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Infrastructure Financing Through Domestic Capital Market in Bangladesh

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This study summarizes the current infrastructure situation and identifies possible risk factors, constraints of infrastructure project financing in Bangladesh. In future with growing reliance on bank financing for infrastructure, problems can arise for financial institutions with growing concentration of risks in infrastructure sector and asset liability mismatch. Capital market provides an opportunity for raising long term infrastructure funds and channeling capital to appropriate projects. However without effective regulation, institutional development for infrastructure financing and appropriate monetary policy capital market can crisis and have long term adverse impact on the economy. The study reviews the strategies adopted by other countries to address this issue, identifies the long term role of government and possible infrastructure financing solution through the domestic and international capital market for Bangladesh.

Field of Research: Infrastructure financing, Capital market, Project finance

1. Introduction

Bangladesh is currently facing 'infrastructure deficit', as evidenced by congested roads, energy shortage, deteriorated health facility which are either nonexistent or in urgent need of repair. These problems in turn impose huge costs on societies specially the poorest segment, from lessened human resource productivity and reduced country competitiveness in the dynamic global market. Bangladesh currently faces the challenge of sustaining its impressive growth rate trend through higher investment and improved quality of essential public services. Like other countries Bangladesh government has come to realize that the tax base alone cannot fund the huge needs for infrastructure in Bangladesh. The government has taken Public Private Partnership (PPP) as a form of procurement for the provision of public services and introduced PPP budget in its annual budget for FY 2009-2010. In many parts of the country there is an acute need to rehabilitate existing infrastructure that was built decades ago. Trade off occurs between infrastructure development and macroeconomic stability when government finance the huge investment requirement for infrastructure by borrowing from domestic sources. In this regard PPP model can fulfill clearly defined public needs through the appropriate allocation

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of resources, risks and rewards (ADB, 2008). Along with introducing the PPP model, with Bangladesh's emerging banking sector there is a critical challenge to find proper financing option for the PPP project promoters. Currently most PPP Infrastructure projects rely on bank financing which can trigger asset liability mismatch for financial institutions. Infrastructure projects unlike other projects are capital-intensive with large initial costs, extensive project development and construction period but low operating costs. In this context, obtaining alternative financing solution, other than the conventional financing sources, becomes essential. The capital market offers a viable solution towards mitigating the asset liability mismatches and shields against the macroeconomic instability due to large outflow of capital. However, the capital market of Bangladesh is still at its nascent stage marked by a highly volatile equity market and an illiquid bond market. In order to facilitate the large infrastructural financing pervasive regulatory support are required to broaden the depth of the market through channeling of the long term saving instruments such as pension funds and life insurance funds into the capital market. The proposed 'Vision 2021' for Bangladesh outlines a detailed plan achieving and sustaining an annual GDP growth rate of 8 percent by 2013 and 10 percent from 2017. The plan is fixed at addressing major infrastructure development issues like target of generating 8,500 megawatts of electricity by 2013, 11,500 megawatts in 2015, and 20,000 megawatts in 2021. In power sector 5167.50 MW (Bangladesh Power Development Board) was the maximum generation in the history of Bangladesh. Currently 12 million consumers have electricity access in Bangladesh which covers only 49% of the total population. Currently Bangladesh has an road network comprising 1,03,000 km roads where on average nearly 8,000 people share 1 km of paved road. With 52 major rivers and 24,000 km waterways, Bangladesh has a navigable water transportation network ranging from 5,968 to 3,865 km during wet and dry season, respectively. Railway sector suffers from the efficiency issue as increase in the number of passenger carriers between major cities were very limited over the last decade and as a result, pressure on roads has increased significantly. Currently Bangladesh's railway sector has 2,855 kilometers of rail line and operates 261 passenger trains and 55 goods trains.

