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Financing Infrastructure: Mobilizing Resources and Exploring New Instruments

Priyadarshi Dash*

Abstract: The current level of infrastructure spending is far below the desired level globally as well as across different regions of the world, and the financing gap is widening day by day. In particular, the increasing demand for infrastructure financing in emerging markets and large developing countries necessitate radical changes in the sources, instruments and forms of financing infrastructure assets. Along with financing requirements of conventional infrastructure (physical as well as social), the achievement of Sustainable Development Goals (SDGs) would require additional investment in basic economic and social infrastructure such as water, sanitation, electricity, roads, etc. While traditional sources e.g. bank loans, syndicated loans, loans by the multilateral development banks, etc continue to remain the major sources of infrastructure financing, the scope for greater participation of private investors has expanded in recent years. In terms of innovative instruments, bonds, equity and other capital market instruments involving both debt and equity features are emerging as preferred asset classes for infrastructure investments. Efficient pooling of investments by institutional investors and public-private partnerships can possibly widen the choice of financing and enhance optimum utilization of global savings.

Keywords: Infrastructure finance, innovative instruments, institutional investors, public-private partnership

Introduction

Gaps in infrastructure financing are widely observed across different regions of the world. As infrastructure development is critical for the socio-economic development of the developing and less developed countries, the shortfalls in funding infrastructure projects send worrying signals. The need for mobilizing resources for infrastructure, especially

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maintenance of ageing infrastructure, is felt even in developed countries as well. Moreover, poor infrastructure continues to remain a major bottleneck in the quest for high and inclusive economic growth. Besides institutional and regulatory issues, lack of finance is often viewed as a major reason for slow pace of infrastructure development in developing countries. As per McKinsey (2017), the world needs to invest $3.7 trillion[1] per annum on economic infrastructure through 2035.

In general, the infrastructure financing landscape is experiencing radical changes in view of the protracted slowdown in advanced economies of the world, importance of supply-side reforms, frequent recourse to fiscal stimulus measures, deepening global value-chains, increasing role of private capital, among others.[2] As a result, it is not only the creation of infrastructure in the form of new highways, bridges, railways tracks, ports, etc. but equal attention needs to be given to maintenance of ageing infrastructure. In addition, the spread of IT applications in economic activities demands investment in the digital infrastructure as well. In that drive, the concerns for sustainable, inclusive and resilient infrastructure are recognized as crucial in the arena of conception, funding and implementation of infrastructure projects. These developments have not only scaled up the desired volume of investments for building infrastructure in developing countries but have indicated the need for diversification of financing sources and instruments.

In this context, it is imperative to assess the trends in infrastructure investments globally especially in the developing countries. Since comprehensive global databases on infrastructure investments are not available, the realized infrastructure stock can be used as proxy for infrastructure investments.[3] As per that logic, we examine the data on various infrastructure indicators for the low and middle income countries[4] at two different time points. It is pretty clear that a good number of countries have experienced steady rise in investments in infrastructure in the 2000s. For instance, the number of broadband subscriptions per 100 people in low and middle income countries has gone up by 4.3 times over a decade (2007-16). Likewise, the proportion of individuals using internet

increased by 3.5 times in this period signifying the faster spread of digital infrastructure. Other areas of physical infrastructure show impressive progress as well. Air freight transport increased by 1.7 times whereas air passenger transport and container port traffic registered growth by 2.5 and 1.8 times respectively. Moreover, the rise in the volume of investment through public-private partnership route presents encouraging trends (Table 1).

Table 1: State of Infrastructure in Low and Middle Income Countries

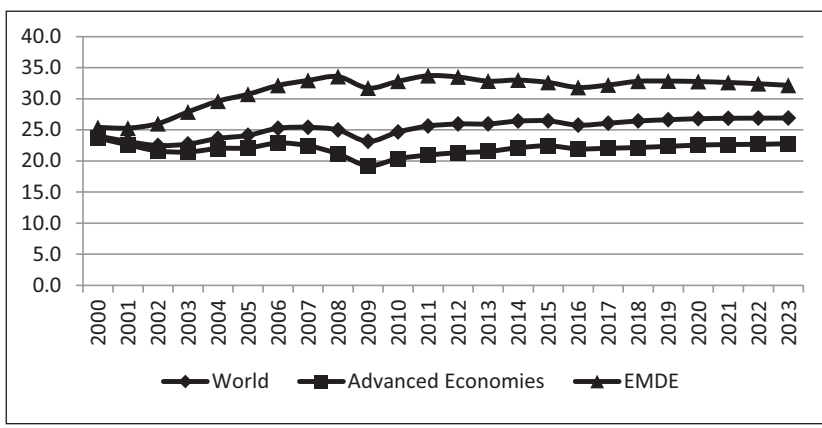
Indicators	2007	2016
Rail lines (total route-km) (thousand)	486.8	496.1
Air transport, freight (million ton-km)	27061.4	47247.8
Air transport, passengers carried (million)	575.0	1462.7
Container port traffic (billion TEU)	202.8	364.5
Access to clean fuels and technologies for cooking (% of population)	44.6	51.4
Access to electricity (% of population)	78.0	84.9
Fixed broadband subscriptions (per 100 people)	2.00	8.65
Fixed telephone subscriptions (per 100 people)	12.98	8.17
Individuals using the Internet (% of population)	10.9	38.6
Alternative and nuclear energy (% of total energy use)	4.9	7.0
Energy use (kg of oil equivalent per capita)	1124.1	1323.8
Renewable electricity output (% of total electricity output)	22.1	24.3
Investment in energy with private participation (US$ billion))	48.6	45.8
Investment in transport with private participation (US$ billion)	28.0	36.5
Public private partnerships investment in energy (US$ billion)	25.5	41.1
Public private partnerships investment in transport (US$ billion)	27.8	36.4

