

**DEBT AND EQUITY OWNERSHIP ISSUES IN PUBLIC-PRIVATE
PARTNERSHIP ORGANISATIONS IN NETWORK INFRASTRUCTURE
INDUSTRIES**

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Key words: Capital structure choice, governance issues, PPP organisations, regulatory regimes, network infrastructures

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Abstract:

During last two decades various Public-Private Partnership (PPP) organisations have emerged from competitive approaches, commercial management and stakeholders' participation in delivering of services in network infrastructure industries around the world. In particular, PPP organisational approaches to generation, management and operations of network infrastructure and services have widely followed competitive market forms under different regulatory regimes. Sometime, these regulatory regimes have been investment incentives to influence specific approaches to PPP organisations. Managerial decisions on financing of PPP companies have been governed by regulatory markets with unstable institutions in developing and emerging economies. While debt ownership in the capital structure is often shared by additional financiers like development and multilateral banks, unique agency issues seem emerging from debt and equity ownership arrangements in regulated PPP organisations. Within a theoretical framework of financing of PPP organisations explained by theory of the firm, this research looks into nature, form and unique governance issues in debt and equity arrangements in regulated PPP organisations. Analysis is supported by a survey on debt and equity arrangements in regulated PPP organisations across different infrastructure sectors and developing environments. Findings reveal that debt has not been an effective mechanism to control managers' behaviour since subordinate financing also functions to address debt agency in the capital structure in those regulated PPP organisations. Thus, results suggest that tying performance of managers with the financial structure of regulated PPP organisation is undermined in developing and emerging economies. These potential governance issues need to be considered for alternative benchmarks to assess efficiency of infrastructure companies in different regulatory regimes for better infrastructure investment performance in developing environments. *JEL Classification: G32, K23, L19, L22, L 50, L90.*

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Introduction

As a result of “Market failure” and inappropriate government intervention, alternative market forms are emerging in developing and emerging economies. Accordingly, in liberalised infrastructure markets various market structures are being tested for the application of Public-Private Partnership (PPP) strategies in infrastructure development (Estache, 2004). During last two decades market driven PPP policy strategies, namely competitive approaches, commercial management and stakeholders’ participation have evolved to facilitate private sector participation in network infrastructure and services development around the world (World Development Report, 1994 and Estache, 2004). PPP organisational approaches to generation, management and operations of network infrastructure and services have widely followed competitive market forms under different regulatory regimes. Where direct competition does not exist, private sector participation has been achieved through competition managed through contractual arrangements, ranging from simple contracts for specific services to long-term concessions that require operation, maintenance, and facility expansion (Kessides, 1993). Among these PPP contractual strategies service, management, lease and concession are commonly used organisational arrangements in delivering of infrastructures (Kessides, 1993 and World Bank, 2003). In this research, PPP organisations are referred to regulated infrastructure companies in which corporate arrangements take following forms.

- Leasing and management: private infrastructure company manages state-own enterprise (SOE) for a specific period while ownership, investment decisions and financial responsibilities remain with the public sector. Example includes Built-Lease and Operate (BLO) organisations in electricity, gas, water, transport and telecommunication infrastructure industries.
- Private operation: private infrastructure company finances, builds and operates a new infrastructure facility for a specific period and ownership of the facility reverts back to the public sector. This also refers to concessions. Example includes Built-Operate and Transfer (BOT) organisations in electricity, gas, water, transport and telecommunication infrastructure industries.
- Private ownership: private infrastructure company finances, builds, operates the facility for a specific period and remain in private ownership. This also refers to Greenfield projects. Example includes Built-Operate and Transfer (BOO) organisations in electricity, gas, water, transport and telecommunication infrastructure industries.

While public sector will be involved in network infrastructure planning under private operation models, network planning will be also forming part of private ownership models (Hirschhausen, 2002). In addition to the above PPP organisational models, divestitures (privatisation) have been also widely used for private participation in infrastructure development. Under divestitures, private entity is involved in buying an equity stake in an SOE through an asset sale, public offering or mass privatisation programme. **Table 1** indicates popular application of private operation and private ownership models in electricity, gas, telecommunication, transport, water and sewerage in developing countries from 1990 to 2001.