2. Literature Review

The importance of infrastructure for economic growth was first recognized after the empirical research by Aschauer (1989) where he argued that public expenditure is quite productive. Later on, many studies have been conducted regarding importance of infrastructure investment and governments' inability to raise required funds. However, for large-scale infrastructure projects private sector participation can contribute through providing financing support (Cheung, Chan, & Kajewski, 2009). Such solution is more preferable if country lacks resources to deliver important public services such as healthcare, transportation, energy and etc (Regan, 2009).To address infrastructure project investment, execution, management concerns in the mid 1990s PPPs were introduced in Britain. Later on governments around the world sought to encourage private investment in national infrastructure in order to reduce public debt and to increase efficiency while minimizing costs. According to Asian Development Bank, PPP is a range of possible relationships among public and private entities in the context of infrastructure and other services that present a framework for engaging private sector and also structure the role for government in ensuring that social obligations are met (ADB, 2008). Many researchers

have identified the attractive factors of PPP for infrastructure projects. Public-Private Partnerships are essential to allow public organizations to respond to market forces and become more competitive (Leibenstein 1966). For instance, private sector through their innovative ideas can introduce new concepts to save project costs (Chan et al., 2006).

Other writers have also highlighted about the sound accountability, transparency issue with the involvement of private entities in infrastructure project as the bidding process of infrastructure projects can attract large firms which are more able and efficient (Cheung, Chan, & Kajewski, 2009). On this regard, PPP seeks to capitalize on the comparative advantage of the public and the private sectors in order to optimize the delivery of public services (Rosenaue, 1999). However like other business model public private partnership also possess different kind of risk as an imbalance in the skills and expertise of the different parties involved in infrastructure project can lead to the undermining of one party's interest and result in the failure to achieve equitable outcomes (Miraftab, 2004). A sound regulatory framework can ensure that partnerships are more efficient and can optimize resources according to broader policy objectives (Pongsiri, Regulations and public-private partnerships, 2002). A sound regulatory framework can reassure private sector investors from expropriation of assets, arbitration in case of disputes, respect for contracts, and a legitimate return on investment (Pongsiri, Regulations and public-private partnerships, 2002).

On the financing issue of infrastructure projects worldwide capital market provides a linkage between the savings and the investors's preferred investment across the entities, time and space. The existence of capital market is essential for efficient resource mobilization, financial development, and, economic growth. Relationship between growth of a stock market and economic growth have been established by many authors including(Demirguc-Kunt and Levine 1996). They have shown that finance through capital market contributes to industrial output growth and ensures economic growth.

3. Data and Methodology

The present study is mainly qualitative in nature. It is based on a comprehensive review of literature; gathering and analysis of secondary data; and interviews with selected capital market and infrastructure experts. The study aims to address the key constraints of infrastructure financing in Bangladesh. The paper initiates through giving an assessment of existing infrastructure situation in Bangladesh specially in power and transportation sector. The unique characteristics of infrastructure project financing, possible risk factors and examples of other countries solving these problems have also been evaluated. The regulatory reforms, institutional development through which Bangladesh's capital market can offer a viable long term solution of the infrastructure financing is also being proposed.

Bangladesh is not the only country around the world facing intense infrastructure problem and financing constraint. Load shedding is common problem in other south Asian countries like India, Pakistan, and Nepal although the intensity of load shedding varies from country to country. In terms of addressing the infrastructure financing problem strategic consideration can vary across countries. In this research based on the success story of

other countries policy issues specially for mobilizing Bangladesh's capital market for infrastructure financing has been addressed.

4. Discussion

Currently Bangladesh's low tax revenue is limiting government's ability to invest in infrastructure. Bangladesh's tax-GDP ratio is 8.5 per cent which is quite low compared to other countries in South Asia (The National Board of Revenue, Bangladesh). Given the Tax GDP ratio it's difficult for the government to implement large scale infrastructure projects. The narrow revenue base of the Bangladesh government due to insufficient tax collection makes the government of Bangladesh highly dependent on the external financing. The budget deficit also have remained above 5% of GDP and the overall debt GDP ratio of Bangladesh has hovered around 40% and large portion of the bank financing goes to interest servicing of the debt burden(Bangladesh Bank, Bangladesh).

In recent times many countries have sought a greater role of private sector in infrastructure sectors like power generation, hospital, roads, ports where there was sole dominance of public sector (World Bank, 2002). With the availability of long term foreign capital and strong backing for policy reforms from international financial institutions, project finance gradually expanded worldwide. For project finance, the sponsors create a special purpose, legally independent company in which they are the principal shareholders. The main reason behind such creation of independent special purpose vehicles (SPV) company is to better protect the parent company from possible adverse impact in the business (World Bank, 1998).

