ROLE OF FINANCIAL DEVELOPMENT IN BOOSTING INFRASTRUCTURE FINANCING:
INSIGHTS FROM BRICS

NEHARIKA SOBTI
DOCTORAL CANDIDATE
DEPARTMENT OF FINANCIAL STUDIES
UNIVERSITY OF DELHI

ABSTRACT
The imminent need for long term finance to support the newly formed Sustainable Development Goals (SDG) 2015 by developing economies has become a daunting task. Poor infrastructure holds back their sustainable economic development and drags their economy to more poverty. Facing burgeoning infrastructure deficit in energy, transportation, water, ICT and healthcare, this article aims to examine the challenges faced by developing economies in particular BRICS in infrastructure financing along with analyzing the success of Public Private Partnership (PPP) model in resolving the long term financing deficit. The article tries to quantify the long term financing needs by these economies and identify the role played by level of financial development in meeting the infrastructure requirement using data from 2005-2016. The study aims to examine the current status of different sources of long term finance amongst BRICS and measure the level of financial development in these nations. By bifurcating financial market performance into its three anchors - financial institutions, instruments and markets, the study attempts to suggest specific policy implications for India infrastructure financing mix to boost long term development and achieve sustainable development goals (SDG) in the future.

Keywords- Infrastructure financing, Public Private Partnership, Financial Development, Project Finance
JEL Classification: G15, G23, O16

INTRODUCTION
The poles of global growth today are centered in the emerging market economies (EME) which are seen as a ray of hope in the current financial and economic stagnation. In order to be guiding lights to a green and sustainable future, development of the infrastructure becomes a cornerstone in fulfilling the vision. Trapped in the quagmire of overpopulation, unemployment, inflation and volatile financial markets, these EMEs despite being high growth rate achievers, are severely constrained by lack of quality infrastructure and reliable source of its financing. Due to the financial turmoil being experienced in advanced economies, the financial crisis in 2008 and Euro zone crisis 2013, investors in these economies have poured in hot money to the EME providing higher rates of return and having strong macroeconomic fundamentals. But instead what these EME require is long term reliable capital to meet its growing infrastructure deficit as opposed to such short term excess capital.

The lack of quality infrastructure holds back long term development and drags the economy to more poverty. Infrastructure development is the backbone for any economy and is the key to long run growth and development as proved by many researchers (Levine, 1997; Kunt, 2006; Neusser & Kugler, 1998). Well developed infrastructure can drive growth by generating sustainable employment opportunities, larger trade with lower tariffs, better health and sanitation facilities leading to disease free healthy population, well connected networks of roads, railways and ports making transportation easier and
ultimately leads to poverty alleviation. Delays in realisation of infrastructure projects imposes social and economic costs.

In majority of EMEs, bank lending has been a dominant form of financing long term investments in infrastructure. But the challenge is the asset liability mismatch (ALM) problem inherent in banking system as banks have short term liabilities in terms of short term deposits of the savers but has long term assets in terms of long tenured infrastructure investment loans. This has becoming an issue of concern off lately as EMEs suffer from underdeveloped capital and bond market coupled with stringent capital adequacy and higher safety margins imposed on banks due to Basel III adoption worldwide post the financial crisis. Without any surprise this has worsened the infrastructure gap and requires non banking financial institutions to replace the traditional bank led model. But this transition seem to be a daunting task.

Long term finance plays a pivotal role in creating physical investments leading to economic growth and sustainable development across all sectors of the economy (OECD, 2015). By giving a boost to the manufacturing sector and small and medium enterprises which are engines of growth in any economy, there has been a consistent discussion on how to gather long term funds in the wake of constrained public finances. A recent move towards low carbon infrastructure addressing impending environmental issues like climate change and global warming, has added more pressure on finances. Recent (OECD, 2016) study reveals that the estimated requirement for global infrastructure in transport, electricity, water and telecommunication will be around $71 trillion by 2030 which is about 3.5% of global GDP and achieving low carbon energy sector will require additional cumulative investment of $36 trillion by 2050 out of which $1.2 trillion for China.

The aim of the study is to explore the changing dynamics of financial markets to improve the long run resilience of financial system. An attempt has been made to explore the role financial development plays across BRICS to boost infrastructure financing. Different indicators of financial development bifurcated into financial institutions, markets and instruments have been analyzed to gauge the varying level of financial development and link it with varying sources of infrastructure financing. The study also focuses on strengthening the financial markets for long term finance by proposing the development of a robust local currency bond markets in EME as an alternative source of infrastructure finance.