Table 1 Cumulative investment in network infrastructure across sectors with private participation by form of organisational arrangements in developing countries, 1990-2001

	Electricity	Gas	Telecommunication	Transport	Water and Sewerage
Private operation	5%	3%	3%	58%	69%
Private ownership	55%	42%	39%	37%	17%
Divestiture	40%	55%	59%	5%	14%
Total US\$ billion	213	34	331	135	40

(Source: World Bank, 2003)

According to market principles, market entrance and incumbent firms are governed by price competition and inherent incentive scheme in market competitions. Application of market forms in line with these principles in network infrastructures such as electricity, telecommunications, water, and transport leads to unbundling sectors and thereby to separate vertically integrated utilities. When unbundling takes place in infrastructure sectors, private investments have been introduced to generate, transmit and distribute facilities and services in network infrastructure industries. Also, restructuring of infrastructure sectors has been done to introduce competition with independent regulation. Regulation is important in the application and sustaining of market principles in network industries (World Development Report, 1994). For example, competition has been introduced into the electricity sector for selling electricity to the grid (wholesale competition) and providing electricity to end use (retail competition) with regulatory regimes like price-cap principles and rate-of-return regulation. According to Weyman-Jones (2003) (cited in Kirkpatrick C and Parker D, 2004) price cap regulation establishes a price ceiling so that the profitability of the firm then depends on the extent to which it is able to keep its costs below the determined maximum revenue under the cap. Similarly, rate of return regulation or cost of service regulation determines prices charged so as to achieve revenues that cover all legitimate operating and capital costs while providing the firm with a fair rate of return on its capital employed (Kirkpatrick C and Parker D, 2004). Price cap regulation and rate-of-return regulation have been widely used in network infrastructure industries in developing and transitions

economies in the 1990s and early 2000s (Weyman-Jones, 2003 cited in Kirkpatrick C and Parker D, 2004).

Incumbent firms and new entrance have been governed by the market principles and the given incentive scheme of the particular regulatory regimes. Also, entry decisions of new infrastructure firms have been associated with sunk-cost (i.e. assets-specific investment in infrastructures) and entry assistance such as incentive to investment (Valletti, 2003). Therefore, financial structures of private infrastructure firms/companies are being governed by managerial functions to manage asset-specific investment risks (Devapriya, 2003). While incumbent firms and new entrance are subject to regulatory regimes within different market structures, financing decisions in these PPP organisations largely depend on managerial functions. Accordingly, PPP organisational arrangements are structured separately from sponsor companies to manage asset-specific risk and expanding borrowing capacity to meet investment needs in infrastructure industries. It is in this background that this research adopts survey methodology to examine nature, form and emerging governance issues in financial arrangements in PPP organisations in network infrastructure industries. The analysis is based on data gathered from databases of development and multilateral banks and review of infrastructure company records in public domain in the recent past. Results will shed light on effective governance arrangements in financing of PPP companies in network infrastructures in different regulatory environments. First, the research paper proceeds to establish a theoretical framework for PPP organisations in network infrastructure industries. Then survey findings on financing approaches to PPP organisations are presented leading to an analysis of managerial functions and debt and equity ownership issues in PPP organisations. Finally, conclusions are presented with suggestions to establish alternative benchmarks to assess efficiency of PPP companies in network infrastructure industries.

Theoretical framework of financing in PPP organisations

Financing of PPP organisation is formed part of the firm theory. In mature market conditions, private financing in infrastructure firms like a PPP organisational model has lead to an effective diversification of asset-specific investment risk of infrastructure firm in the capital market. Therefore, managerial decision on financing of PPP organisations in mature market is also informed by management of the firm asset-specific risks through capital market. Furthermore, in established competitive markets financing mechanisms arising from the firm financial policies seem sometime conventional since financing instruments are not often structured in response to institutional conditions as it is required in developing environments (Devapriya, 2003). In developing institutional environments, financing arrangements in PPP organisations aim to address both regulatory and exogenous risks. Therefore, managerial functions informed by regulatory regimes govern required

return on investments in PPP organisations in network infrastructure industries. Thus, tying performance of the managers with the financial structures of regulated PPP organisations is seen to be the focal element of return on infrastructure investments. Following Devapriya (2005), a framework of industrial organisation and financial policies applied to PPP policy strategies is used to build up a theoretical framework of financing in PPP organisations. According to Devapriya (2005) the framework of industrial organisation and financial policies consists of emerging market forms, behaviour of the firm, and governance elements of financial arrangements and corporate structures. In this research, these key aspects are expanded by theory of the firm.

