by alternative users without sacrifice to productive value, see A Nicita and U Pagano supra

[17] Ownership of the asset matters when contracts are incomplete because the owner has residual control rights. Since the government owns the PPP asset, it makes all decisions concerning the asset not included in the contract, for instance it can build another road to compete with an existing toll road managed by the private sector. See O Hart, 'Incomplete Contracts and Public Ownership: Remarks, and 'An Application to Public Private Partnerships', [2003] 113(486) *The Economic Journal* C69-C76

[18] Hold up occurs for example when parties renegotiate the incomplete contract. During renegotiation the party in the better position is the one who can potentially hold up the other party and therefore obtain better payoffs or better conditions. See SPing Ho and Chun-Wei-Tsui, 'The Transaction Cost of Public-Private Partnerships: Implications on PPP Governance Design' (2009) <http://www.academiceventplanner.com/LEAD2009/papers/Ho_Tsui.pdf> accessed on 19 November 2012

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breaching the terms of the non-compete clause. This finally led to dispute between the parties which is being litigated across various levels of the judicial system in the country. It is the position of this paper that if the risks in the project were better managed, instead of wholesale transfers from one party to the other, the project would not have collapsed.

It is the position of this paper that the best way to deal with the issues that arise from the incompleteness of long term contracts is to ensure that risks in these contracts are better managed. There are suggestions to the effect that parties may draw up more detailed and complete contracts to avoid the issues that arise with incompleteness. The response to this is that it is impossible to draw up a complete contract that deals with all risks because of their unpredictability. it is important to note that even if it was humanly possible to come up with such a contract that could foresee all possible scenarios in the future, such a detailed contract would come with some disadvantages. While, it is more likely to reduce opportunism, it may also inhibit future efficiency leading to possible future re-negotiation of the contract. Therefore, it might not necessarily be a good thing to pursue completeness in contracts. Another solution usually canvassed is to insert "trigger" clauses that allow for a renegotiation of certain terms if conditions change. Again renegotiations might lead to undesired consequences, with parties taking advantage to demand for concessions not originally within the contemplation of the parties. Finally, there is also the contention that parties can manage incompleteness through the use of *force majeure* clauses. This however may lead to the project being abandoned or coming to an abrupt end. The management of risk in long term contracts can be achieved through 3 basic steps: The first is the optimal allocation of risk, the second is by ensuring that allocated risks are then properly mitigated and finally through the use of put and call options in contracts.

4. Management of Risks in PPPs

The management of risk involves:

a) Risk identification: the process of identifying all the risks relevant to the project;
b) Risk assessment: the determination of the degree of likelihood of the risk and the possible consequences if the risk occurs;
c) Risk allocation: assignment of the responsibility of the consequence of the risk to one or more of the contracting parties; and
d) Risk mitigation: the process of controlling the likelihood of occurrence of the risk and or the consequence of the risk.[19]

There are certain agreed rules that guide risk allocation in PPPs. It is agreed that risk should only be allocated to a party who:

a) has been made fully aware of the risks they are taking
b) has the greatest capacity to manage risk effectively and efficiently (and charge the lowest risk premium)
c) has the capability and resources to cope with the risk eventuating
d) has the necessary risk appetite to want to take the risk
e) has been given the chance to charge the appropriate premium for taking it. [20]

[19] Department of Economic Affairs (2006) National Public Private Partnership Handbook, Department of Economic Affairs, Ministry of Finance, Government of India, 1-246
[20] A Ng and M Loosemore supra

It is important to note that risk transfer does not eliminate the risk; it only reduces their economic cost.[21] An even greater efficiency is achieved through the mitigation of the risk. Mitigation occurs, where there might still be need for example, to reduce the severity of the risks assumed by one of the parties by taking back some of the risks. This strategy is employed for instance, where it is necessary to stimulate the private sector to invest in projects, which it would not otherwise have considered for investment. Another reason may be to reduce costs to the private sector and consequently reduce tariff and other burdens on citizens. In the first instance the private sector tries to mitigate some of its assumed risks by taking out insurance policies against them. Those risks that cannot be insured against are inevitably provided for through the use of special clauses in the contract to mitigate its impact.