Source: World Bank-World Development Indicators Online.

Besides the demand-side view of infrastructure finance, it would be interesting to look at the trends in global savings and investments. It has relevance from the angle of the claim that infrastructure development is not necessarily constrained due to lack of finance but because of lack of proper mobilization of available capital. A comparison of pre- and post-recession savings rates suggest very healthy trends for the world as well as for the advanced economies and emerging markets & developing economies (EMDEs). On an average, savings rate increased in the range of one to two per cent in the post-recession years compared to the trends during 2000-07. As per the IMF projections,[5] saving rates for the world, advanced economies and EMDEs are around 27 per cent, 23 per cent and 33 per cent respectively (Figure 1). Interestingly, savings rates for the EMDEs are projected to rebound in the next five years following some moderation during the global economic recession in 2008-09 and in the immediate years following the recession.

Figure 1: Global Savings Trends, 2000-2023

(% of GDP)



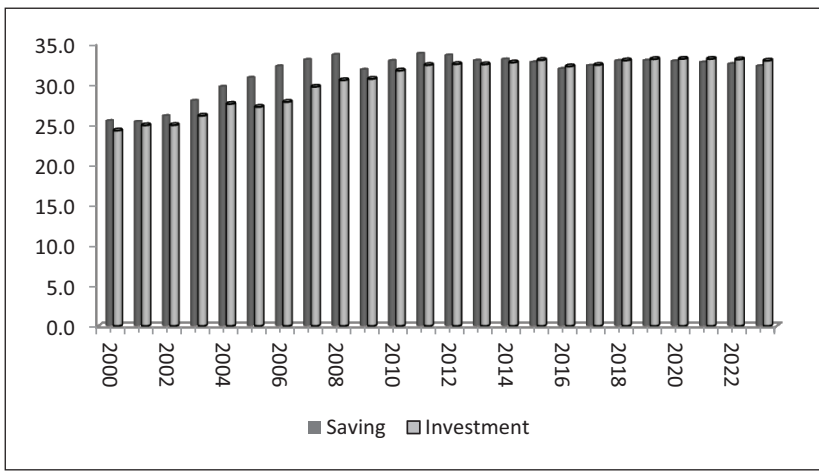
Source: Drawn by author based on data from IMF-WEO Database.

Given robust savings pattern in the EMDEs, we consider the comparison of savings and investment rates in these countries for an assessment of the magnitude of deficits. A clear pattern is observed

in the investment rates of the EMDEs in the post-recession period. In the pre-recession period from 2000-07, saving rates were higher than investment rate in the EMDEs. Unlike this period, investment rates are equal to or higher than savings rate in the post-recession period especially 2012 onwards (Figure 2). It shows the growing appetite for investment in the EMDEs, a part of that might have been inspired by investments in infrastructure as fiscal stimulus packages in different countries. The combined trends in savings and investments in EMDEs reveal no signs of glut in global savings. However, the case for targeted and efficient utilization of savings may be likely given higher projections of investment rates in EMDEs till 2023.

Figure 2: Savings and Investment Rates in Emerging Markets and Developing Economies, 2000-2023

(% of GDP)



Source: Drawn by author based on data from IMF-WEO Database.