Contractual nature of the firm provides an important theoretical approach to gain insights into financing of PPP organisations. Furthermore, Jensen and Meckling (1976) show how owner-manger relationships, financial structure decisions and firm objectives interact in imperfect market environments. These notions have been the centre of discussions in financing of companies and investments in the corporate world. With regard to PPP organisations, Alexander and Mayer (1997) discuss incentive effects of threat of bankruptcy, internal control on managers' performance and remuneration, and corporate control brought by the external discipline on the potential efficiency of infrastructure companies. These unique aspects could be further expanded to identify specific governance features of capital and corporate structures of regulated PPP organisations in developing environments.

Traditional agency issues in borrower and lender relationships and contractual arrangements that address demand and supply conditions have led to specific governance features in regulated PPP organisations. Financial arrangements have been normally structured into a separate legal entity and thereby work to overcome the traditional agency conflicts in corporate finance. The issue of the conflict between debt and equity in PPP organisations have been curtailed by incentives for behaviour, which will guard against opportunistic conduct¹. In the traditional financial transaction, the incentive conflicts exist between the lenders (the bank) and the shareholders. This agency conflict generally leads to issues of under-investment and risky investment problems. The company is viewed as the bank's agent in the use of the funds raised by the loan; and the bank contracts with the agent (the company) to invest the money prudently and pay it back as contracted. However, irrespective of this condition, the company may invest money opportunistically, which may lead to either of the mentioned debt and agency issues. In contrast, asset-specific financing in PPP organisations works to overcome both agency problems of under investment and risky investments by prescribing that the money raised by debt is involved in the infrastructure investment only, otherwise there is no transaction.

¹ "Opportunistic" conduct is used in the traditional Williamson transaction cost economics definition of "opportunism", namely "self-interest seeking with guile" (Williamson, 1985).

Sometime long-term debt commitment in PPP organisations seems to have the nature of equity participation, which can be comparable to the shareholders' role (Scheinkestel, 1997). Scheinkestel (1997) further suggests that this long-term perspective is such that, if the loan can not be repaid within the stated period of the loan terms, the project will still be able to continue to generate sufficient revenues to achieve full payment at a later date. Similarly, broader trends to blur the strict delineation between debt and equity finance as revealed by the use of different financial instruments such as mezzanine finance and participation of institutional investors in financing the capital structure, offer alternative means of controlling opportunism in asset-specific financing such as project finance (Scheinkestel, 1997). According to Scheinkestel (1997) by holding a combination of both debt and equity institutions hope to get the benefits of diversification at least to reduce the risk of failure on all fronts. However, these hybrid instruments may be ill equipped to deal with regulatory risks in unstable institutional environments.

Default on debt occurs when contractually fixed claims are not fully serviced. This engenders bankruptcy or financial distress costs. The more volatile or variable project cash flows, the more likely that default could be triggered. Hedging instruments in asset-specific financing reduces the variability of the cash flows and thereby reduces the probability of financial distress. In effect, such a mechanism reduces the expected cost of financial distress. The probability of financial distress, and hence the expected cost of financial distress, is a rising function of financial leverage or the extent of debt usage (Senbet and Triantis, 1997). Thus hedging is more valuable for more highly leveraged firms. A typical asset-specific financing structure such as project financing indicates high leverage, implying high cost of hedging and risk management. With respect to the advantage in risk incentive costs, it can be observed that hedging can be used to control incentive problems since it can reduce the volatility of the firm cash flows, hedging can reduce the states in which the firm defaults for a given capital structure, and hence improves opportunities for more efficient contracting (Senbet and Triantis, 1997). This in turn could lead to reduction in agency costs of debt financing in asset-specific investments in PPP organisations.