5. Allocation and Mitigation of Risk in Contracts

The best way to resolve the issues that arise from the incomplete nature of long term contracts is through proper risk management. The PPP contract is the principal document that regulates the partnership and ensures risk allocation between the public and private sectors over the term of their relationship. It also provides the foundation on which other project documents like the financing agreement rests. The other contractual documents that are relevant to risk allocation are the shareholders' agreement between project sponsors, the credit agreement with the project lenders, EPC Contract, operations and maintenance contract and supply contracts. Contractual clauses are the basic instruments for the transfer of risk in PPPs. The contract may basically allocate risks through the use of indemnities, conditions, warranties and force majeure clauses. As Ward *et al* pointed out:

> Successful and appropriate allocation of risk presupposes an atmosphere of trust between contracting parties and a clear mutual appreciation of all relevant project risks and their effects… in the absence of one or both of these guidelines, it is perhaps not surprising that the debate about the appropriate allocation of risk is often diverted to the investigation and clarification of the effectiveness of allocation mechanism such as contract clauses."[22]

Contract design is not a straightforward task and it is even more complicated, if it also assigns risk, like in PPP contracts. This is because the imperfect allocation of risk in contracts constitutes one of the primary reasons for the failure of PPP arrangements.[23] Failure to allocate risks properly in PPP contracts may lead to other undesirable consequences like contract re-negotiation. Contract renegotiation may invariably lead to bargaining between the private sector operator and the government in a non-competitive and non-transparent environment.[24] Renegotiation might in that instance become a part of the strategy for the private sector to ask for other concessions from the government by raising other unrelated issues at the risk of damaging the public interest in the

[21] R Marques and S Berg supra

[22] SC Ward et al, 'On the Allocation of Risk in Construction Projects' [1991] 9(3) *International Project Management*, 104-147

[23] T Murphy, 'The Case for Public- Private Partnerships in Infrastructure', [2008] 51 (1) *Canadian Public Administration* 99-126.; Marques R Berg, 'Revisiting the strengths and limitations of regulatory contracts in Infrastructure Industries', PURC Working Paper No.14, University of Florida, Glanville, Cited in Marques R. and Berg S. Risk, Contracts and Private Sector Participation in Infrastructure supra.

[24] ibid

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project. Marques and Berg contend that this promotes opportunistic behavior, including opportunistic bidding at the tender stage, so that the winners curse becomes a winners blessing.[25] Where risk is inappropriately or excessively transferred to the private sector it might reduce the number of bidders and foster opportunism of the remaining tenderers.[26]

Due to the fact that the PPP contract is used to allocate project risks, it should be drawn up in such a way that it takes into consideration all eventualities that may affect the risk profile of the parties. Contracts that fail to address risk in a comprehensive manner are likely to raise the cost of infrastructure services to the final consumers.[27] On a policy level, it can be useful to provide for risk allocation and mitigation guidelines in policy and legislative instruments. This will guide the parties through the contract negotiation process in the allocation, mitigation and pricing process before reducing them into contractual clauses as either for instance conditions or warranties or other contractual terms. There is also sometimes a need for standardization of PPP contracts by creating templates as it may contribute towards greater transparency and reduce the incidence of corruption. However, such standardization may lead to a greater deal of rigidity in the PPP process. When allocating risks in contractual documents, the following goals should be pursued:

a) to provide incentives to reduce long term costs of a project;
b) to provide incentives to complete the project on time and within budget;
c) to provide incentives to improve the quality of service and revenue yield;
d) to insure the public and private partners against risk[28].

Risk insurance for the public partner helps to improve its profile of expenditure on the project by converting variable operation and capital cost into predictable unitary payments. Risk insurance for the private partner helps reduce the cost of capital[29]. These goals can be achieved by contractually providing for the service output specifications of the private sector. This will fully ensure that risk for the quality of the service is transferred to the private sector by ensuring that the private sector's revenue has a correlation with the quality of the service and also enables the private sector effectively monitor the output of the private sector.

6. Contractual Documentation of Risk

Project-related risks such as construction risks, cost overrun risks and demand risks are all allocated through contract design. Problems arise when the contract transfers a wrong amount of risk or the wrong types of risk to the private sector party. According to a World Bank study of PPPs in Latin American and Caribbean countries, majority of the reasons for the high level of contract terminations or re-negotiations[30] in these countries, was as a result of contracts failing to manage risks.[31]

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[25] ibid

[26] J Zitron, 'Public- Private Partnership Projects: Towards a Model of Contractor Bidding Decision-Making' [2006] 12(2) *Journal of Purchasing and Supply Management* 53-62

[27] R Marques and S Berg supra

[28] Elisabeth Iossa, Giancarlo Spagnolo and Mercedes Velez, 'Contract Design in Public Private Partnerships' (2007) World Bank Report <http://www.gianca.org/PapersHomepage/Contract%20Design.pdf> accessed 25 March 2012).