INFRASTRUCTURE INVESTMENT DEFICIT
According to the latest Mckinsey Report, 2016, the world would need to invest $3.3 trillion a year or 3.8% of GDP of the world in economic infrastructure to support expected rates of growth from 2016-2030 of which 60% accounts for emerging market economies. With adopting new Sustainable Development Goals (SDG) by United Nations, the size of this investments further increases. Currently, the worlds invests $2.5 trillion a year on transportation, power, water, telecommunication thus, creating an infrastructure deficit. Infrastructure investments are largely characterized by long gestation periods, High irreversible initial outlay, time profile of cash flows, high initial risk, illiquidity and are subject to market failure which makes make private sector investment difficult. Since infrastructure financing by private sector may not breakeven their direct payouts, but the huge positive externality to

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1Refer to Mckinsey Report "Bridging Global Infrastructure Gaps", Mckinsey Global Institute, June, 2016
society at large of these infrastructure development is so high that ultimately it becomes the onus of the government to ensure adequate funds are deployed in this area.

**TABLE 1 - INFRASTRUCTURE REQUIREMENT IN BRICS**

<table>
<thead>
<tr>
<th>INDICATOR</th>
<th>India</th>
<th>China</th>
<th>Brazil</th>
<th>Russian Federation</th>
<th>South Africa</th>
</tr>
</thead>
<tbody>
<tr>
<td>GNI per capita, Atlas method (current US$)</td>
<td>950</td>
<td>2,360</td>
<td>5,910</td>
<td>7,560</td>
<td>5,760</td>
</tr>
<tr>
<td>Access to electricity (% of population)</td>
<td>43</td>
<td>99</td>
<td>95</td>
<td></td>
<td>66</td>
</tr>
<tr>
<td>Electric power consumption (kwh per capita)</td>
<td>480</td>
<td>1,781</td>
<td>2,008</td>
<td>5,785</td>
<td>4,847</td>
</tr>
<tr>
<td>Improved water source (% of population with access)</td>
<td>89</td>
<td>88</td>
<td>91</td>
<td>97</td>
<td>93</td>
</tr>
<tr>
<td>Improved sanitation facilities (% of population with access)</td>
<td>28</td>
<td>65</td>
<td>77</td>
<td>87</td>
<td>59</td>
</tr>
<tr>
<td>Total telephone subscribers per 100 inhabitants</td>
<td>18</td>
<td>63</td>
<td>73</td>
<td>137</td>
<td>82</td>
</tr>
</tbody>
</table>

*Source* - World Bank PPP Database, 2016

The need for investment in infrastructure can be well understood by relating the deficit in infrastructure in sectors like electricity, sanitation, water, transpiration and telephone subscription. India is in dire need to invest majorly in electricity provision as it has the lowest percentage of its population with access to electricity. China and South Africa, on the other hand, should invest in sanitation and connectivity of its people through ICT.

Despite the high socio economic returns, infrastructure projects suffer from huge viability gap funding meaning that expected funds required to meet the infrastructure projects are in excess to the fund available. The inherent issues with infrastructure projects experienced from past accounts are the inability to cover project cost based on existing tariffs, high political risk, lack of expertise in infrastructure investments budgeting, lack of reliable data for forecasting expected performance and irreversible high investment for long gestation period.

**FIGURE 1 - QUALITY OF OVERALL INFRASTRUCTURE IN BRICS**

*Source* - Global Competitive Report, 2015-16, World Economic Forum,
Long term finances by institutional investors are a common feature in advanced economies but emerging economies lack the investor base and a well diversified pipeline of projects. Majority of infrastructure financing in EME have been done by banks but since their short term liabilities in terms of short term deposits do not match long term assets in the form of infrastructure loans, this created asset liability mismatch (ALM) problem and reduces bank's capability to be the panacea for this growing infrastructure deficit.

CHALLENGES TO INFRASTRUCTURE FINANCING IN EMEs

The growing gap in infrastructure finance in developing economies has become the talk of major policy debates as the link between infrastructure development with poverty, sustainable economic growth and capital flows have been extensively researched ((Beck et al., 2016), (Laeven, Levine, & Michalopoulos, 2015), (Beck, Demirgüç-Kunt, & Levine, 2007), (Levine, 1997)) and found to be positive. EMEs especially India and China, both the fastest growing economies of the world have strong demand for infrastructure but its access to long term finance is constrained by poor contract enforcement, macroeconomic instability and weak institutions. Various bottlenecks that impedes the flow of long term finance from are discussed and needs to be addressed.