Financing arrangements in PPP organisation are sometime exposed to another agency conflict between the equity holders (owners) and managers. This conflict centres on incentive conflicts, that is managers incentive to appropriate (or expropriate) shareholders' wealth by siphoning off free-cash flow. However, in project-specific financing this issue is largely counted since the financial arrangements typically have high debt and the owner/manager problem of appropriation of the cash flow is typically counted. To support this argument with reference to the capital structure in project-specific financing, Chemmanuar and John (1996) stated that the complexity and restrictiveness of the contracts associated with a project like in project-specific finance leave the management little

discretion and little free cash flow. They further described characteristics through a fairly complex set of contracts, with the product and cash flows carefully pre-committed to suppliers and creditors so that discretionary benefits available from project finance transactions to the management of sponsoring firms are minimized. Once the agency issue associated with the external debt finance and the conflict between the manager and sponsors are generally addressed, the remaining issue in project financing is the high asset-specific nature of investment in PPP organisations. This further can explain the important role of the contractual structure in PPP organisations to deal with asset-specificity problems. An asset-specific investment requires financiers to manage risk through formal agreements between themselves, promoters, contractors, suppliers and customers in order to direct project cash flows according to their interests. This in effect results in further incentive conflicts and incentive alignment issues in the contractual arrangements in addition to the regulatory risks to which PPP organisations expose. This also refers to an additional form of agency issue under bilateral dependency as it emerges in project financing in asset-specific investments (Williamson, 1988).

Furthermore, sponsors and bankers are mutually dependent for success in their interest in financing and investing in PPP organisations. While the bank requires a successful loan, the sponsors need a successful project. Project-specific financing ensures that the sponsors don't behave opportunistically, by "requiring" a high debt to equity ratio (where the project can support it). The sponsors on the other hand still try to avoid ongoing responsibility for the debt, and this means project-specific debt is preferred. This would also mean potentially a leverage equity return with a successful project for promoters. However, project-specific financing limits them to the equity returns, because it means they cannot expropriate free cash flow the debt contracts demand that as much as possible of free cash flow goes into debt serving and repayment as explained above. Whilst waiting for equity returns, other benefits promoters may obtain include the possibility of participating in contracts to build the project. However, this introduces another set of agency problems, that of delivering the project. In this manner, the equity holders (the sponsors) and the bankers both have an interest in the success of the project and are thus bilaterally dependent due to their mutual interest. Therefore, given the nature of financing in network infrastructure as a venture, the bankers and the sponsors have to manage both demand and supply risks with contracts, because these are essential to stabilize cash flow to secure high debt with predictability beyond financial risk (interest rate and currency risks). This underlies organization of contracts around a regulatory regime for supplying of inputs and off-take purchase agreements. This introduces an important demarcation in financial arrangement such as project financing in PPP organisations. As such, the debt contract in financing is at the centre of regulated PPP organisations thus deserves primary attention, while supporting arrangements such as to stabilize off-take, supply contracts and management incentives as secondary arrangements in corporate structure. Therefore, the necessity of managing the debt contract in regulated PPP organisations is in response to interaction of PPP organisation with the market structures in network infrastructure industries.

In summary, governance features of capital and corporate structures of regulated PPP organisations could be presented in the following diagram (Fig.1).

Fig. 1 Theoretical model of financing in PPP organisation



Analysis of corporate governance of financing in PPP organisations

The above developed theoretical framework is applied to analyse capital structure choice and corporate controls in PPP organisations in network infrastructure industries. The data samples of PPP organisations are based on the World Bank Private Participation in Infrastructure (PPI) Database and secondary sources of infrastructure companies across different infrastructure sectors and developing environments. According to the World Bank PPI database, nearly 2,500 PPP organisations have mobilised investment of some \$ 754 billion across electricity, gas, water, transport and telecommunication infrastructure industries in 132 developing countries (DCs), in 1990-2001 (World Bank, 2003). Among PPP organisational models, private operation and private ownership have been the most common type of PPP organisations across many network infrastructure industries in DCs in 1990-2001. These two popular PPP organisations have attracted the most investment amounting to US

