

Bond Financing for Infrastructure

Introduction

It is widely agreed that major investment is needed for infrastructure in Asia. The poor level of infrastructure in the region threatens to hamper the region's growth prospects and the goal of reducing poverty. Improved connectivity can help improve trade and growth in less developed areas. Integrating electricity grids across countries would enable energy resources to be shared across borders, thus expanding the regional energy trade and increasing energy security. Increased investment in infrastructure can help remove the constraints that poor infrastructure facilities place on growth.

Most empirical studies have shown that infrastructure investment has strong spillover effects on other parts of the economy.⁸ This suggests that there are positive externalities in infrastructure investment; therefore, in the absence of government intervention, there may be underinvestment in infrastructure. While the magnitude of the effects may vary, empirical studies have tended to find large and positive effects of investment in public infrastructure on economic growth.

In particular, the spillover effects of investment in infrastructure are found to be higher in developing countries. This is not surprising as developing countries tend to have poorer levels of infrastructure and can benefit more from additional investment. Another interesting finding is that spillover effects tend to be spread over a large area. The smaller the geographical area of the study, the smaller the effects of public investment tend to be. This suggests that spillover effects can be felt over quite a large area, which also implies that the benefits of infrastructure projects may sometimes spill over national borders.

There is substantial variation in the quality of infrastructure in the region. Some countries—such as Hong Kong, China; the Republic of Korea; and Singapore—have infrastructure that approaches or even exceeds developed world standards. However, other countries still lag behind in their infrastructure quality and considerable investment will have to be undertaken to bring their infrastructure standards up to global levels (**Table 9**).

Given that infrastructure investment has proven to be beneficial to economic growth, there have been several attempts to estimate how much investment in infrastructure is needed in Asia. A joint Asian Development Bank (ADB) and ADB Institute report in 2008 estimated that Asia needed to invest about US\$8 trillion in transport, communication, and energy infrastructure between 2010 and 2020. Of this amount, 68% would be designated for new infrastructure and the remainder for maintaining and replacing existing infrastructure. The detailed breakdown of infrastructure requirements given above reveals that the largest amount of funding is required in sectors that investors are usually the most cautious toward (**Table 10**). These are sectors where construction risks are high (e.g., transport and energy), suggesting that the region faces a major challenge in financing the necessary infrastructure.

Public and Private Provision of Infrastructure

Financing infrastructure has its unique set of challenges. By its very nature, infrastructure has spillover effects and externalities. This suggests that private provisions will tend to be inadequate, thus requiring governments to regularly intervene to provide services. Furthermore, most infrastructure is part of a network and these systems tend to be public goods. The marginal cost of providing an extra unit of a public good is close to zero. So welfare will be maximized by providing a public good at marginal cost. However,

⁸ A.M. Pereira and J.M. Andraz. 2013. On the Economic Effects of Public Infrastructure Investment: A Survey of the International Evidence. *Working Papers*. 108. Williamsburg, VA: Department of Economics, College of William and Mary.

Table 9: Quality of Asian Infrastructure

Region or Economy	Overall	Road	Railroad	Port	Air Transport	Electricity Supply
G7 Average	5.7	5.7	5.3	5.4	5.8	6.3
East Asia Average	5.5	5.5	5.5	5.5	5.7	6.0
China, People's Rep. of	4.3	4.4	4.6	4.4	4.5	5.2
Hong Kong, China	6.5	6.3	6.4	6.5	6.7	6.8
Korea, Rep. of.	5.8	5.8	5.6	5.5	5.9	6.0
Southeast Asia Average	4.6	4.5	3.2	4.5	5.0	4.7
Brunei Darussalam	5.1	5.2	2.1	4.5	4.9	5.5
Cambodia	4.2	4.0	2.3	4.2	4.4	3.6
Indonesia	3.7	3.4	3.2	3.6	4.2	3.9
Malaysia	5.4	5.4	4.9	5.5	5.9	5.9
Philippines	3.6	3.4	1.9	3.3	4.1	3.7
Singapore	6.5	6.5	5.7	6.8	6.8	6.7
Thailand	4.9	5.0	2.6	4.6	5.7	5.5
Viet Nam	3.2	2.7	2.6	3.4	3.6	3.1

Note: Based on a scale of 1 (underdeveloped) to 7 (extensive and efficient by international standards).
Source: World Economic Forum's *Global Competitiveness Report (2012–13)*.