- **Heavy dependence on Banking System**- The major issue of why is it difficult to match long term investment demand with long term funds. The reason lies in heavy dependence on bank led model of financing in EMEs coupled with underdeveloped capital and derivative markets. Commercial banks are constrained due to maintaining low fiscal deficit targets and lack of long term liabilities.

- **Poor participation by institutional investors**- Emerging market economies suffer from limited growth in institutional investment in infrastructure projects because lack of liquidity, underdeveloped and shallow capital markets, bureaucracy and legislative hurdles, political instability, exchange rate risk, high inflation swings, country risk, lack of reliable data on asset allocation by institutional investors, lack of capacity and most importantly, lack of expertise in executing infrastructure projects and financing.

- **Bank Asset Liability Mismatch and tight prudential norms**- In order to match its short term liabilities which are the short term deposit with long term assets like infrastructure loans, banks have limited recourse to this issue. With imposition of Basel III norms, banks are further constrained to maintain capital adequacy ratio and heed to tighter prudential norms, which reduces their capacity to lend to infrastructure projects on a large scale.

- **Lack of well developed pipeline of projects**- The biggest challenge is the absence of well diversified portfolio of pipeline of projects which no single investor has operational or financial capability to form. This task has to be done by government of respective countries with the help from multilateral institutions like World Bank, New Development Bank (BRICS Banks) or OECD. Proper pipeline of projects lends credibility to its operation and expected performance.
• **Underdeveloped Bond Market**- Most EME have a shallow bond market which are in early stage of development making institutional investors averse of participation. The two simultaneous challenges faced by infrastructure debt and equity holder are first, illiquid long term commitment of financial resources which blocks their funds and, second, the inherent difficulty to price the associated long term risk. Traditional bank led financing alternatives provided easily solution to these problem but their constrained resources has sidelined them.

• **Macroeconomic Instability**- High inflation leading to higher debt servicing requirement, stagnated growth impeding the pipeline of infrastructure projects, weakening currency makes foreign currency denominated bonds risky and volatile stock markets makes equity financing for infrastructure instable.

• **Political Instability and Policy paralysis** - Policy paralysis and political uncertainty in past have made foreign institutional investors wary of long term dependence on such economies as experienced by Enron in India in 1993 when a state government revoked the power plant deal without giving any recourse. (Hall, 2014) argues that the greatest concern in PPP is the arbitrary exercise of political power like sudden cuts in prices, dismantling the project, unilateral new negotiations which culminates into political risk. Infrastructure projects various services to all stakeholders and a proper social cost benefit analysis should be undertaken as starting point for setting up properly structured investible infrastructure projects.

• **Conservative Investors**- The major challenge faced by bonds market is the conservative approach of the investors to stay away from low rated bonds unless they are backed by high equity investments or are attached with credit enhancement guarantees. Lack of expertise amongst the sponsors and contractors in infrastructure financing make them vulnerable to deficit financing problem.

• **Constrained Government Budgets due to fiscal deficit targets**- With bank pricing becoming aggressive and huge influence of banks in infrastructure projects has made it imperative to move towards project based finance or institutional investors meeting asset liability match. Government financing through increasing direct fiscal support has met with opposition from public and led to higher build up of debt leading many economies like India to cut back on capital expenditure in its 2016 budget in order to keep fiscal deficit under target.

• **Infrastructure as an Asset Class is not developed**- First generation infrastructure projects were ill suited for institutional investors which led to a backlash in the past. Increasing knowledge deficit amongst investors as to what it means to invest in infrastructure projects as a strategic asset allocation decision made it a highly risky proposition. Increasing information asymmetry

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2 Refer to [http://www.economist.com/node/473117](http://www.economist.com/node/473117)
3 Refer to Asia Infrastructure financing Report, 2016, Deutsche Bank Research.
with regard to expected performance and behavior of the underlying infrastructure portfolio made infrastructure investments a scary proposition.