\$ 320 billion in 1,233 entities, in particular for power and telecommunications industries across East Asia and the Pacific in 1990-2001 (World Bank, 2003). In this research, first, a representative sample of five private electricity entities from five Asian countries namely, China, Thailand, the Philippines, Pakistan and Indonesia, are selected to analyse debt and equity ownership and corporate control in PPP organisations. Second, financial contracts that form debt ownership are analysed to identify managerial implications and debt ownership issues in regulated PPP organisations in network infrastructure industries.

Table 2 Sample of private electricity companies across Asia

Project company	PPP Organisation	Year of financial closure/ commercial operation	Debt US\$ (Mn.)	Equity US\$ (Mn.)	Investment Total US\$ (Mn.)
Subic Power Plant (Philippines)	Private operation	1999	1820	680	2500 (in 1995)
Shajiao "C" Power Project (China)	Private operation	1996	750	1,226	1976 (in 1992)
Paiton Power Project (Indonesia)	Private ownership	1993	134.08	4.28	138.36 (in 1993)
AES LAL PIR Power Project (Pakistan)	Private ownership	1997	249	95	344 (in 1993)
Tri-Energy Co. Ltd (TECO) (Thailand)	Private ownership	2000	300	167	467 (in 1998)

(Sources: case study manuscripts)

PPP organisations in the above representative sample are analysed and summarised in **Table 3**.

Table 3 Summary of analysis of capital and corporate structures

PPP Organisation	Functions associated with corporate structure	Features of debt financing and capital structure
(1) Paiton Power Project in Indonesia.	<ul style="list-style-type: none"> - Typical secondary contractual arrangement manages the project risk. - Demand, supply and construction risks is hedged through off-take contract, supply contract and forward contract. - Incentive and guarantees as bonding addresses risk of agency problems arising from failure of counterparty's contractual obligations. 	<ul style="list-style-type: none"> - Typical level of financial leverage. - In response to riskiness of the transaction, subordinate debt forms a major portion of "equity" while debt financing largely includes ECAs and OPIC as credit enhancement. - Additional measures like above credit supports work to address risk of loan default from debt agency. - Hedging arrangement addresses the currency risk in foreign debt serving. - Commercial debt is refinanced through public debt raised from international capital market. - Reputation of the main sponsor gives valuable private information thereby helps to derive loan covenants effectively.
(2) Shajiao "C" Power Project In China.	<ul style="list-style-type: none"> - Corporate governance and transaction governance interact to execute the secondary contracts through JV arrangement. - Under the above arrangement key contractual risks are managed separately by the main parties through subsequent contracts. - Key contracts include mechanisms to manage risk of counterparty's contractual performance associated agency problems. 	<ul style="list-style-type: none"> - Capital structure is in response to the corporate governance, which reflects the effect of institutional factors on finance arrangement in China. - Debt to equity ratio is lower than expected norm. - The foreign sponsor arranged the commercial debt financing under limited recourse conditions. - Equity financing arranged in line with incentives for early completion of the project. - Currency risk has been hedged to ensure smooth foreign debt serving. - Guarantees from the sponsor's parent company functions to reduce risk of default from debt agency.

Table 3 Summary of analysis of capital structure and corporate control (Continue...)