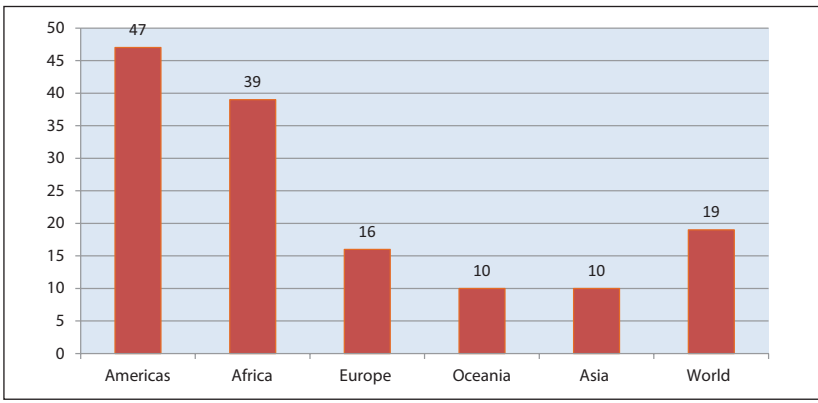
Against this backdrop, this note attempts to explore innovative financial instruments that would help efficient mobilization of financial resources for infrastructure development with a specific focus on the developing country priorities.

Need and Sources of Infrastructure Finance

Infrastructure financing is vast in scope and complex in terms of instruments and risk parameters. One fundamental difference between the standard financial investments and infrastructure investments is reflected in the valuation and pricing aspects. The non-exclusivity features of most of the economic and social infrastructure projects complicate valuation of impacts, and hence, pricing of the benefits of services. Over the years, the demand for infrastructure financing has gone up drastically across countries necessitating diversification of sources of funding and innovative solutions. While financing solutions are being envisioned worldwide, financing gaps have significantly widened for infrastructure projects. There are several estimates of infrastructure financing requirements by multilateral bodies and consultancy agencies. As per the estimates by the Oxford Economics and Global Infrastructure Hub, the gaps in infrastructure financing are substantial. Further, the achievement of SDGs would require additional spending on the basic economic and social infrastructure such as water and sanitation, electricity, roads, and so on (Figure 3; Table 2).

Figure 3: Estimates of Infrastructure Investment Gaps for 2016-2040 (Per cent)

(Extent to which estimated investment need is greater than investment expected under current trends (Per cent)



Source: Oxford Economics and Global Infrastructure Hub (2017)

Table 2: Estimates of Infrastructure Investment Gaps for 2016-2040

(% of GDP)

Region/ Sector	Current Trends	Investment Need	Gap (C-B)	SDG (Over and Above (C))*
(A)	(B)	(C)	(D)	(E)
Sector				
Road	1.0	1.3	0.3	
Electricity	1.0	1.1	0.1	0.2
Rail	0.4	0.4	-	
Telecoms	0.3	0.3	-	
Water	0.2	0.2	-	0.1
Airports	0.1	0.1	-	
Ports	0.1	0.1	-	
Region				
Asia	4.0	4.4	0.4	0.3
America	1.7	2.5	0.8	0.1
Europe	2.3	2.6	0.4	-
Africa	4.3	5.9	1.7	3.4
Oceania	3.5	3.8	0.4	-

*2016-2030

Source: Oxford Economics and Global Infrastructure Hub (2017).

Both conventional and sophisticated financing instruments are often used to raise finances for infrastructure projects. While bank loans remain the most widely used conventional source of funding infrastructure, syndicated loans, MDB financing and range of financial instruments with varying risk and return features are often considered for infrastructure financing (Table 3). Risks associated with Greenfield investments are relatively high compared to Brownfield and post-construction investments. Both equity and debt instruments are prevalent in infrastructure financing. Hybrid instruments involving both equity and debt features such as mezzanine capital are also widely used for

Table 3: Types, Sources and Instruments of Infrastructure Financing

Types of Infrastructure Investments							
Economic Infrastructure			Social Infrastructure				
Greenfield Investments (Higher Risk) (e.g., construction, design, build and operation risk)			Brownfield Investments (Medium Risk) (e.g., operating toll road with significant capital investment)			Secondary Stage Investments (Low Risk, Low Return, well-established cash flows) (e.g., post-construction investments)	
Financing Options							
Financing instrument (equity/debt)	Equity		Debt				
Investment vehicle (public-private)	Listed	Unlisted	Capital Market			Private Debt	
Investment route (direct)	Infrastructure stocks	Infrastructure project/SPE	Government infra bonds	Corporate bonds	Project bonds	Loans to infra companies	Project loans
Examples of Funds (indirect)	Infrastructure stock fund	Private equity/ mutual fund	Municipal bond fund	Infrastructure bond fund	PPP fund	Infrastructure debt fund	Infra-structure loan fund
Sources of Infrastructure Finance							
Public			Private				
Governments	Sub-national	Development Institutions	Corporate finance		Project finance		
			Public Companies	Private Companies	Non-PPP	PPP	

Source: Adapted from Fig. 4 & 5 in Inderst and Stewart (2014) and Fig.2 in Inderst (2016).

infrastructure projects. In the recent years, among investment routes, the focus is more on corporate bonds and municipal bonds even though government bonds dominate the bulk of project financing in the developing countries. Private equity and infrastructure funds are investing in infrastructure assets as well. As the demand for infrastructure financing in the recent years is growing, the contribution of institutional investors has become vital.