In project finance off balance sheet lending happens because of project's own merit and involves complex loan and security documentation along with ongoing monitoring by lender. However any infrastructure project involves various kinds of risk which makes infrastructure project financing a difficult task. Prior to project completion there can be multiple obstacles including availability and accessibility of land and rights of way, technical specifications, third party interests, political factors, construction delays and cost overruns, legal and contractual documentation and environmental issue. The project's cash flow can also be affected due to risk during operation which includes traffic volume, competitive alternatives, political factors, toll collection system, foreign currency convertibility, maintenance, liabilities of concession-holders. Due to these inherent risk factors private infrastructure project worldwide requires extensive due diligence, contractual clauses between different parties, Insurance schemes, government guarantees and other guarantees. From lender's perspective it's essential to verify payment mechanisms, liability and incentives, remedies and liquidated damages, provisions for force majeure, change of law, political and financial protection, conflicts of interest, termination/compensation, and dispute resolution. Not only lenders need to carry out detailed financial due diligence for infrastructure project technical due diligence involving technical specification of equipment/ material being used in the project is also very important from lenders perspective. Given the sheer scale of infrastructure projects in Bangladesh it's difficult to finance the project by a single lender, so these projects involve syndication financing from lenders. With complex mechanisms often without proper expertise of infrastructure projects lenders back off from financing projects. If we look at

selected power plant financing structure in Bangladesh, then most of the power projects in Bangladesh required significant debt financing.

Table 1: Infrastructure Project financing of selected Power Plants in Bangladesh

Sl. No.	Name of the Project	Project Cost (US $m)	Debt Amount (US $m)	Debt: Equity
1.	Haripur 360 MW CCPP	170.75	93.91	55%: 45%
2.	Meghnaghat 450 MW CCPP	300	220.00	73%: 27%
3.	Haripur 110 MW BMPP	124	87	70%: 30%
4.	Khulna 110 MW BMPP	99	54	55%: 45%

Source: Bangladesh Power Development Board

From the table it is evident that in private sector for large-scale power plant the debt portion ranges from 55% to 73% of the total project cost, which is considered to be moderate to high levered. Currently most of the infrastructure projects in Bangladesh are financed by the Investment Promotion & Financing Facility Project (IPFF) managed by Bangladesh Bank with the financial assistance of the International Development Association (IDA). Bangladesh Bank allocates fund from the IPFF fund to local financial institutions which then lends to the infrastructure project company.

Currently Bangladesh has a number of Independent Power Producer (IPP) projects. But problem emerges for other sector infrastructure financing like toll roads, elevated expressways. Unlike power project carrying out formal due diligence of road sector, port project is difficult as in power sector there exist a number of contract like Power Purchase Agreement (PPA), Gas Supply Agreement(GSA), land lease Agreement(LSA) which guarantees the revenue stream for the project company. Power project normally requires comparative less land than for road, bridge project. Because of huge land requirement in a land constraint country like Bangladesh, resettlement issue is a major concern which takes time to resolve and increase the project cost. Besides the usual project risks in roads, health, education sector infrastructure development has other unique risk factor because of the public interest nature of most projects and the interface with regulators and government agencies for project permission and other approvals. These risks could include tariff increase reversals due to public unacceptability of the tariffs determined, challenging of environmental clearances, and arbitrary reneging of contracts. Along with these issues financing capital intensive infrastructure projects is a major issue for Bangladesh's economy. Currently for infrastructure project financing, Bangladesh relies heavily on Banking Channel. On the other hand, most of the banks prefer to obtain financing support from Investment Promotion and Financing Facility (IPFF), which is a infrastructure promotion and financing project managed by Bangladesh Bank with support from World Bank. However, the entire loan application process under IPFF including loan review by technical consultants require significant time, which lead to project delays and cost overrun.

On the other hand, too much reliance on banking sector for infrastructure financing can let to asset liability mismatch along with excessive sector exposure in infrastructure for financial institutions. In developed countries like US, Europe and Australia the capital markets have been used over the last two decades as an alternative market to raise capital funds for infrastructure projects. Capital market financing for infrastructure can occur for both equity and debt. Normally equity financing for infrastructure are raised through listed infrastructure funds. On the other hand backed with the support of future cash flows from the project infrastructure bonds can be issued in the capital market.