PPP Organisation	Functions associated with corporate structure	Features of debt financing and capital structure
(3) Subic Power Plant in the Philippines.	<ul style="list-style-type: none"> - Both BOT legislation and institutions pertaining to JV affected the derivation of the transaction governance. - JV arrangement characterised by multiple roles played by the sponsors advantageously used to manage risk of agency issues in secondary contracts. - The strength of transaction /corporate governance facilitated public debt financing. 	<ul style="list-style-type: none"> - Project was initially financed with equity and equity financed structure was converted into a pure project financing structure near project completion. - Highly leverage capital structure includes public debt financing from international capital market. - Hedging arrangement functions to address currency risk - Sponsor's parent company guarantee of payment obligation of public debt effectively acts as a bonding mechanism to address default from debt agency. - Reputation of the main sponsor was a vital factor for public debt financing .
(4) AES LAL PIR Power Project in Pakistan.	<ul style="list-style-type: none"> - Institutional conditions carry incentives to organize finance - Typical key contracts function to hedge demand, supply and contractual risk with mechanisms to address the risk of agency problems. - Off-take contract has been structured to hedge exogenous risks namely, regulatory, political and currency risk. 	<ul style="list-style-type: none"> - Capital structure indicates typical financial leverage in limited recourse financing. - Multilateral bank's (i.e. IFC) participation in both debt and equity was a credit enhancement. - Credit support together with ECA facility act as bonding mechanism to manage debt agency. - Sponsor reputation together with IFC involvement has made available more private information about the project and thereby averted the lenders' exposure to adverse selection.
(5) Tri-Energy Co. Ltd in Thailand.	<ul style="list-style-type: none"> - Typical secondary contractual arrangement works to hedge demand, supply and construction risk. - The contracts include hedging mechanisms to address the exogenous risk. Particularly, institutional measures exist to hedge currency risk in foreign financing of private power project. - The secondary contracts also include mechanisms to manage risk of agency problems due to the failure of counterparty contractual obligations. 	<ul style="list-style-type: none"> - Capital structure is highly leverage. - The credit support from OPIC provides credit enhancement while it functions as a bonding mechanism to address debt agency. - Consideration of refinancing through local public debt works to totally hedge currency risk involve in foreign debt serving. - Reputation of the main sponsor and higher level of project rating give valuable private information for the prospective bond holders about the project both <i>ex ante</i> and <i>ex post</i>. Thus reduce information asymmetry.

Analysis of capital structure and corporate control reveals that mechanisms are required to address both exogenous risks and risk of agency problems arising from debt and equity ownership arrangements (**Table 3**). In particular, additional measures such as *guarantee and incentive* and *credit support* work to form bonding mechanisms to address the risk of loan default resulting from debt agency. In the individual case analyses it is further revealed that these measures also address risks introduced by market from to which PPP organisations expose. Equity contribution is around 27-30% of total financing need and shows typical level of equity ownership in regulated PPP organisation in electricity sector with developing institutional environments. Required debt capacity is achieved by means of different financial investments to assemble the financial structure. Different financial instruments, mainly long-term finance in form of subordinate loans from development and multilateral banks help the sponsors to achieve a viable capital structure to withstand the inherent risk profile in regulated PPP organisations. The security structure enhances both risk allocation and expanding different debt financing sources in PPP organisations. Organization of the capital structure in this manner is reflected in the mechanisms to address debt agency and information issues as well as credit risk characteristics in relation to the riskiness of regulated market forms. In other words, expanding debt capacity as represented by the different financial instruments is governed by both regulatory market conditions and corporate governance features. Case studies indicate that the debt capacity as represented by the ability of cash flow to serve debt repayment is a function of the extent to which the risk can be effectively distributed through corporate structure. The financial instruments for expanding borrowing capacity, mainly through long-term debt capacity, also contribute to this. It is in this light that the analysis proceeds to look into financial contracts that form debt ownership in PPP organisations. The main focus here is on subordinate financing sources that establish a viable financial structure for regulated PPP organisations (**Table 4**). As revealed in case analysis subordinate financings often fill the gap between senior debt and equity ownership in the capital structure of regulated PPP organisations in developing institutional environments.