Table 10: Infrastructure Requirements in Asia, 2010–20

Sector or Subsector	New Capacity (US\$)	Replacement (US\$)	Total (US\$)
Energy (Electricity)	3,176,437	912,202	4,088,639
Telecommunications	325,353	730,304	1,055,657
Mobile Phones	181,763	509,151	690,914
Landlines	143,590	221,153	364,743
Transport	1,761,666	704,457	2,466,123
Airports	6,533	4,728	11,261
Ports	50,275	25,416	75,691
Railways	2,692	35,947	38,639
Roads	1,702,166	638,366	2,340,532
Water and Sanitation	155,493	225,797	381,290
Sanitation	107,925	119,573	227,498
Water	47,568	106,224	153,792
Total	5,418,949	2,572,760	7,991,709

Source: ADB. 2009. *Infrastructure for a Seamless Asia*. Manila.

this means that the fixed costs (sunk costs) will have to be financed somehow. Sometimes consumers are charged based on their demand for the goods, while at other times consumers are charged based on their ability to pay. But some government subsidies or support are common to ensure that services are available to a wide swath of the population.

Because of market failures, infrastructure services in Asia are still mostly provided by the public sector, but there has been an increase in private sector participation since the 2008/09 global financial crisis. Looking at the breakdown of public and private investment in infrastructure in different countries, around 80% of infrastructure spending in the People's Republic of China (PRC)

comes from the public sector. Both Malaysia and the Philippines have roughly an equal split between public and private sector infrastructure spending. In Thailand, however, about one-quarter of infrastructure spending is handled by the public sector. For these countries, the public share of infrastructure investment has been on the decline since 2008/09.

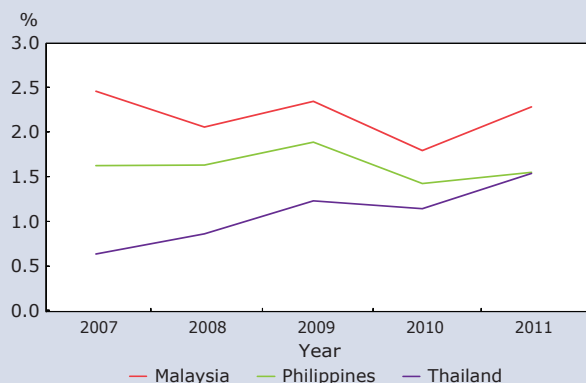
One reason for increasing private sector participation in infrastructure projects is because of heightened concerns about growing government indebtedness. While most of the region's governments continue to maintain healthy fiscal balances, they are understandably wary of borrowing large amounts to finance infrastructure projects. As a result, this has prompted a search for greater private participation in infrastructure project financing. There are also expectations that the private sector can implement infrastructure projects more efficiently. Getting the providers of infrastructure projects to finance them can align more closely the needs of consumers and providers. The main drawback of private sector participation is that its costs of borrowing are usually higher than government's, which may increase the cost of an infrastructure project. However, some have argued that the greater efficiency of the private sector can result in lower overall costs. Others emphasize

that the key to efficiency is how competition and regulation in the infrastructure sector are managed, rather than the issue of ownership. For example, a poorly regulated private monopoly is not likely to deliver efficient services. Hence, rather than focusing on attracting private investment in specific infrastructure projects, governments should instead aim to improve the overall business and investment climate to facilitate investment in infrastructure.

The region's governments missed an opportunity during the recent period of plentiful liquidity—resulting from advanced economies' easy monetary policies and the subsequent capital flows into emerging markets—to ramp up their infrastructure spending. Data show that central government spending on infrastructure as a share of gross domestic product (GDP) after the global financial crisis remained stable or even fell in most countries across the region. Bucking this trend, Hong Kong, China and Thailand took the opportunity to increase their infrastructure spending when liquidity was plentiful (**Figures 13a, 13b**).

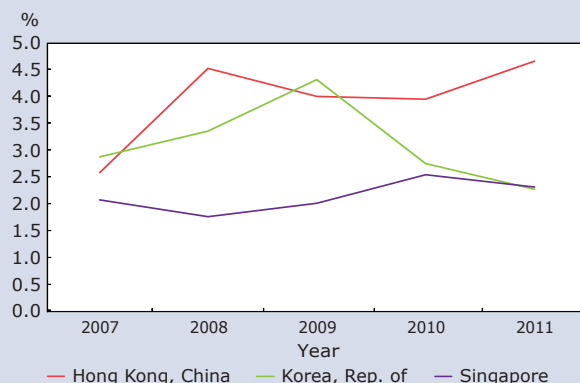
Meanwhile, private participation in infrastructure projects has not increased much in the region in recent years (**Figure 14**). This suggests that most of the extra liquidity was channeled into consumption