- **Lack of monitoring and investment benchmarking:** Since performance monitoring is lacking and long term investments are illiquid and unlisted, investors have no rationale to venture in this area. Lack of investment benchmarks for ascertaining the returns, false investment narrative, massive forecasting errors, lack of infrastructure equity and debt avenues made investors to sideline infrastructure as an asset class (Geest & Nunez-ferrer, 2011).

It has long been agreed that private sector development does not occur in a vacuum, rather, it requires facilitating conditions to unleash its true potential. For that, financial institutions play a pivotal role and help to explain differing levels of output, growth, credit and development (Rodrik, 2002). The level of difference in financial institution performance are largely due to differences in economic development of the country, productivity, business environment, culture, value system and risk characteristics.

**FINANCIAL DEVELOPMENT**

Financial Development has been extensively researched as a cause of economic growth with (Bagehot, 1873) found that efficient capital markets in England led to enhanced resource allocation towards more productive investments. Other like (Schumpeter, 1911), (Hicks, 1969) and (Mckinnon, 1973) have analysed the role of banking system, capital markets and financial development in economic growth, innovation and creation of productive assets. Inherent functions of a financial market are efficient mobilization of savings from depositors to lenders for the most productive use, reducing information asymmetry, proper monitoring of investment projects and help investors to diversify risk have been the cornerstone for any financial market research. Though the positive link between the domestic financial liberalization and financial development have been supported by recent studies by (OECD, 2013), (Cihak, Demirgüç-Kunt, Feyen, & Levine, 2012) and (World Bank, IMF, & OECD, 2015), but whether it spurs private sector investments in infrastructure financing is still dubious. (Huang, 2014), (Voghouei, Azali, & Jamali, 2011), (Standley, 2010), (Greenwood, Sanchez, & Wang, 2013) and (Ba, 2015) have recently studied the determinants of financial development and its relationship in infrastructure financing. (Bott, 2014) made an index of financial development using principal component analysis by including overall financial development, financial intermediary development, stock market development, financial efficiency and financial size development (depth).

There has been a large body of literature available on exploring the role played by private investment and financial development on economic growth (Levine, 1997), (King, 1993) and others. Economic theory have predicted that private investment and financial intermediary development contributes significantly to each other as an increase in investment leading to rise in aggregate demand enlarging demand for external finance and enlarging the extent of financial intermediation by persuading depositors to save their idle cash in banks. The endogenous finance growth models (Diamond, 1984) have proved that financial markets play a pivotal role in mobilising investment capital to highest productive use.
MEASURING FINANCIAL DEVELOPMENT IN BRICS

Financial development is said to exist when financial system which is a set of financial instruments, intermediaries and market does a better job in providing the functions of savings mobilization to productive assets, reduce information asymmetry, enhance competition, provide access to financial services and promote technological innovations. Financial development indicates the capacity of financial system to enhance the efficiency of resource allocation and monitor capital projects with financial depth and improved competition. As business investment is critical to productivity, sophisticated financial markets in terms of sound banking system, well regulated securities market, greater investments by private equity and venture capitals are necessary for long term infrastructure financing.

FIGURE 5 - FINANCIAL DEVELOPMENT INDICATORS FOR BRICS IN GIC 2016

The above diagram reflects the level of financial development based on 8 indicators as shown. India fares best in legal rights index measures the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders and thus facilitate lending. But stands poorly in other indicators. Due to huge built up of gross NPA in public sector banks of 7.3% in 2016 with Rs 3,61,731 lakh crore in absolute terms, bank's soundness is under threat. Access to non bank finance is also constrained due underdeveloped capital and bonds market with conservative behavior of the investors. China performs average on all financial indicators as it also suffers from huge debt on its bank balance sheet, the falling

SOURCE - Global Competitive Index, Global Competitive Report, World Economic Forum, 2015-16

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4A non performing asset (NPA) is a loan or advance for which the principal or interest payment remained overdue for a period of 90 days.

of Yuan and stock market crash all points towards dismal condition of its financial system. South Africa on the other hand, have shown improvement in all fronts except the ease of access to loans.

FIGURE 6 - OVERALL FINANCIAL DEVELOPMENT INDICATORS FOR BRICS FOR 2015-16

SOURCE- GLOBAL COMPETITIVE INDEX, WORLD ECONOMIC FORUM, 2015-16

Thus, the overall picture for the year 2015-16 reflects the overall financial development indicator in which South Africa outperforms all in BRICS due to its stable macroeconomic and strong banking system and capital markets. China facing slow down due Yuan devaluation and stock market crash is struggling. India due to high NPA build up, slow growth in bonds market, informal lending dependence and poor access of finance to SME and infrastructure financing leads to average performance in financial development.