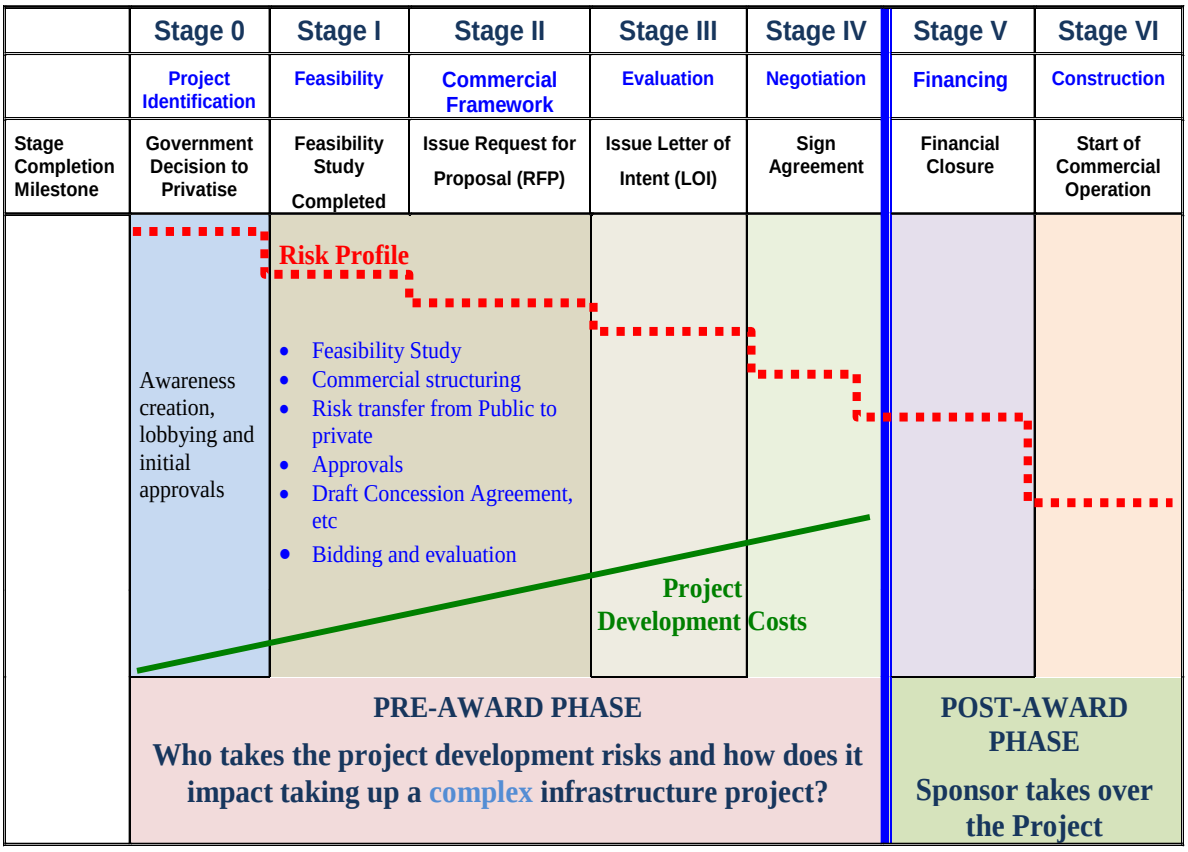
In developing country like Bangladesh where capital market regulatory framework is still weak and collusions among the market stakeholders take place government has to play a supporting role in facilitating regulatory reform and institutional development. Without sound regulatory framework it will not possible to effectively provide a linkage between the savings and the preferred infrastructure investment. These reforms cannot happen overnight rather a gradual restructuring model should be followed. If we look at the worldwide experience then different countries have adopted different kinds of strategies to address their infrastructure financing problem .China for example used its huge reserve and domestic savings to finance infrastructure development activities. Sri Lanka on the other hand used ‘sovereign bonds’ to raise capital to finance infrastructure development projects as well as promoting PPP to finance large infrastructure development projects. Indian capital market with infrastructure bonds provided the necessary financing for the promoters of infrastructure projects. The initial move aiming to develop a domestic capital market should be targeted towards accumulating contractual savings pools which channel savings towards securities through institutional investors. Pension fund and life insurance funds should be channeled in the capital market. Already the policymakers are taking steps to utilize huge idle money in the life insurance sector of Bangladesh. In the initial stage these insurance funds can be given priority during the IPO’s for long term capital market development.