Diversification of Sources and Innovative Instruments

Over the years, infrastructure development has largely been funded by the public sector with budgetary outlays. In most cases, the loans extended by the Multilateral Development Banks (MDBs) were backed by sovereign guarantees. As a result, infrastructure investments never developed as a preferred asset class for the private investors, especially for institutional investors. Infrastructure assets remained a special category of investments for long with very high level of perceived risks. With little participation of capital market in infrastructure financing, the choice of financing instruments also became limited. Non-sovereign lending, to a great extent, was viewed as very risky category of investments. This insulated treatment to infrastructure projects, perhaps confined MDB financing to select sectors across countries in the world. Given the pervasive demand-supply mismatch in infrastructure financing, which is widening fast, there is a growing recognition of diversification of sources of funding for infrastructure development. Some of the innovative steps that could mitigate the deficits in pooling resources from the market for infrastructure projects are discussed in the following paragraphs.

Tapping Institutional Investors

While bank financing of infrastructure projects appears to be grossly inadequate to match ever-increasing demand, institutional investors like pension funds, insurance companies, social security funds and sovereign wealth funds can be the potential sources of infrastructure finance. Typically, institutional investors prefer investing in select portfolios of long-term, low-risk and low-return assets; mostly ending up in government securities/bonds and brownfield investments. Over time, the

need for diversification of portfolios is increasingly recognized by the institutional investors; especially after the Global Economic Recession in 2008-09. The post-crisis global financial market characterized by low interest rate and higher risk aversion somehow pushed institutional investors to move for alternate investment assets with higher yields in segments like real estate, hedge funds, private equity and other assets. Moreover, Basel-III regulations and disappearance of monoline insurance companies also squeezed investment opportunities during the post-crisis period. The attractiveness of infrastructure assets for the institutional investors was an outcome of pessimism in the traditional segments of long-term finance. As a result, the institutional investors are showing tendency to effect changes in their long-term asset allocation strategies.

Theoretically, infrastructure investments suit the liability structure of the institutional investors; as long-term liabilities of the institutional investors would ideally require a stable stream of cash flow over the long-run. Since infrastructure projects have long-gestation period, insurance companies, pension funds and sovereign wealth funds increasingly consider in investing in infrastructure assets, which are often backed by sovereign guarantees. Currently, the level of investment in infrastructure by the institutional investors is very low globally, even though pension funds and insurance companies are major investors, in general, and constitute 60 per cent of GDP. Infrastructure is yet to emerge as a preferred asset class for individual as well as institutional investors. Factors that constrain growth of this segment are limited investment and risk management expertise in the local market, lack of appropriate financing vehicles, short-term focus, and regulatory barriers, among others.

As per the IFC (2017a), the total assets under the management of the traditional institutional investors doubled from $36 trillion in 2000 to $73.4 trillion in 2011, and increased in subsequent years also. Although investment size is relatively higher in developed economies, the market for institutional investment is growing in developing countries as well. Pension funds in developing countries have potential to reach $17 to $25 trillion by 2050. Some developing countries are substantial in absolute

terms; given the overall shallowness in institutional investment markets of the developing countries. The biggest pension assets in developing countries are in the following order: China ($1214 billion), Brazil ($308 billion), Mexico ($148 billion), Chile ($145 billion), Malaysia ($106 billion), India ($129 billion), South Africa ($84 billion), Egypt ($54 billion) and Russia ($78 billion).[6] Likewise, insurance penetration in both life and non-life segments is growing worldwide with huge untapped potential in emerging markets and developing economies. The assets managed by the sovereign wealth funds in different countries are quite large. This vast untapped segment can be efficiently leveraged for infrastructure financing; provided the risks faced by them are amicably addressed. The major risks, mostly cited, are appropriation risks, poor governance standards, stable legal and regulatory systems, lack of a pipeline of investment grade assets, lack of scale and capacity and lack of data on historical track record of investment performances for risk management.

Bank financing, the main component of debt finance to infrastructure, suffers from asset-liability mismatch. To address this issue, countries including India are trying to promote institutional investments from pension, insurance and sovereign wealth funds into infrastructure. One instrumentality in this regard is development of Brownfield assets as a separate asset class for infrastructure investment. Brownfield assets are in the operational stage and are thus considerably de-risked as they are past land acquisition and environment and forest clearance stage. This makes them amenable to long-term institutional investment from pension, insurance and sovereign wealth funds. In the road sector, India has successfully launched the Toll-Operate-Transfer model as an example of development of Brownfield assets as a separate asset class. Financial vehicles like Infrastructure Investment Trusts (InvlTs) and Real Estate Investment Trust (REITs) have also been launched for attracting long-term investment from institutional investors in the infrastructure and real estate sectors respectively.