[29] ibid

[30] Whilst renegotiations are not entirely bad, there are many undesirable outcomes that typically arise when contractual revisions take place. It may give rise to opportunistic behaviour by contracting parties.

[31] Op cit 32

Specific level of risk allocation between the private and public sector partners vary according to the method of PPP used for a project. This is because the scope of activities delegated to the private sector varies from mode to mode. For each type of contractual mode (whether BOT, DBFO, concession etc.), risk is allocated to the private sector through contractual incentives and penalties incorporated within the payment mechanism and through activities for which the private sector party is responsible.[32] Care must however be taken in drafting the contracts to ensure that the risks are allocated in an optimal and broad manner to reduce the effects of risks eventuating and give parties room to maneouver in settling disputes in the future. Below are some of the ways in which selected types of risks should be allocated in the contract to avoid potential hold up or opportunistic behaviour.

6.1 Insurance Risk

Insurance is a viable tool for mitigating risks and as a general rule, the private sector partner is encouraged to mitigate its assumed risks through the use of insurance instruments. However, sometimes, insurance for certain risks may become unavailable or available on unrealistic terms. To address this issue, PPP contracts should include insurance benchmarking with an adjustment to PPP payments, if market insurance premiums vary beyond a threshold. In some instances, un-insurability which typically constitutes an event of default under the project loan is a termination event, unless the public sector agrees to act as insurer of last resort. Another option is for the public sector to keep the risk instead of allocating it to the private sector since the public sector is best able to assume an uninsurable risk. Insurance may not however solve all the issues that arise as a consequence of incompleteness, but it goes a long way in ameliorating the consequences.

6.2 Design, Construction and Technical Specification Risk

When this risk eventuates, it may lead to the project not being concluded on time or at all. It is recommended that PPP contracts should be designed to be output based such that the private sector assumes the design and construction risk. Payments also have to begin on the satisfactory completion of construction. i.e. no service, no fee. This was one of the major problems with the Lekki Toll Road Concession in Lagos where the Concessionaire started collecting tolls on the road after completing only less than 10% of the road project. [33] The Project Special Purpose Vehicle (SPV) usually takes the construction and design risk and passes it down to the construction subcontractor with appropriate warranties to the public sector. It is not advisable for the public sector to approve or sign off on design, as this will unwittingly transfer the risk back to it. The contract may also employ liquidated damages provisions to ensure that the private sector compensates the public sector for this risk. However, care should be taken to ensure that it does not become a penalty provision by ensuring that compensation is only payable upon the public partner suffering economic loss from late delivery.[34]

[32] ibid

[33] The Lekki toll road concession was aborted by the Lagos State Government.

[34] If it becomes a penalty provision the courts will not enforce it. See *Dunlop Pneumatic Tyre Co Ltd v New Garage and Motor Co.* Ltd. [1975] A.C. 79

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6.3 Planning and Approvals Risk

Even though planning, permitting and other approval risks should be allocated to the private sector, the public sector should commit itself by way of warranty in the contract to provide assistance in securing necessary approvals since it is better able to interface with other responsible government agencies for granting the approvals. In doing this a portion of this risk is thereby transferred to the public sector.

6.4 Change in Law Risk

This is best treated as a shared risk whereby the general change in law risk is shared and change in law specific to the project is retained by the public sector. According to one author, change of law risks should be handled as follows:

- If a significant change in law prevents the private sector party from fulfilling its obligations, then the private sector party should be entitled to receive corresponding payments irrespective of its inability to supply contracted services.
- The private sector can be restored to the same economic position if the change in law results in additional cost to the private sector company over and above an agreed threshold.

  The change in law should apply to any change in law after bid submission date and should include any changes in tax regulations, etc.[35]

6.5 Operational Performance Risk.

This risk is better allocated to the private sector through the use of contractual incentives and penalties incorporated within the payment mechanisms and performance/quality requirements to enforce standards during the operating phase. The contract should therefore clearly specify the consequence of not meeting these requirements[36]. Where possible, operational standards should be specified in broad, output terms and avoid over prescription.

6.6 Financial/Economic Risk

The payment mechanism is also used to allocate economic risk between the public and private sectors. Proper allocation ensures that the users of the facilities only pay for services or outputs delivered. The public sector should have the right to withhold payments, if the services are substandard and not remediated on time.