Figure 13a: Infrastructure Spending as % of GDP for Selected ASEAN Countries



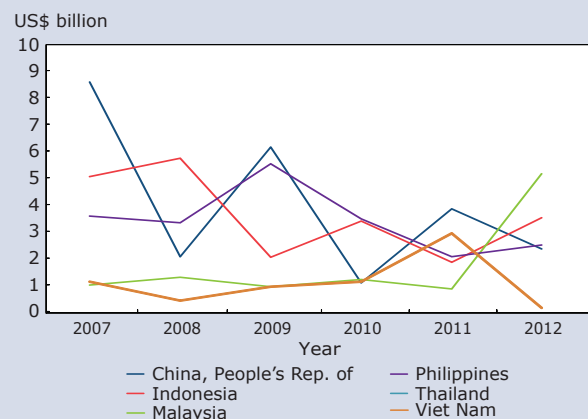
ASEAN = Association of Southeast Asian Nations, GDP = gross domestic product.
Source: ADB staff calculations based on data from national sources.

Figure 13b: Infrastructure Spending as % of GDP for Selected Asian Economies



GDP = gross domestic product.
Source: ADB staff calculations based on data from national sources.

Figure 14: Total Commitments of Private Sector Participation in Infrastructure Projects in Selected Asian Economies



Source: The World Bank Private Participation in Infrastructure Database.

and financial assets rather than investment. With the prospects of the end of quantitative easing in the United States (US) and given current market turmoil, infrastructure financing will likely become more difficult and expensive for the region's governments. This suggests the need for governments to develop policies that incentivize financial institutions to direct more of their lending for productive activities.

The divergence between average and marginal costs, which tends to be large for infrastructure projects, deters private sector investment as there is the potential for ex post appropriation. This is because project owners will find it economically beneficial to continue operating projects as long as marginal costs are covered. This problem becomes more acute for long-term projects. The difficulty of getting governments to commit for the long-term has meant that the private sector has been reluctant to take on the burden of providing infrastructure services. Even when the private sector participates in infrastructure projects, the government still has an important role to play. As most infrastructure projects are long-term in nature, only the government is able to credibly commit to future payments. The failure to credibly commit will affect the cost of capital since this cost is affected by regulatory risk. Therefore, legal protection is needed to reduce the cost of capital.

Trends in Infrastructure Financing

As the region's infrastructure financing requirements are large, one of the questions raised is how to mobilize and channel the funds required. Infrastructure financing has several important characteristics. First, it tends to involve locking up funds for a long time. This means there has to be a significant maturity transformation undertaken by the financial intermediaries as most funds available are usually short-term. Therefore, the financial sector will have to develop the necessary risk assessment and management skills to intermediate funds for long-term infrastructure. The long-term nature of infrastructure also makes it more difficult to assess the risk. There also tends to be a divergence between the social and economic values of infrastructure projects. Government financing may be cheaper as the public sector may be able to internalize some of the risk inherent in infrastructure projects.

It is clear that the demand for infrastructure financing is high in the region. The good news is that the region's economies have plenty of domestic savings that can be mobilized to fund infrastructure projects. Given the weak conditions of the advanced economies, infrastructure spending in the region can also provide a welcome boost to domestic economies. The capacity of these economies to finance infrastructure spending will depend on the region's capacity to mobilize savings and attract investment from abroad, and on how it effectively channels those funds to productive infrastructure projects. While the level of savings is important, it is also crucial that savings are channeled to the proper infrastructure projects.

Among the region's economies, the source of most long-term financing for the private sector is still the banking system. Bond financing still comprises a relatively small share of the private sector's long-term financing, although this share has risen recently, particularly since the global financial crisis. The situation in the public sector is reversed, with most of its long-term funding being intermediated through bonds.

One concern is that infrastructure financing tends to be carried out by banks using project finance. But the new Basel III capital requirements, which mandate that banks hold more capital against long-term finance, will make it harder for banks to lend long-term. There are some signs that foreign bank lending to the region has already taken a hit as European banks have shed assets in Asia to shore up their capital bases. As **Figure 15** shows, long-term bank lending to the region has been in decline since the global financial crisis. Some of the slack has been taken up by bond financing, suggesting yield-hungry bond investors are still keen to invest in the region.

Looking at the flows of bank financing from different regions into Asia, there has been a clear drop in infrastructure financing from European Union (EU) banks since the global financial crisis. There has also been a decrease in bank financing from Asian banks based in India and Thailand. These declines have been offset to a certain extent by greater investment from Japanese and Australian banks (**Figure 16**).