Land Value Capture Finance

Land Value Capture Finance (LVC) is increasingly adopted by the municipal governments and development authorities worldwide as an innovative instrument of financing urban infrastructure. The rationale for considering LVC as a means of generating resources for urban administration is derived from the value generated from the land adjacent to transport infrastructure built in the urban spaces. Transport infrastructure like metro rail stations, flyovers, bus depots etc. improves access to the public in the form of jobs, shops, schools, entertainment and recreation. With proper contract arrangements those pieces of land may be leased to private developers, which in turn would create business opportunities. The value generated with this improved access can be a source of revenue for urban authorities. Instead of direct sale of lands, which is an inefficient form of resource mobilization, LVC captures the economic impact created by transportation infrastructure.[7] In essence, LVC is a new tool of raising revenue in proportion to increase in land value, resulting from new or improved infrastructure.

The standard techniques used for value capture financing are impact fees, air rights, betterment fees, joint development, special arrangement districts, and so on. While the effectiveness of these techniques is context-specific, developing a mix of instruments would be desirable. For instance, land value tax is considered the most efficient means of all value capture methods in some occasions. Globally, LVC has been successfully practised in Denmark, Australia, Poland, New Zealand, USA, UK etc.[8] In India, a good number of states have implemented LVC for mobilization of resources for urban infrastructure. Impact fees are effectively implemented in Indian states including Andhra Pradesh, Gujarat, Maharashtra, Tamil Nadu and Madhya Pradesh. Moreover, Tamil Nadu and Maharashtra have amended state laws expanding the scope of value capture mechanism to urban lands also. The transport and economic corridor projects like the Delhi-Mumbai Industrial Corridor (DMIC), Sagarmala and metro rail projects in Delhi, Bengaluru, Hyderabad, Lucknow, etc. are some of the examples for value capture finance. Haryana and Gujarat have used successfully land-pooling schemes.

In addition, the urban bodies like the Mumbai Metropolitan Region Development Authority (MMRDA) and City and Industrial Development Corporation of Maharashtra Lt (CIDCO) have also tried LVC for resource mobilization.[9] Although land-based financing is gaining popularity among the city administrators globally, it has certain risks such as volatility and bubble in land markets, lack of transparency and accountability in land sale, efficient end-use of realized revenue from land, and so on.[10]

Local Currency Financing

Currency risk has been an important decision factor in project finance, particularly, in the large infrastructure projects for which uncertainty over exchange rate movements is quite natural, as the project cycle is long and involves many phases. Borrowing in hard currency could exacerbate currency risks in case of depreciation which along with the cost of hedging can add to the price/tariff rate of infrastructure services. In the absence of deep and diversified local capital markets in most developing countries of the world, there are hardly choices for countries to borrow for infrastructure funding, except borrowing in hard currencies such as USD, sterling or euro. To reduce overall cost of capital accruing from zero exchange rate risk, the benefits of lending in local currency is being propagated as an innovative instrument of financing infrastructure. Local currency financing is preferred to foreign currency borrowings as both repayment and revenue generation materialize in the same currency besides its importance for local capital market development. Its popularity is growing in the recent years as the new multilateral banks, such New Development Bank (NDB) and Asian Infrastructure Investment Bank (AIIB), emphasize on it in their lending portfolios. The Black Sea Trade and Development Bank has expanded its local currency lending, and has issued bonds since the last few years with an aim to support small and medium enterprises development and local market development.

Local currency financing has assumed tremendous importance after the East Asian Financial Crisis in 1997. Borrowing short-term and lending long-term in hard currency amplified the cost of repayment when sudden repayments of short-term external commercial loans were

demanded by the financiers following sharp depreciation of the Thai baht and consequent spread of contagion across the East Asian region. The success of the local currency financing is contingent upon the existence of deep local capital market. It would facilitate issuance of bonds in local currency in the local financial markets. Based on the experience of the Asian Bond Market Initiative (ABMI), the promotion of local capital market is a feasible way provided proper institutional mechanism is put in place. The growth of local currency bond market would require necessary initial conditions like secondary market liquidity, reasonably large size of issuance, market makers, underwriting by international investment banks, regulatory reforms like streamlining of stamp duties, withholding taxes, etc. Very often, lack of liquidity and 'buy-to-hold' behaviour affect orderly growth of local capital market in the emerging markets and developing countries. Novelty in financing contracts in the form of Power Purchase Agreements would be useful in implementing local currency financing option efficiently. The Nam Theun 2 Hydropower Project in Laos and Bhutanese hydropower projects are best examples of such arrangements. The International Financial Corporation (IFC) has issued Umugada bond in Rwanda as an instrument of local currency financing.