6.7 Exchange Rate Risks

To the extent that equity and debt funding for the project is denominated in local currencies, the public sector need not bear exchange rate risk. However, if funding for the project is denominated in foreign currencies, the government is likely to bear the exchange rate risk in other to maximize cost efficiency of the project. One of the ways of handling this in the contract is by ensuring that the project payments are adjusted for exchange rate variations. The alternative would be to provide in the contract for compensation to the private sector where the event, which is within the control of the public sector, eventuates. This is necessary in other to restore the economic equilibrium of

[35] Yongijian *et al* supra

[36] Elisabeth Iossa, Giancarlo Spagnolo and Mercedes Velez, 'Contract Design in Public Private Partnerships' (2007) World Bank Report <http://www.gianca.org/PapersHomepage/Contract%20Design.pdf> accessed 25 March 2012)

the contract. Despite the fact that the obligation to raise finance usually rests with the private sector, it is not uncommon in situations where funds for the financing of the project are coming from abroad, for the government to also guarantee exchange rates. For example in a major road project in Vietnam, assurances were given by the government that the Dong (Vietnam's Currency) will always be converted at a specified rate regardless of currency fluctuations.[37]

6.8 Default Risk

This occurs when the SPV is not able to deliver either during the construction or operation phase of the project. This can be dealt with and mitigated in the contract by providing step-in rights for the public sector to come in and replace the private sector partner.

6.9 Political or Legal Risks

This includes risks of expropriation, non-convertibility or non-repatriation. This may be dealt with through political risk insurance to cover for example sovereign default and expropriation. The contract may deal with this risk by specifying for example that expropriation is an event of default and that war and strife may be termed a force majeure event. In the Guangdong-Shenzen-Zhuhai superhighway project in China, the political risk was mitigated by political risk insurance, which was arranged by the financiers and a project guarantee, which was offered by the government.[38]

6.10 Demand Risk

This occurs when the end user demand for project output is lower than the base case original forecast. In many sectors, it is difficult for the private sector to reliably predict end-user demand. In such cases, the PPP payment mechanism may be designed to eliminate demand risks. The contract design may also be used to mitigate demand risk. This may be dealt with by directly guaranteeing minimum purchase of project output or indirectly through adjusting tariff with demand or a combination of them. For example, the price would increase in accordance with the reduction of demand beyond agreed thresholds. The government may also insist that price be reduced, if the market volume increases.[39] The contract may also provide for fixed term plus a given extension period, if the level of demand is below an agreed break- even point specified in the contract. Another option is to grant an upfront subsidy or a demand guarantee limited to a strictly enforceable period (e.g. 3 years, to vary according to the project's attractiveness). In toll road projects, the introduction of a dynamic tolling regime is another option. In this case toll pricing vary according to travel peaks or time of day or days of the week. It is also good practice where a non-compete clause is employed, to link the clause with congestion limits and expansion obligations. These will also help strike a good balance with the long-term sustainability of the infrastructure sector.

Even though demand risk is sometimes allocated to the private sector, it is not uncommon for the public sector to take some of the risk back. The Columbian Government for instance in the PPP

[37] ANg Loosemore supra

[38] United Nations Economic Commission for Europe (2008), *Guidebook on Promoting Good Governance in Public-Private Partnerships, United Nations Publications*, Sales No. 08.II.E.1

[39] S Ye and Tiong Effects of Tariff Design in Risk Management of Privately Financed Infrastructure Projects (2003) 129 (6) Journal of Construction Engineering Management 610-618

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contract for the construction of the runway at Bogata's El Dorado Airport, guaranteed a minimum revenue to the private sector partners.[40] Again, In the El Cortijio- El Vino Toll Road in Columbia, the Columbian government agreed to reimburse the private sector consortium if traffic on the road was less than 90% of the specified level.[41] This was the same for the North South Highway Project in Malaysia where government undertook to compensate the project consortium if the traffic flow and resulting toll income fell below a certain level.[42]

6.11 Construction Risk

This risk, which is conventionally allocated to the private sector, occurs from the private sector party's failure to meet performance criteria for the completion of the construction phase of the project. Selecting a single contractor for the construction and operation of the project may mitigate this risk and also the public sector partner may require the private partner to provide insurance backed guarantees to ensure project completion. In the Hong Kong Tate Cairn Road Tunnel project the project completion risk was mitigated by the good reputation of the private sector partner that was selected through a procurement process and also by a 10yr performance bond extended by the private sector consortium.[43] However, sometimes performance bonds may increase the overall cost of the project since it is expensive to procure and therefore care should be taken to find a good balance.