Infrastructure Financing

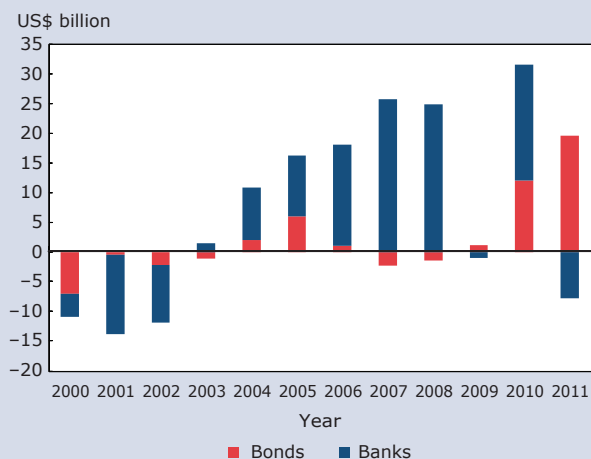
All infrastructure projects are ultimately financed by individuals. The question is whether they are

financed through a private sector intermediary or the government via taxes. The main advantage of financing through the public sector is that governments tend to be able to borrow at lower rates than private companies. While on the surface, a government may be able to borrow more cheaply, one of the reasons for this is that the government is assuming the equity risk in the infrastructure project. This means that the government and taxpayers are responsible for any cost overruns.

Given the high initial costs and long service life of infrastructure projects, long-term financing is required. As the revenues generated from infrastructure projects will be in local currency (LCY), the preference will be to borrow in LCY to reduce the potential for currency mismatch. Borrowing in foreign currency (FCY) will leave the project exposed to adverse exchange rate movements that could result in much higher financing costs in LCY terms. The risks of currency mismatch were starkly revealed during the 1997/98 Asian financial crisis when infrastructure companies that had borrowed in FCY faced massive losses following the fall in value of regional currencies.

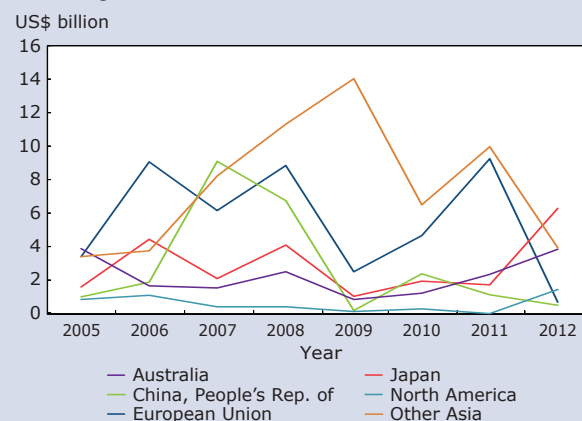
How best can private sector financing be structured? By its very nature, long-term financing is required

Figure 15: Sources of External Long-Term Private Debt Financing Flows to Asia



Note: Includes Cambodia, People's Republic of China, Indonesia, the Lao PDR, Malaysia, the Philippines, Thailand, and Viet Nam.
Source: World Bank's World Development Indicators.

Figure 16: Sources of Infrastructure Project Financing Flows to Asia



Note: Other Asia includes Bangladesh, Brunei Darussalam, India, Indonesia, Malaysia, Pakistan, the Philippines, the Republic of Korea, Singapore, Thailand, and Viet Nam.
Source: *Infrastructure Journal Online*.

as the initial costs of constructing infrastructure projects are high, while the service life of projects tends to be long. Hence, capital costs have to be amortized over many years to match them with the revenue stream that infrastructure projects generate (after also taking into account operating costs).

There are two main stages to the development of an infrastructure project. These two distinct phases have different characteristics in terms of risks and returns. The initial phase of the project is known as the Greenfield phase. This covers the design process, securing the necessary permits, and construction of the infrastructure project. As the construction of infrastructure projects tends to be a complex process, the risks here can be quite high. Completed infrastructure projects, which are operating and generating revenue, are considered to be in the Brownfield phase. Whether or not a project is in the Brownfield phase will differ by type of asset. However, an infrastructure project will generally be considered to be in the Brownfield phase when it is generating a steady stream of income.

Given the two distinct phases and risk profiles of an infrastructure project, it may be preferable to have different types of investors at different stages of the project. At the initial construction stage, investors with the necessary project appraisal skills and risk appetite will be more suitable for providing the initial financing. Once the construction phase is completed and the revenue generating phase has begun, the initial investors can exit their investment and sell the project. With the construction phase over, the project is generating a steady stream of revenue that might be suitable to be packaged as bonds and sold to investors. This can be an attractive investment as the risk is quite small and the debt holders would have ownership of the asset.