Co-Financing

Infrastructure projects typically involve heavy investments, spanning over a relatively longer project cycle. The nature of risks is different at varied stages of project implementation. While public funding would be required at the initial stage of design and construction, in subsequent phases equity financing is more efficient. In operation phase, debt investments would flow in due to the predictable cash flows. Even refinancing becomes more feasible and attractive in operation phase. This entails diversity of instruments required for addressing different aspects of financing infrastructure projects. Given the large size of investments and diversity of risks, no single MDB or financial institution would be in a position to finance spending cycle of the entire project. Co-financing is an ideal mechanism to fill the gap in financing. All the multilateral development banks are party to some or other forms of co-financing arrangements with the other development banks.

The Africa 50 Infrastructure Fund by the African Development Bank and Managed Co-lending Portfolio Program (MCPP) Infrastructure by the IFC are the examples of co-financing arrangements. AfDB has created a new department to increase syndication and co-financing activities. Besides leveraging co-financing from the World Bank, EU, European Investment Bank, Islamic Development Bank and other development banks, AfDB has several private sector syndications as well.[11] AfDB believes that co-financing would crowd-in additional financing. Likewise, Black Sea Trade and Development Bank has stepped up its co-financing activities. In 2016, 68.9 per cent of signed portfolio of the bank was through co-financing route.[12] In similar fashion, ADB underscores vitality of co-financing for meeting SDGs. In 2017, $5.95 billion were mobilized in commercial co-financing to maximize development impact of ADB lending.[13] The Inter-American Development Bank (IADB) mobilized $2.9 billion in 2017 through co-financing which comprised 89 per cent of all resources mobilized in the year.[14]

Green Finance

The world is at present witnessing the challenge of meeting the demands of sustainable and resilient infrastructure. It has implications for financing as the traditional criteria of project assessment stands outdated, given the externalities associated with the creation of green and sustainable infrastructure. Pricing of externalities is difficult in the case of green finance. However, green finance could be an innovative instrument for mobilizing resources as it factors incentives and disincentives for climate change, disaster risk management and social impact of infrastructure. As estimated, the cumulative investment in green infrastructure would amount to $36 to $42 trillion between 2012 and 2030. Renewable energy financé is an important category in this regard. The concerns for clean and low-carbon energy are widely felt across all countries of the world. In that sense, green finance is not only an instrument of mobilizing resources but also a channel for inculcating a healthy system of construction, operation and maintenance of infrastructure projects.

Municipal Finance

Urban infrastructure, particularly, investments in utilities like drinking water supply, drainage systems, electricity, roads and flyovers, etc. needs massive overhauling as most of the countries are experiencing rapid urbanization and demographic transitions. It would require large investments across different sectors of urban infrastructure. Urban administration and municipal governments face tremendous pressure of finances to support this pace of infrastructure building and maintenance. At the same time, the resources at their disposal, which consist of revenues from user charges, land taxes, betterment fees, etc, are barely sufficient to cover financing requirements. The fund crunch is even more acute in developing countries. Municipal bonds are viewed as an effective means of raising resources for creation and maintenance of various types of urban infrastructure. In developed countries, municipal bonds are well-accepted whereas this asset is not properly explored in developing country municipalities. In India, the Bangalore Municipal Corporation was the first municipal body to issue municipal bonds in 1997. Although the share of municipal bonds in India is negligible at present, its utility as a financing tool would remain significant.

Private Sector Participation

Private sector participation is considered the most important element of infrastructure financing. Scarce public resources cannot meet ever-increasing demand for infrastructure development. Infrastructure investments, most of which are illiquid and carry higher perceived risks, remain unattractive to private investors. However, with state guarantees, private investors may take interest in infrastructure projects. Encouraging trends were observed in private sector participation in infrastructure during 1990-2017 (Table 4). In terms of sectors, electricity tops the list in terms of investments through PPP route, followed by ICT, ports and water & sewerage and roads.

Table 4: Private Participation in Different Sectors (1990-2017)

Sector	Countries Participated (No)	Investment in Projects ($ Million)					
		East Asia and Pacific	Europe and Central Asia	Latin America and the Caribbean	Middle East and North Africa	South Asia	Sub-Saharan Africa
Airports	135	7029	48988	37949	2007	5918	1919
Electricity	729	211722	125218	295518	32615	178106	35406
ICT	270	27382	20505	49653	9489	5178	8806
Natural gas	115	9730	24355	36481	4816	1076	2249
Ports	256	23048	5291	25823	5607	12438	12383
Railways	102	43663	5356	55548	343	8037	5119
Roads	219	53804	25944	117834	-	79501	3057
Water and sewerage	250	35236	5340	34790	4109	648	779

Source: Author's Compilation from World Bank, PPI Database.

Public-Private partnerships (PPPs) have received mixed response from policy-makers in different countries. With proper contracts and upfront investments by the implementing agencies, the private participation in financing and development of infrastructure can be dealt with effectively. It would also require enabling provisions on guarantees and dispute settlement mechanisms, particularly currency risk, political risks and governance risks.