INDICATORS OF FINANCIAL DEVELOPMENT

The 4 main indicators of financial market development given World Bank Global Financial Development Indicators⁶ are -

1. DEPTH - Financial market depth indicates the capacity of the banks, stock markets and bonds market to provide finances to private sector, pooling risk and selecting the most productive investments. It explains financial sector relative to the economy. Majorly used proxies like private credit relative to GDP, stock market capitalization to GDP, syndicated loan to GDP, outstanding debt to GDP.

- Banks Depth - Private credit relative to GDP measures the domestic private credit to the real sector by deposit money banks as percentage of local currency GDP. This measure has strong statistical link to long term economic growth and poverty. China has been the clear winner amongst BRICS as it is a bank led economy with majority of its domestic credit being fulfilled by bank. Russia and Brazil have started to deepen their bank credit but South Africa and India remains stable in this regards due to deepening of its securities market.

⁶ Refer to World Bank Global Financial Indicator, World Bank Data Base, 2016
Bond markets depth play a pivotal role in long term finance and its depth is a good indicator of a robust PPP financing model. South Africa is a laggard in bond market which highly underdeveloped as compared to its growth rate whereas China bond markets is Asia's second largest bond market and is very well traded and liquid market. India is trying to deepen its bond market by giving various tax incentives and favorable regulations. Russia and Brazil bond markets are in their embryonic stage and needs to increase its access.

Stock Markets Depth- Stock market capitalization means the product of numbers of shares outstanding with its closing price. It indicates the size and liquidity of the equity market and the extent to which companies can leverage it to finance their operations. South Africa has the highest stock market depth with its index JSE Limited performing exceptionally well. China recently saw the stock market crash due to Yuan devaluation and underlying debt buildup and
India also witnessed swings to ups and downs due to various domestic and international events like China crash, commodities price rise, elections, etc.

**FIGURE 9 - FINANCIAL MARKET DEPTH - STOCK MARKET**

![Graph showing stock market capitalization to GDP (%) from 2005 to 2014 for China, India, Russian Federation, South Africa, and Brazil.](source)

Source: Global Financial Development, World Bank Database

2. **STABILITY**

Financial Stability measures the resilience of the financial system to external shocks and events. It indicates the absence of system-wide events in which the financial system fails to operate and is like a stress test for markets. Russia demonstrates high levels of volatility during financial crises, as well as other countries. Recent periods post-2012 show high resilience in stock markets returning to their pre-crisis levels.

**FIGURE 10 - FINANCIAL MARKET STABILITY - STOCK MARKET**

![Graph showing stock price volatility from 2005 to 2014 for China, India, Russian Federation, South Africa, and Brazil.](source)

Source: Global Financial Development, World Bank Database

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3. EFFICIENCY & LIQUIDITY-
Financial markets efficiency means that all publically available information should be reflected in the prices making forecasting of prices a random event. Stock market turnover ratio measures the stock market liquidity as it tells the no. of shares traded in proportion to outstanding shares. China has shown highest liquidity in its stock markets hinting towards the highly developed the market is. India has taken a fall due to certain macroeconomic events and immature markets. Russia and Brazil stock markets are at nascent stage.

FIGURE 11 - FINANCIAL MARKET EFFICIENCY - STOCK MARKET

Source- Global Financial Development , World Bank Database

4. ACCESS - Financial markets need to ensure that all financial services offered by them are accessible to them so that they can take the advantage of business opportunity. Financial inclusion has become the buzzword for all EMEs in order to bring millions of poor under the formal credit system so that they are not exploited by informal money lenders.

SOURCES OF LONG TERM FINANCE
Long term finance plays an important role by extending the maturity structure of finance by reducing the rollover risk of borrowers thereby lengthening the horizon of investment and enabling firms to meet heavy investment projects by making long term financial instruments available. Government financing has always been a significant source in infrastructure as it is a public good with long gestation period and subject to political and regulatory risk. It has been estimated that the public sector makes up nearly 70% of infrastructure financing, the private sector around 20% and multilateral agencies the remaining 10%. According to another study conducted by (World Bank, 2015), only 66 % of small firms, 78% medium sized firms have long term liabilities compared with 80 % and 90% in high income group respectively. The study also found that firms in high income countries finance 40% of fixed assets externally and 20 % in low income countries. Due to imperfect financial markets in EME, overcoming the scarcity of long term finance become challenging. The major sources of long term finance available are analysed here.