Private investors are interested in investing in infrastructure projects for several reasons. Infrastructure projects tend to be monopolistic in nature either because a particular market is a natural monopoly or government regulations

restrict new entrants. The high level of investment required for an infrastructure project serves as a barrier to entry and thus makes it difficult for new competitors to arise. Given the monopolistic nature of infrastructure projects, governments tend to regulate the prices that operators are allowed to charge. This means that infrastructure projects tend to generate a stable inflation-adjusted return.

Another advantage of infrastructure projects is that the demand for infrastructure services does not vary too much with economic cycles. As infrastructure services tend to be essential, their utilization tends to be quite stable even during economic downturns. Certain services may be more volatile (e.g., transportation) and may suffer a modest fall in demand during recessions, while the consumption of utilities (e.g., water and energy) tends to hold up even during recessions.

The revenue stream from infrastructure tends to be inflation-protected too. Regulated rates are usually indexed to inflation. This is useful as infrastructure bonds are often inflation-indexed bonds, which are desired by many investors but are in limited supply.

As mentioned above, banks are the dominant form of private sector financing for infrastructure projects in Asia. However, their ability to continue providing long-term financing may be limited. One problem is that the source of funding for banks is short-term deposits, which are hard to match with the maturity of most infrastructure loans. Basel III rules on bank funding, which increase the size of the capital buffer lenders must hold against losses and require that banks better match the duration of their own funding to their loans, have reduced banks' desire to lend for long-term infrastructure projects. Syndicated loans have also become less prevalent, as some traditional banks have stopped their participation in this area. Banks may be offering more short-term funding in the future, but this increases the refinancing risks and costs of the infrastructure projects. Long-term syndicated bank lending to Asia from outside the region has also been affected by the global

financial crisis. As European banks struggle to deal with the fallout from the eurozone crisis, they have been shedding assets to meet more stringent capital requirements.

This makes it more important for the region to develop its bond markets to finance infrastructure projects. In some markets, bonds issued by infrastructure-related companies already represent a substantial share of total bond outstanding. For example, in Malaysia, 40% of bonds outstanding are issued by infrastructure-related firms. Developing the infrastructure bond market in the region can help draw non-traditional investors into financing infrastructure projects.

A key potential source of long-term financing for infrastructure projects is pension funds. The amount of money managed by pension funds in the region is increasing (Table 11). In particular, the Republic of Korea, Malaysia, and Singapore have large and well-developed pension funds. As long-term investors, pension funds would seem to be natural financiers for infrastructure projects. The funding structure of pension funds, comprising long and stable contributions from participants, is well-suited for financing infrastructure. The long duration of infrastructure project cash flows is attractive to pension funds because it matches their liabilities. Also, infrastructure assets offer pension funds some measure of protection against inflation while pension funds offer financing in domestic currencies.

Table 11: Amount of Sovereign Pension Fund Assets (US\$ million)

Country	2005	2012
China, People's Rep. of ^a	8,102	49,026
Hong Kong, China	110	211
Indonesia	4,000	14,399
Malaysia	69,659	183,761
Philippines ^{b,c}	4,452	7,443
Singapore	74,906	186,243
Korea, Rep. of	160,319	326,209
Thailand	6,986	18,253

Notes:

^a Latest data as of end-2010.

^b Earliest data as of end-2006.

^c Latest data as of end-2011.

Source: OECD Pension Funds Data and Sovereign Pension Funds Annual Reports.

On the other hand, the main drawback of pension funds as a source of infrastructure project financing is that they tend not to have the expertise needed to evaluate and invest in such projects. Infrastructure assets are complex to evaluate and heterogeneous in nature. The number of risks involved is also myriad (e.g., political, reputational, environmental, and governance-related) and not the type that pension fund investors are familiar with. Generally, pension funds are restricted to invest in highly rated securities only. Hence, most financing by pension funds is usually done indirectly through the purchase of government securities. Even then, the share of LCY government bonds held by pension funds has declined in most economies in the region since 2005 (Table 12). The rapid growth of pension funds has meant that they are running out of investment options, forcing them into assets offering only low returns. Thus, they are searching for alternative investments offering high and stable returns, which is why developing financial assets for infrastructure bonds can be useful. However, to entice pension funds to invest in infrastructure projects, financial assets must be structured to meet their investment criteria.