As per the Private Participation in Infrastructure Database of the World Bank, India is second in the developing world both by the number of PPP projects as well as associated investments. India's success in private participation in infrastructure is built on standardization of contracts, standardized procurement process, scheme of viability gap funding that provides grants to the private sector to a maximum of 20 per cent of project costs, and a robust regulatory structure.

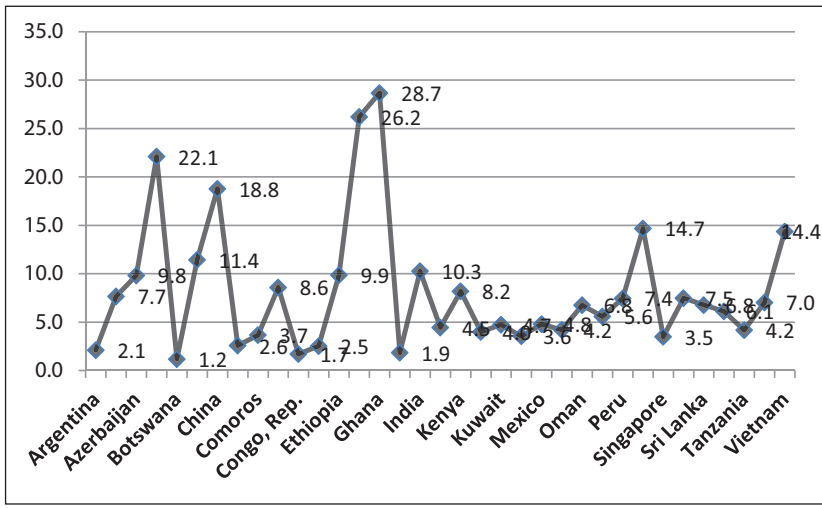
Pooling Foreign Exchange Reserves

Many countries in Asia and Latin America have accumulated significantly higher levels of reserves in the 2000s. Some countries, like China, Japan, etc., hold disproportionately higher reserves against widely used benchmarks for reserve adequacy. For some emerging markets and developing countries the pace of reserve accumulation was remarkably high. As per our computation, reserve stock has grown manifold over the period 2000-2017. For some countries it has increased by 15 to 30 times including Bangladesh, China, Georgia, Ghana, Russia and Vietnam. The speed of accumulation is relatively higher during 2000-07 than 2010-17. Likewise, the increase in reserve holdings is more than 4 per cent for a number of sample low and middle income countries (Figure 4). It signifies the fact that there is a greater likelihood of growth in idle reserve stock which can be productively utilized for creation of infrastructure assets. Moreover, reserve accumulation was followed as a conscious strategy by the central banks in the crisis-affected economies, particularly in East Asia after the crisis in 1997. This wave of competitive accumulation facilitated by net capital inflows prompted the idea of deployment of surplus reserves into high-yielding productive real assets as an alternative to investment in the traditional portfolio such as the US treasury securities. Investment in infrastructure projects has been perceived as a viable option of deploying surpluses (or a fraction of reserves), which potentially has high social desirability. This idea also assumed policy attention in India in the mid-2000s. Korea Investment Corporation (KIC), Temasek Holdings in Singapore, State Administration of Foreign Exchange (SAFE), etc. have invested foreign exchange stock of Korea, Singapore and China in high-yielding financial assets. There are some reserve-based Sovereign Wealth Funds (SWFs) in different countries which invest in durable infrastructure assets as well.[15]

Pricing, Cost and Regulatory Reforms

Mispricing and cost overruns due to delay in construction, regulatory changes, etc. cause losses to operators/firms and create uncertainty for future investments. As estimated, developing countries incurred loss of

Figure 4: Foreign Exchange Reserves Accumulation in Select Low and Middle Income Countries (2000/2017)



Source: Author's computation based on data from World Bank-WDI data.

Note: The rise in reserve stock (excluding gold) is measured as the no. of times the reserve stock has gone up over the level in 2000.

about $180 billion in the early 1990s due to mispricing and technical inefficiency (Kessides, 2004). Further, cases of under-pricing and cross-subsidies are also rampant in the developing countries. These various roots of inefficient pricing can possibly be addressed through regulatory reforms. One school of thought favours unbundling of ownership, operations, administration and any other wings of management in order to enhance efficiency and plug deficiency in competence and skills. State-owned utilities (or natural utilities) are often blamed for breeding this inefficiency. The benefits of unbundling lie in specializing in those segments of the project in which the concerned entity has competence. In that perspective, the role of state and the private actors can be demarcated with phased investment plans and revenue sharing stream clearly identified. Institutional reforms in developing countries in the realm of infrastructure finance as undertaken by the developing countries

in the 1990s and 2000s broadly constitute certain important areas of reforms including competitive entry, privatization, creation of regulatory capacity, regulatory safeguards, improving labour productivity, fixing gaps in service delivery, and so on. Based on experience of countries in dealing with infrastructure financing and project implementation, it is quite evident that issues of cost recovery can only be addressed if proper pricing is in place. States and markets will have to take equal responsibility in inculcating a transparent culture of regulations as both have their own unique competency and strength in funding and implementing the infrastructure projects.