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1. COMMERCIAL BANKS
Long term finance has predominantly been the prerogative of banks in EME as the other sources like equity and bonds remain less accessible. Since banks as a source of long term finance cannot lose its sheen completely, so, banks should also allow long term funding through subordinate debt and issue local currency bonds which helps them to address Basel III capital adequacy norms and maintain its attractiveness to sponsors. But this approach will come in the way of bond market development as it will not be able to fulfill the spare tire role in infrastructure financing if banks become the largest issuer of bonds. Development banks and multilateral banks can play an increasingly pivotal role.

2. BOND MARKETS
Emerging market economies are in dire state to boost their local currency bond market to strengthen PPP model and reduce reliance on bank led traditional sources of long term finance. The key advantage of spurring local bond market is that it helps to tide over the currency risk that can arise typically when project generates revenue in domestic currency has foreign currency denominated debt service requirements, which without hedging can become disastrous in long tenure due to adverse exchange rate movements increasing the debt service liability threatening the viability of the project. A distinct feature of bonds markets in EMEs is that majority of its largest corporate issuers are state owned entities.

Other than this, a new wave of indirect bond investment has been observed wherein entities not directly involved in construction or operations of infrastructure project issue bonds to the huge domestic savings. Infrastructure Bonds have outstripped the syndicated loan as a source of finance for infrastructure with China dominated in the local currency issue followed by Korea in Asia.
As it can be observed that India Bond market is at a very nascent stage and needs to increase its reach and accessibility as a source of long term finance. South Africa has a liquid and developed both private and public bond market followed by Russia and Brazil. Public bond market are more deep than private ones owing to their early establishment.

Source- Global Financial Development, World Bank Database
2. NON BANKING FINANCIAL INSTITUTIONS
Since the government budget towards infrastructure along with bank cannot alone meet the burgeoning infrastructure fund requirement, attempts should be made to attract institutional investors like pension funds, insurance, and sovereign wealth funds as a potential source of long term financing in developing economies. Since the current overall level of these institutional investment is embryonic, structural reforms are needed to create more favorable investment climate, build private sector confidence and ensuring that huge savings are adequately channelised to productive investment avenues.

A. PENSION FUNDS
Pension funds are an ideal source of long term financing with an ideal asset liability match as the employee starts to deposit a part of its salary in the fund right after start of his/her job and withdraws it only 20-40 years hence after retirement. This proves to be a stable and continuous pool for infrastructure financing. Based on the pay as you go scheme, pension reserve fund maintained by government or social security institutions are also an apt source of infrastructure financing.

FIGURE 15 - PENSION FUND PENETRATION IN BRICS

<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Africa</td>
<td>94.8</td>
</tr>
<tr>
<td>Russia</td>
<td>5.5</td>
</tr>
<tr>
<td>Brazil</td>
<td>12</td>
</tr>
<tr>
<td>China</td>
<td>1.2</td>
</tr>
<tr>
<td>India</td>
<td>0.6</td>
</tr>
</tbody>
</table>

Source: Global pension statistics, OECD, 2015

South Africa has a well developed pension fund market with India being at the nascent stage as compared to other BRICS. China invest majority of its pension fund assets in equities whereas Russia and Brazil allocates them in Bonds and govt. bills. India has least contribution to pension funds as compared with South Africa and China which have 4% of its corpus invested in pension fund schemes.
TABLE 2 - PENSION FUND ASSET ALLOCATION IN BRICS , 2014

<table>
<thead>
<tr>
<th>Country</th>
<th>Equities</th>
<th>Bills and bonds</th>
<th>Cash and Deposits</th>
<th>Other (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hong Kong (China) (2)</td>
<td>61.1</td>
<td>21.7</td>
<td>13.1</td>
<td>4.1</td>
</tr>
<tr>
<td>Brazil</td>
<td>25.6</td>
<td>54.9</td>
<td>0.1</td>
<td>19.4</td>
</tr>
<tr>
<td>South Africa (3,8)</td>
<td>25.0</td>
<td>9.5</td>
<td>4.4</td>
<td>61.1</td>
</tr>
<tr>
<td>Russian Federation</td>
<td>8.7</td>
<td>64.0</td>
<td>22.2</td>
<td>5.1</td>
</tr>
</tbody>
</table>