5. Capital Market Opportunity for Infrastructure Financing

Traditional sources of financing for infrastructure project includes equity from the sponsors, government, contractors, development agency, World Bank Guarantees , subordinated debt from the sponsors, debt Finance from commercial lending, development agencies, ECAs, project bonds from capital markets and finally Multilateral agencies. As a country's financial system matures and becomes more sophisticated it is able to respond to complex infrastructure financial challenges in flexible, innovative ways. However, Bangladesh’s banking sector and capital market have not reached that level yet. The banking sector of Bangladesh has made great strides in terms of expanding the operation even to the rural areas and providing modern banking services. However, the Banking sector of Bangladesh have concerns regarding soundness of regulatory capital as the average capital adequacy ratio of the banking sector remains below the required 10% at 9.7% in FY11 and there are also concerns regarding asset quality as non-performing asset still hovers around 5%. The biggest concern of the banking sector of Bangladesh is the bout of acute liquidity crisis mostly due to the overdependence of the government in financing the fuel imports and non-development expenditure through banking channel thus crowding out private investments. On the other hand, Infrastructure PPP project usually involves high

upfront cost and long payback period. Initially the project has high project development cost, however, once the project starts earning, the overall project risk profile significantly comes down and after the commercial operation the project starts making revenue and project comes down even further.

Figure 1: Infrastructure Project Cycle

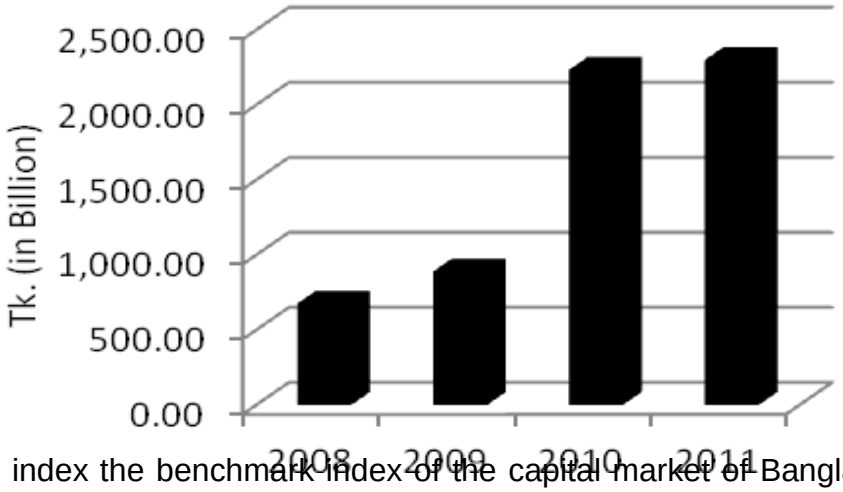


For infrastructure PPP projects investors with the requisite project development skills and risk appetite are needed to provide the initial financing, but these investors should then be able to offload the assets to other investors after the commercial operation, thus moving on to invest in new projects. By this time, the major risks have already been borne by the initial investor and the projects have a prospective stable revenue stream. A different type of investor may enter in at this stage, thus widening the pool of the investors that can be tapped and lowering the overall financing cost of the project. Capital market can provide a suitable exit mechanism for the initial investors in this regard. However, the financial market regulator, infrastructure related executing agencies and other industry stakeholders needs to ensure a sound accountability procedure to avoid any manipulation along with overseeing the technical maintenance, operational aspects of the infrastructure projects. Such mechanism of exiting through capital market within 2-3 years of commercial operation can lead to poor infrastructure project maintenance and operation procedure given the short time period incentive structure of project promoters. So regulators need to carefully balance the importance of providing an exit mechanism for the project promoters against the risk of poor infrastructure project maintenance procedure. Inefficient maintenance procedure will lead to high operational and maintenance cost leading to low

profit margin for the investors. However, many countries around the world have addressed this issue with careful policy formulation backed by technical quality checking, accountability procedure.