Table 4 Instruments across subordinate financing

Project company	PPP Organisation	Year of financing	Type of financing	Financing agency	Amount of financing (US\$Mn.)
BLCP Power Plant (<i>Electricity</i>) (Thailand)	Private ownership	2003	Loan	ADB	40.0
Phu My 3 (<i>Electricity</i>) (Vietnam)	Private ownership	2003	Risk Mgt.	ADB	32.0
			Loan	ADB	40.0
			Risk Mgt.	MIGA	138.0
United Energy System Georgia (<i>Electricity</i>)(Georgia)	Management and lease	2003	Loan	EBRD	1.1
Red Vial Number (<i>Transport</i>) (<i>Toll roads</i>) (Peru)	Private operation	2003	Loan	IADB	18.0
Maputo Port (<i>Seaports</i>) (Mozambique)	Private operation	2003	Loan	IFC	18.0
			Guarantee	MIGA	6.5

(Source: World Bank PPI Database)

Table 4 shows subordinate financing instruments ranging from loans, risk management instruments to guarantees from multilateral and private sector unit of development banks most often represent debt ownership with senior lenders in capital structures in regulated PPP organisations across different infrastructure sectors and developing environments. In some occasions, private sector unit of development bank, International Finance Corporation (IFC) of the World Bank for example, takes part in senior lenders in syndication or part of equity position as a subordinate lender in the capital structure in regulated PPP organisations in infrastructure sectors. Thus, nature of debt agency and managerial implications of debt and equity ownerships would create necessity for additional risk-mitigation measures though financial structuring of PPP organisation take places naturally. During Asian financial crisis between 1998 and 2002, the average cost of capital in infrastructure firms varied from less than 11% to over 15% across regions and sectors while the cost of equity varied from around 13% to over 22% (Estache and Pinglo, 2004). Similarly, evolution of financial structure of regulated privatised utilities and transport companies shows that debt is replacing equity in financing the investment needs of utilities and transport services in developing countries (Silva et al, 2004). These provide evidences for implication of regulatory and market risks on debt and equity arrangements and managerial behaviour of PPP organisations.

Managerial decisions on debt and equity arrangements in capital structure are informed by not only regulatory risks but also institutional risks for which PPP organisations such as private ownerships and

private operations expose. Ramamurti (2000) found that privatized firms operating in emerging economies may behave differently from similar private firms in developed economies due to institutional differences. A quite similar framework to Ramamurti (2000) is advocated by Henisz and Zelner (2000) to consider on-going challenges faced by private infrastructure investors as a result of the intensely political nature of the industries in which they operate. They analyze how country level institutions, firm-level characteristics, and commonly employed strategies at the project level affect individual investors' fortunes in private electricity generation. Also, empirical evidences confirm that stable institutional conditions and appropriate mechanisms to manage risk of agency problems increase potential debt capacity of infrastructure companies in emerging economies (Devapriya and Alfen, 2004). Therefore, managerial decisions on financing of PPP organisations are governed by regulated markets with unstable institutional conditions in developing countries. In regulated PPP organisations, debt ownership in the capital structure is often shared by multilateral banks as subordinate financing. Although asset-specific financing arrangements such as project finance could resolve traditional agency issues, the risk of the agency problems associated with debt and equity arrangements have to address both the traditional and unique agency problems in PPP organisations in developing environments. Thus, debt has not been an effective mechanism in regulated PPP organisations for controlling manager's behaviour because credit support and guarantees also function to address debt agency in the capital structure of these organisations. These agency problems show that tying performance of the managers with the financial structure is undermined in regulated PPP organisations in infrastructure industries in developing environments. These evidences show unique agency problems in privatised infrastructure firms in developing and emerging economies. In effect, results show potential governance issues in debt and equity ownership arrangements to be considered for alternative benchmarks to assess efficiency of infrastructure companies in developing and emerging economies.

Conclusion

Within a theoretical framework of financing in PPP organisations explained by theory of the firm this research looked into nature, form and unique governance issues in debt and equity arrangements in regulated PPP organisations across different infrastructure sectors and developing environments. Analysis is supported by a survey on debt and equity arrangements in regulated PPP organisations across different infrastructure sectors and developing environments. Findings reveal that debt has not been an effective mechanism to control managers' behaviour since subordinate financing also functions to address debt agency in the capital structure in those regulated PPP organisations. Thus, results suggest that tying performance of the managers with the financial structure of regulated PPP organisation is undermined in developing and emerging economies. These potential governance issues need to be considered to establish alternative benchmarks to assess efficiency of infrastructure

companies in different regulatory regimes for better infrastructure investment performance in developing environments.

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