Source- Global pension statistics, OECD , 2015

TABLE 3 - CONTRIBUTION IN PENSION FUNDS IN BRICS , 2014

<table>
<thead>
<tr>
<th>Contributions in pension funds in selected OECD and selected non-OECD countries, 2010-2014 (As a percentage of GDP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OECD countries</td>
</tr>
<tr>
<td>India</td>
</tr>
<tr>
<td>Russian Federation</td>
</tr>
<tr>
<td>Brazil</td>
</tr>
<tr>
<td>Hong Kong (China)</td>
</tr>
<tr>
<td>South Africa</td>
</tr>
<tr>
<td>2010</td>
</tr>
<tr>
<td>0.4</td>
</tr>
<tr>
<td>3.1</td>
</tr>
<tr>
<td>4.8</td>
</tr>
</tbody>
</table>

Source- Global pension statistics, OECD , 2015

B. INSURANCE FUNDS

Life insurance sector provides various long term schemes like retirement schemes, annuities and life insurance benefits schemes, child education plans, etc which allows them to have long term liabilities and paves the way for such funds to look for long term assets like infrastructure investments. Insurance fund provides a stable pool of funds and an ideal asset for green infrastructure initiatives⁹.

C. MUTUAL FUNDS

Pooling of small sums of money from large number of investors also provides a continuous stream of finances especially when based on passive investment ideology. Since this corpus is invested in diversified asset classes like equities, bonds, cash, real estate, gold, etc, can be a good source for infrastructure financing by investing in equities and bonds of infrastructure funds.

D. SOVEREIGN WEALTH FUNDS

Sovereign wealth funds (SWF) are special purpose vehicles created by central government of countries with the aim to stabilize the economy from external macroeconomic shocks, recessionary slump, preserve government fiscal/foreign exchange reserves, and Balance of payment deficit. These funds have increasingly been utilized for funding utilities like airports, roads, energy plants and water plants. Assets under management by such funds have grown rapidly and in January 2014 accounted for more than USD 6 trillion according to the Sovereign Fund Institute. In India, NIIF has been set up as a SWF to support Greenfield and Brownfield investments in infrastructure in budget 2015-16 by tapping overseas strategic partners like multilateral institutions and institutional investors.

E. DEVELOPMENT FINANCING INSTITUTIONS

Multilateral development banks play a pivotal role by not only providing access to funds for infrastructure projects but also by providing technical assistance and risk management framework. MDB capacity to leverage infrastructure development in sync with SDG 2015 have been pale with regard to outstanding investment needs. The new wave of development banks with New Development Bank set up by BRICS and Asia Infrastructure Investment Bank (AIIB) setup by China are trying to fill the gap by having initial capital of $100 billion each.

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10 http://www.swfinstitute.org/
11 http://www.thehindubusinessline.com/opinion/columns/indias-shaky-sovereign-wealthfund/article7731106.ece
F. PUBLIC PRIVATE PARTNERSHIP

The key value drivers of a successful PPP project are transfer of operational and commercial risk to private sector, efficient management, experience of public agencies to carefully select, evaluate and implement PPP transactions and innovation. A robust regulatory and financial market institutions are important starting points for a well developed PPP framework. The future of infrastructure financing depends upon a well structured PPP framework underpinned by a robust non banking financial institutions and institutional investors having long term finances without suffering from asset liability mismatch (ALM) problem.

FIGURE 3 - PPP PROJECT DEALS AND INVESTMENT IN BRICS


CASE FOR INDIA

Infrastructure Deficit

Investment in infrastructure has been a challenging task in India due to stalled projects, inordinate delay, decline in gross fixed capital formation, inadequate private sector participation, environmental clearances and macroeconomic fundamentals. Union Budget 2015-16 strongly emphasized revival of PPP model and revitalize private sector participation to fill the $1.5 trillion investment in infrastructure over the next decade as the new government intends to connect 700 thousand villages with roads by 2019 as a part of massive modernization plan. Initially relying on public finance, the government also aims to attract funding from multilateral banks like AIIB and World Bank. Due to recent international events causing jitters in the global economy like Brexit, World Bank Update, 2016 has found that private sector participation in infrastructure in India fell from $73.7 billion in 2010 to a mere $4.2 billion in 2015 and with this the share of PPP is down from $48.4 billion to $4.1 billion, with the decline being sharpest in electricity where private sector participation fell from $37.8 billion to

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$2.1 billion, in roads it fell from $14.5 billion to $1.9 billion and in case of ports from $0.7 billion to 0.1 billion\(^{13}\).