The ground reality is the capital market of Bangladesh is one of the smallest in Asia but the third largest in South Asia. Nonetheless, the size of the stock market of Bangladesh has grown impressively since its inception in 1964. In the last 4 year the market capitalization of the Dhaka Stock exchange has grown at a CAGR of 50%. In FY11 the market capitalization of DSE was 33% of GDP of Bangladesh. The Figure below shows the market capitalization of last 4 years

Figure 2: Market capitalization of Dhaka Stock exchange



The DGEN index the benchmark index of the capital market of Bangladesh was the best performing index of the world in fiscal year 2010, as the index surged by 60% from the previous year, but in the subsequent year the DGEN collapsed by 45%, becoming the worst performing stock market world within a year. And such sharp fluctuations are evident even in the historical medium term observations as the DGEN has experienced 3-year annualized volatility of returns of 30.4% from FY08 to FY11. The high volatility of the Bangladeshi stock market makes it a poor destination for international portfolio investments and an expensive financing mechanism for the domestic borrowers as the investors requires higher returns to compensate for the high market risk. However, given the strong need of infrastructural development followed by vulnerability of the banking sector and the foreign aid flows, the role of the capital market for financing is a pressing need in the local economic perspective.

With the current market structure of Bangladesh there can be three possible ways of financing infrastructure through capital market. In the first phase, infrastructure mutual funds need to be structured which will be partly financed by the banking sector (about 10%) and the rest of the fund will be collected from public through issuance of close-ended mutual funds. These infrastructure funds will be managed by professional portfolio managers of the concerned asset management companies with close supervision of trustee and other regulators. This infrastructure fund can possibly invest in three areas;

about 50% of the fund will invested in the infrastructure related listed companies which will enhance market liquidity.

Secondly 25% of the fund will be invested in government fixed securities and other fixed income instruments. Mainly this portion of the investment will ensure some stable return and reduce overall portfolio volatility. The final 25% of the fund will be invested into infrastructure projects. Any infrastructure PPP project where a public authority has provided for a compulsory buy-out of the project on payment of a pre-determined termination payment shall be eligible to borrow from the Fund. Further, the eligibility could be restricted to projects which have completed at least one year from their entry into commercial service, i.e., their commercial operation date (COD), without any material default in debt service or in the performance of their obligations under the respective project agreements. If the fund manager thinks that going for IPO for such projects is difficult in next 3-4 years, then the infrastructure fund can enter into a share put option with predetermined exercise price. This 25% of the total fund will provide an alternative financing channel for infrastructure project financing in Bangladesh and at least address some of the difficulties in current project financing. With such buy back obligation from the project promoters the fund will be able to invest in both BOO (Build, Operate and Own) and BOT (Build, Operate and Transfer) projects. However, the lending needs to be restricted to projects which are awarded through competitive bidding as they would carry the assurance of a sustainable price discovery.

After initial years of experience the market regulators can gradually increase the funds limit of 25% of investing in infrastructure project. Gradually the market regulators need to move towards debt fund for Infrastructure PPP projects. Such debt funds can also issue negotiable bonds to its investors. The bonds should carry standardised covenants so as to simplify the credit evaluation process and enhance the potential of secondary trading. As such, the Fund will not borrow on a project-specific basis; it will pool all its borrowings for lending to project companies. Typically, the holders of such long-term debt would be insurance, pension funds and sovereign funds However, the asset management company must have the managerial and technical capability to analyze and select the most profitable blocks of infrastructure projects. In addition, it's essential to create a liquid secondary market in debt. The project companies will be required to issue a negotiable bond to the Fund. In due course, these bonds could be traded in the market, either individually or through an intermediate bond created by securitizing the bonds issued by a group of companies/ SPVs (to enhance secondary market liquidity).