Risk Mitigation Instruments

The diversity of sources and instruments of innovative financing are discussed in the above sections. Along with those, innovations are equally desirable in risk management as the perceived risks are unusually high in case of infrastructure assets. Although certain standard financial risks apply the same way to infrastructure projects as for other investments, some risks such as political risk, country risk, illiquidity, uncertain cash flows (resulting from long-gestation periods), opaque and inefficient pricing, etc. are unique to infrastructure projects. IFC's experience suggests a holistic roadmap to deal with those risks by a suitable combination of privatization, Build-Operate-Transfer (BOT) and similar operating models and adaptive regulatory frameworks (Bond and Carter, 1994). As a result, the attractiveness of infrastructure projects as a profitable investment class has not happened yet. In addition, a set of risk mitigation instruments provide necessary guarantees to the private players for funding of infrastructure projects. Those risk mitigation instruments vary in design and effectiveness. Some instruments that have been successfully tried in different countries include multilateral wrap guarantee combined with partial credit guarantees (e.g. Inter-American Development Bank Partial Credit Guarantee (PCG) for local bond issuance in Chile), PCG combined with Contingent Loan Support in PPP projects (e.g. Inter-American Development Bank covering both partial risk guarantee and political risk insurance in Peru), corporate finance

with political risk guarantee and political risk insurance (e.g. cover of commercial risks by equity sponsor Sasol in South Africa backed by a guarantee by Sasol and political risk guarantee from the World Bank and political risk insurance from Multilateral Investment Guarantee Agency (MIGA) and Export Credit Insurance Corporation of South Africa (ECIC). Similar other variants of risk bundling instruments are available to the players engaged in infrastructure financing (Matsukawa and Habeck, 2007). Proper combination of financing instruments and risk mitigation strategies may unleash huge private sector participation in infrastructure funding.

Way Forward

In view of the ever-increasing demand for infrastructure development, the need of examining sources and modalities of financing infrastructure projects has become paramount. Besides conventional tools of financing, there is a need for 'out of box' solution in the form of bundling risks and returns. Bank loans although has remained a major traditional source of funding infrastructure projects, mobilization of private capital is given emphasis in the recent years. Capital market solutions are vigorously pushed for consideration by policy-makers and development banks. Tapping the funds parked with the institutional investors such as pension funds, insurance companies, sovereign wealth funds, etc. would be critical supplementary sources of funding. In fact, because of strong 'push factor' that operates in the standard portfolios in the post-crisis period in the United States and other advanced economies, institutional investors have shown keen interest in diversifying their lending portfolios. It is also well-recognized that budgetary support would not be adequate to meet the growing financing requirements for infrastructure development. Private investors would perhaps invest in infrastructure provided returns from the assets are higher and also predictable. Certain institutional innovations have occurred in the infrastructure financing landscape in the recent decades. Notable examples include private equity funds, infrastructure bond fund, local currency bond issuance and raising capacity and financing resources of the sub-national or municipal governments.

Developing countries whose financial sectors lack depth and liquidity seem to have underscored the importance of formulating appropriate financing mechanisms for infrastructure development.

While the benefits of deep and diversified financial sectors with sophisticated instruments are undoubted, there are some concerns which need to be addressed. For instance, certain sectors and regions are considered highly risky compared to other sectors and regions. Although investment appetite with private investors is still there, investments do not flow to these sectors and regions that easily. This warrants devising suitable incentive structures in contracts in the form of guarantees against exchange rate volatility, faster resolution of investment-related arbitrations, adequate refinancing and co-financing options, etc. Since the asset-liability structures of institutional investors like pension funds differ drastically relative to commercial banks and financial institutions, proper sequencing of funding plans over different phases of project cycle would help attract these investors to infrastructure projects.

Endnotes

1 See McKinsey (2017).

2 See RIS and Ministry of Finance (2018)

3 Walsh, Park and Yu (2011) followed this logic in their empirical work on infrastructure financing in India.

4 Low and middle income category is chosen to represent the developing countries.

5 See IMF, World Economic Outlook Database, April 2018.

6 Inderst and Stewart (2014)

7 See Levinson and Istrate (2011)

8 See Medda and Modelewska (2011) and Govt. of India (2017)

9 See Govt. of India (2017)

10 See Peterson (2009)

11 See AfDB (2017).

12 See Black Sea Trade and Development Bank (2016)

13 See ADB (2017)

14 See IADB (2017)

15 See Dash (2012).

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