Institutional investors can invest in infrastructure assets through several avenues. They can directly invest in an infrastructure project, which is the most complex method and, as a result, quite rare. This is because the preparatory work required is significant, including identifying infrastructure projects, analyzing the risks involved, and estimating the expected returns. Direct investors would probably have to share management responsibilities as well. This option tends to be

Table 12: Share of LCY Government Bonds Outstanding Held by Sovereign Pension Funds (%)

Country	2005	2012
China, People's Rep. of	6.87	6.43
Indonesia	5.15	4.98
Malaysia	57.18	21.17
Korea, Rep. of	23.15	25.08
Thailand ^a	22.44	26.03

^a Earliest data as of end-2007.

Source: *AsianBondsOnline*.

limited to the largest institutional funds that have in-house infrastructure teams.

A more common way for institutional investors to gain exposure is through participating directly in an unlisted fund. Unlisted funds are set up by management companies on behalf of institutional investors to provide them with exposure to infrastructure projects without having to develop in-house expertise. Data from Preqin shows that there are 88 unlisted infrastructure funds that invest in Asia with a total of US\$22 billion of funds committed. The number of funds and amounts committed have risen since the global financial crisis, suggesting that investor confidence has not been dented. As of 21 July, funds were looking to raise an additional US\$9.4 billion to invest in infrastructure in Asia. Most of these investors are from the US, but Korean and Indian investors also play a substantial role.

Institutional investors can also invest in the listed firms that operate infrastructure, including utilities, energy, and toll road companies. However, these listed firms are often diversified so they do not provide direct exposure to infrastructure projects. Also, the performance of listed companies may be more affected by the overall performance of equities than cash flows from the infrastructure projects.

Finally, investors can buy debt linked to infrastructure projects. There is a growing number of bond funds that invest in infrastructure projects mostly through mezzanine debt. The funds are usually managed by former bankers who are specialists in infrastructure projects. The returns are usually lower than those of infrastructure equity funds, but then the risks are usually lower as well. Another option is to purchase debt that is issued by project operators and securitized by the revenue stream from infrastructure projects.

It is clear that there is an appetite among investors for infrastructure project investments. The funds potentially available for investment are considerable and could go a long way toward bridging the region's infrastructure gaps. To

attract investors, however, a project must offer an appropriate rate of return. A common complaint of investors is that there is a shortage of bankable projects that they can invest in.

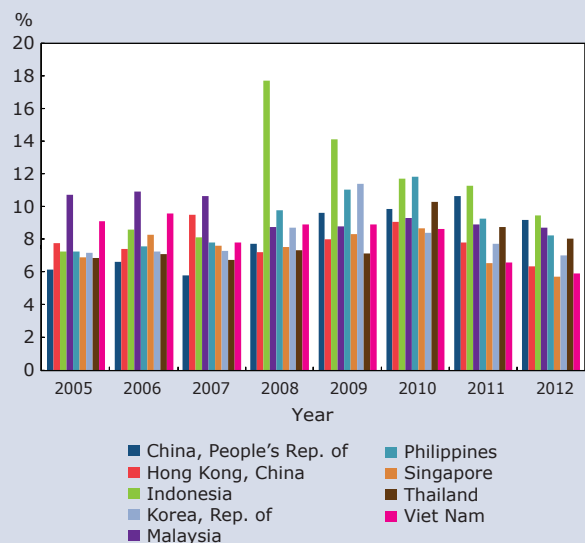
Return on Private Infrastructure Investment

In order to gauge the level of returns expected by infrastructure investors in the region, investor perceptions of risk in private providers of infrastructure were estimated in nine emerging East Asian economies: the People's Republic of China; Hong Kong, China; Indonesia; the Republic of Korea; Malaysia; the Philippines; Singapore; Thailand; and Viet Nam. Our sample consists of 193 publicly traded companies providing infrastructure services, of which 78 are in electricity; 51 in telecommunications; and 64 in gas, water, and multi-utilities. The financial data for our sample of companies were obtained from Bloomberg and verified through the companies' published financial statements. The data covers the period 2005–12 at annual intervals.

Investors' expected rate of return for infrastructure firms is estimated by calculating the risk-adjusted cost of capital for the companies. The comparison of the weighted average cost of capital (WACC) estimated across countries provides us with an estimate of the relative competitiveness of infrastructure firms. The WACC is the required mean rate of return on each source of capital for a firm—such as stocks, bonds, and other debt—where the weights are based on the share of each source in the firm's capital structure. The sources of capital are grouped into two categories: equity and debt.