Being dominated by bank financing, infrastructure financing will receive a boost by allowing FDI and institutional sector participation. India is faring better in its PPP model as compared to Asian counterparts but still its dependence on bank loans is creating an issue for long term sustainable financing vehicles. Greater equity and debt in infrastructure financing will reduce this dependence and enhance operational performance of the projects and greater success. India in its recent budget 2015-16, announced the setup of National Investment Infrastructure Fund (NIIF) with initial investment of INR 200 billion with its equity coming from both the Indian government and foreign institutional investors. India has remarkably strengthened its PPP policy framework with 583 projects by adopting slew of reforms in order to improve legislative and financial sector with government pushing it further by becoming an enabler rather than a provider. By ensuring a transparent and competitive environment in PPP project selection, Gujarat has done wonders in infrastructure investment. But, political distortions and improper risk allocation and bid procedures calls for a regulatory restructuring with focus on improvement in investment climate to attract private sector participation.

POLICY IMPLICATION FOR INDIA

- **Better Pipeline of well developed projects**- India needs to plan for a well structured list of infrastructure projects in order to lend reliability and credibility to its government intentions to complete the project and achieve expected performance targets. This need to be collaborative effort of the sponsors, government and multilateral institutions.

- **Changes to regulation and risk mitigation**- India need to adopt favorable laws and policy actions to boost the private participation in infrastructure lending like tax incentives, proper risk mitigation strategies, changing attitude of people with focus on service delivery and laws to restrict corrupt practices. Union Budget 2015-16 passed public utility (resolution and dispute) Bill, 2016 to ensure better enforcement of laws.

- **Market facilitation and Knowledge Enhancement**- India should create an enabling environment by facilitating access to resources, hiring experts in gaining knowledge about infrastructure deals, removing market fiction and price distortions.

- **Solid cross border investment principles**- In a bid to harmonise and benchmark the performance with international counterparts, Indian government should ensure convergence of laws, regulations, arrangements with global standards to integrate the long term financing sector by allowing greater cross border investments.

- **Improve capital markets and bond markets**- India needs to greatly deepen their long term market i.e. equity and debt to attract private participation and greater access to long term domestic bonds and instruments which do not suffer from exchange rate fluctuations.

- **Encourage banks to use syndicated loans**- India has a better volume of syndicate loans as compared to China but as its infrastructure lending is dominated by bank, and bank being

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constrained due to ALM and Basel III norms, the only recourse for banks to keep lending to infrastructure sector is to diversify its exposure by greater issuance of syndicated loans.

- **Ease FDI norms in construction** - India has eased its FDI norms for construction companies by easing the exit route and reducing lock in period to 3 years with 100% FDI already in place for construction sector.

- **Install credible Rating system for infrastructure projects** - It is very important for government to install a credible rating agency and mechanism for infrastructure projects since they have long gestation periods and incur huge initial outlay. So, in order to lend credibility to institutional investors, rating agencies should be introduced.

- **Credit Enhancement and Government Guarantees** - Governments in order to mitigate risk tries to offer credit guarantees and full insurance against any potential loss, but this act of government turns out to be counterproductive as it destroys incentives for cost minimization and quality maintenance by private sector. This implicit assurance makes too big to fail rhetoric apt in infrastructure financing. But till the time institutional investors are not pouring in, such enhancer needs to be given.

**WAY AHEAD**

Thus, the attainment of Sustainability Development Goals 2015 will become a reality with a well developed market for long term finance. Since there is no magic bullet to fill the infrastructure investment gap, this calls for a multi prolonged approach which targets several areas of concern. Ensuring strong macroeconomic fundamentals like low inflation targeting, low fiscal deficit coupled with healthy banking system, strong regulation and supervision, strong financial market development, better institution building, market friendly innovation that overcomes market frictions and promotes financial literacy, policies promoting foreign institutional investors and deep bond and equity markets. The government has a greater role to fulfill this dream and needs to provide national infrastructure roadmap with well developed pipelines of projects and promote transparency by strengthening data quality and disclosure norms. Thus, these small steps taken together will try to narrow the burgeoning infrastructure gap and boost the economic growth.
REFERENCES