6.12 Cost and Schedule Overrun

This risk is usually allocated to the private sector and may occur due to inefficient construction practices. Selecting a single contractor for both the construction and operation of the project may mitigate this risk. Also, it helps to select an experienced private sector partner with adequate financial backing with good track records. It is also possible to negotiate a fixed price construction contract, including penalties for delays (penalties should be proportional to the shortfall e.g. penalty per day or week of delay). This may be combined with bonuses for early completion.

7. Put and Call Options

An option is the right but not the obligation to take some actions in future. In the context of PPPs, a put option is the option (but not the obligation) of the private sector partner to sell the remainder of the term of the concession back to the government at a certain price, date and under stipulated conditions. A call option is the reverse, giving the government a right to buy back the concession from the private sector partner under certain conditions. The concept of put and call options are not new to PPPs, practitioners have always attempted to value the implicit options available to parties when they enter into long term PPP contracts. This allows the parties price-in the value of the options into project, thereby improving the commercial values of projects.[44] There was a suggestion that was put forward by Quiggins, suggesting that PPP contracts will be improved by

[40] A Ng Loosemore supra

[41] ibid

[42] DD Liou, 'Bridging the Funding Gap' [1997] 148 (8) *Project Trade Finance* 32-33

[43] C Checherita and J Gifford, 'Risk Sharing in Public Private Partnerships: General Considerations and the Evaluation of the U.S. Practice in Road Transportation' (2008) Paper presented at the Transportation Research Board 87th Annual Meeting, Washington, D.C. <https://ageconsearch.umn.edu/bitstream/207820/2/2007_1B_PartFin_paper.pdf> accessed 16 November 2017

[44] N Vajdic and I Damnjanovic, 'Risk Management in Public-Private Partnership Road Projects Using Real Options Theory' [2011] International Symposium Engineering Management and Competitiveness, Zrenjanin Serbia

the inclusion of "put and call" options which allow either of the contracting parties to terminate after a predetermined period which he proposed should be every 7 years with the public sector having an option of buying off the remainder of the unamortised period by the private sector.[45] In a similar vein, Veigas argues that concessions are better designed in successive shorter term contractual cycles of a maximum of 15years each, with each new cycle involving a revision of objectives, policies, technological standards and demand forecasts. This is aimed at the partial amortisation of the private sector party's investment. At the end of the concession period the concessionaire would collect a payment equivalent to the value of the unamortised payments.[46] The Government does not need to have recourse to funds from the budget to make these payments, It may raise the money by organising a subsequent concession for another period of similar duration without the cost of a new construction. It can be done in a manner that allows the new rent cover the exit payment of the first concessionaire.[47] The advantage of employing the use of options is that the government acquires a fully developed asset without having to contend with construction risk or cost overruns, which is always a major concern for the public sector. Also the government continues to fulfil its primary mandate to its citizens which is to ensure the provision of services. The private sector party on the other hand receives money in return for the asset and is able to pay off its debt and redistribute capital and any returns back to its shareholders.

Conclusion

Filling the gaps in incomplete long term agreements requires proper risk management. This involves managing risks in an optimal and broad manner, taking into consideration the capacities of contracting parties in allocating risks. Where possible, risks should be mitigated in a manner that greatly reduces their effects where they eventuate. Contracts should also be designed in a manner that creates room for parties to resolve disputes amicably in the future instead of being overly prescriptive. Positive mitigation measures should usually go hand in hand with some clauses that ensure that the private sector does not make excessive profits from government support. For instance, the government may employ claw-back provisions, which basically allows the government to share some of the profits made by the private sector as a consequence of government support. The contracts may also contain abatement clauses, which may penalize the private sector for falling below certain set standards. It is also suggested that inserting put and call options into agreements will help parties amicably exit projects where the risk management framework fails. It is certain that put and call option agreements make PPP contracts less prescriptive and therefore more flexible leading to better outcomes for both parties. However, in using them, care must be taken to ensure that the conditions under which the options become exercisable are pre-determined and the formula for determining the exercise price of the option agreed by the parties beforehand. It makes sense that exercising the option does not unwittingly reward either party; otherwise it will only encourage opportunistic behaviors.

[45] See J Quiggins, 'Public Private Partnerships: Options for Improved Risk Allocation' [2005] 38 *Australian Economic Review* 445; J Quiggins, 'Public Private-Partnerships: Options for Improved Risk Allocation' [2006] 29 (3) *UNSW Law Journal* 289

[46] JM Viegas, 'Questioning the Need for Full Amortisation in PPP Contracts for Transport Infrastructure' [2010] 30 *Research in Transport Economics* 139-144

[47] ibid

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