In the second phase, after the initial listing of few infrastructure funds in Bangladesh's stock market, with active participation of the large institutional buyer, sets the stage for the project promoter's parent companies to get listed in the stock exchange and obtain project financing. Bangladesh already has made significant progress in this regard with listing of few power companies in the stock exchange. Currently in infrastructure sector of Bangladesh, Independent Power Producers (IPP) has made significant progress. However listing these IPP's in the capital market is difficult as these specially created project vehicle (special purpose vehicle or "SPV") companies are in many cases a limited concern, meaning the company is created through BOOT(Build, Own, Operate and Transfer) scheme. Under a BOOT scheme the project company needs to transfer the ownership to

government after a predetermined period agreed during the project transaction phase. However, these companies can enter into a buyback option with the investors from the capital market.

In the last phase, government can enter into the scenario and create infrastructure fund which mainly provides refinancing facility for the infrastructure projects. This facility will use its sovereign rating to borrow long term funds and refinance infrastructure loans of banks. Government will play a role of credit enhancer, purchasing loans from banks and making large share ownership available to cautious investors such as insurance companies and pension funds. However, Bangladesh's overall financial market needs to go through significant structural transformation before such arrangement is feasible. Government needs to carefully analyze the contingent liabilities and extent of sovereign guarantee liability before taking such initiatives.

6. Conclusion

As Bangladesh's economy is expanding, Bangladesh's policy makers are confronting with different challenges which require extensive strategic analysis to choose between different courses of action. Creation of world-class infrastructure has been recognized as a key priority and a necessary condition for sustaining the growth momentum of Bangladesh. Although Bangladesh's current capital market is not in a suitable state to support infrastructure financing but this market is gradually maturing and has the potential to address the current infrastructure project financing constraint. With careful long term planning it's possible to provide an exit mechanism for infrastructure project promoters and ensure alternative financing channel through Bangladesh's capital market. However, to reach that levelBangladesh's regulators need to start taking initiatives. Initially the market regulators can focus on creating infrastructure fund which will provide an alternative funding channel for infrastructure project promoters. With the experience of other successful capital market around the world, gradual regulatory reform, institutional development and participation from government can help Bangladesh's capital market to move towards a mature financial market with different types of instruments available tailored for different stages of project financing risk diversification.

References

Aschauer, D.A. (1989), "Is Public expenditure Productive?" *Journal of Monetary Economics* 23, 177–200.

Asian Development Bank 2008, Public-Private Participation Handbook, Manilla, Philippines, pp.1, 55.

Augenblick, M, and Custer BS 1990, 'The Build, Operate, and Transfer ("BOT") Approach to Infrastructure Projects in Developing Countries', *The World Bank, Policy Research Working Paper* 498.

Chan, D.W.M., Chan, A.P.C. and Lam, P.T.I (2006). A feasibility study of the implementation of Public Private Partnership (PPP) in Hong Kong, *Proceedings of the CIB W89 International Conference on building Education and Research*, April 10-13, 2006.

Cheung, E, Chan, AP & Kajewski, S 2009, 'Reasons for implementing public private partnership projects: Perspectives from Hong Kong, Australian and British practitioners*'*, *Journal of Property Investment & Finance*, pp. 81-95.

Demirguc-Kunt, Asli and Ross Levine 1996, 'Stock Market Growth and Financial Intermediaries: Stylized Facts', *The World Bank Economic Review*, Vol. 10 (2), pp.291- 232.

Leibenstein, Harlay, 1966, "Allocative Efficiency vs. 'X-Efficiency'," *American Economic Review*, Vol. 56, No. 3 (June), pp. 392−415.

Miraftab, F 2004, 'Public Private Partnerships; The Trojan Horse of Neoliberal Development'*, Journal of Planning Education and Research*, pp. 89-101.

Pongsiri, N 2002, 'Regulations and Public-Private Partnerships', *The International Journal of Public Sector Managemen*t, pp. 487-495.

Vining, AR, & Boardman, AE 2008, 'Public Private Partnerships; Eight Rules for Governments*', Public Works Management and Policy*, pp.149-161.

World Bank, and Inter-American Development Bank 1998, 'Concessions for Infrastructure: A Guide to Their Design and Award', World Bank Technical Paper 399. Washington, DC, pp.1, 21.

World Bank 2002, 'Private Infrastructure: A Review of Projects with Private Participation 1990-2000', Viewpoint series, Washington, DC

World Bank 2007, 'Public- Private Partnerships in Transport', Policy Research Working Paper 4436. Washington, DC, pp.1.