Our estimates of the WACC for the region's economies are presented in **Figure 17**. Before the global financial crisis, Malaysia displayed the highest level of WACC, but it has been on a downward trend since then. In Indonesia, the WACC for infrastructure firms rose sharply after the crisis but has since moderated somewhat. Nevertheless, the WACC of Indonesian firms remained the highest in the region in 2012. The WACC of companies in the

Figure 17: Average WACC of Infrastructure Firms by Economy

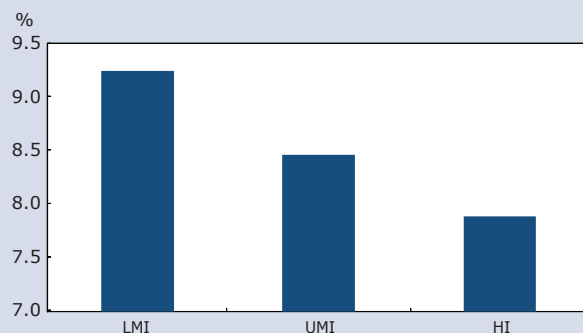


WACC = weighted average cost of capital.
Source: Author's calculations based on financial data from Bloomberg LP.

PRC was quite low before the crisis but has been on a rising trend since then.

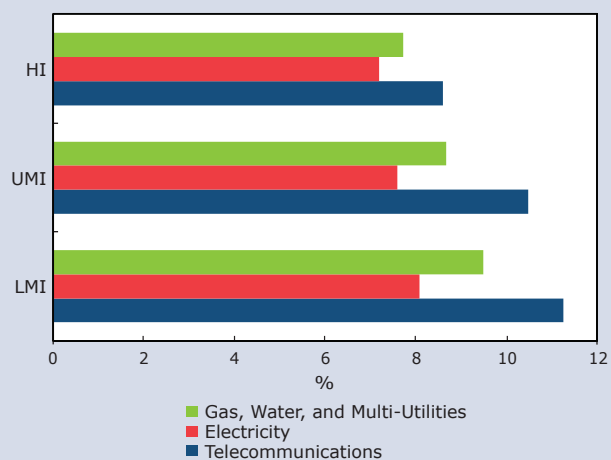
To simplify the comparisons, companies were grouped by the income level of their home economy. Lower-middle income (LMI) consists of Indonesia, the Philippines, and Viet Nam; upper-middle income (UMI) includes the PRC, Malaysia, and Thailand; and high-income (HI) consists of Hong Kong, China; Singapore; and the Republic of Korea. **Figure 18** shows the WACC of the three groupings. Specifically, the greater perceived risks of investing in LMI economies are reflected in a higher WACC. On average, infrastructure firms in LMI economies require a rate of return of about 0.75 percentage points more than infrastructure firms in UMI economies, which in turn require a rate of return 0.6 percentage points more than infrastructure firms in HI economies. This suggests poorer economies will have to offer bigger returns to investors even when their capacity to pay is less. Comparing the WACC of infrastructure firms by types of industry reveals that telecommunication firms have the highest WACC and electricity firms the lowest (**Figure 19**). This could be because electricity firms are generally natural

Figure 18: Average WACC of Infrastructure Firms by Income Group



HI = high-income, LMI = lower-middle income, UMI = upper-middle income, WACC = weighted average cost of capital.
Note: 2005–12 average.
Source: Author's calculations based on financial data from Bloomberg LP.

Figure 19: Average WACC of Infrastructure Firms by Type of Industry

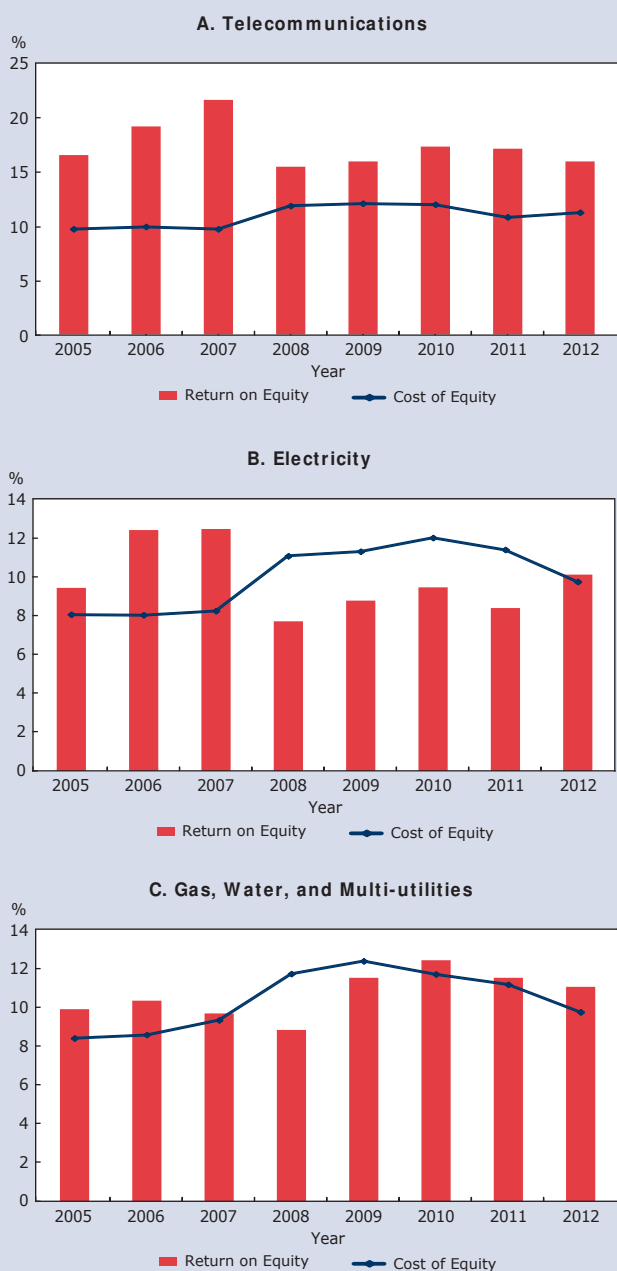


HI = high-income, LMI = lower-middle income, UMI = upper-middle income, WACC = weighted average cost of capital.
Note: 2005–12 average.
Source: Author's calculations based on financial data from Bloomberg LP.

monopolies, while telecommunication firms operate in competitive markets.

For a sense of the relative risks and returns facing investors in infrastructure firms, the cost of equity can be compared with the return on equity. The results are presented for three sectors—telecommunications; electricity; gas, water, and multi-utilities—in **Figure 20**. For electricity firms, in roughly half of the years under observation, the return on equity exceeded the

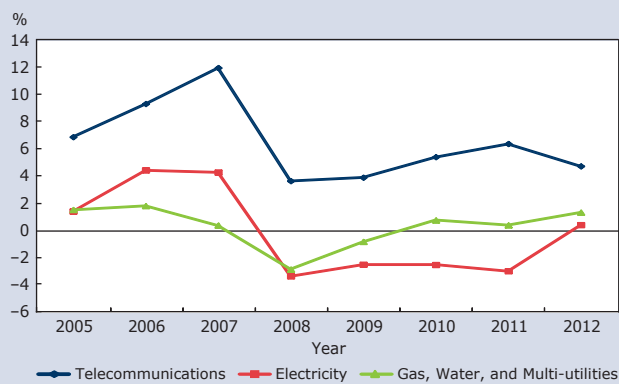
Figure 20: Cost of Equity vs Return on Equity of Infrastructure Firms by Type of Industry



Source: Bloomberg LP.

cost of equity (**Figure 21**). The performance of telecommunication firms has been better when the return on equity has exceeded or matched the cost of equity. In the case of utilities, the return on equity has generally lagged behind the cost of equity.

Figure 21: Return on Equity Less Cost of Equity of Infrastructure Firms



Source: Bloomberg LP.

Policy Recommendations

It is clear that financing infrastructure is a huge challenge for the region. At the same time, bond financing can help attract a new class of investors to infrastructure projects. In the more developed bond markets in the region, bonds have already been successfully utilized by infrastructure companies to raise funds. Deep capital markets are important to ensure sufficient liquidity to facilitate the issuance of bonds. In addition, it will be important develop a pool of investors through the pension systems that can invest in these long-term bonds.

To encourage investors to purchase infrastructure bonds, several obstacles must be overcome. While there is a substantial pool of funds in the region ready to be invested in infrastructure projects, there is a shortage of infrastructure projects that meet the requirements of investors. Hence, there is a need to improve the pipeline of bankable projects. One way to do that is to develop a long-term strategic framework for infrastructure development to ensure that investors have a regular supply of infrastructure projects to invest in. Assisting less-developed economies in structuring bond financing for Brownfield phase infrastructure can also create additional supply. Without a steady supply of infrastructure projects coming on the market, it will be difficult to get investors interested.

Another hurdle is that infrastructure projects tend to be given a credit rating that is too low to be of interest to institutional investors. Most institutional investors will not purchase non-investment grade bonds. Unfortunately, most infrastructure projects, especially those located in developing countries, may not qualify for an investment grade rating. One way to raise the rating of an infrastructure project is to provide guarantees. Traditionally, this guarantee has been provided by governments, but it carries a fiscal risk. Hence, the cost of providing the guarantee has to be carefully weighed. Another way to improve the credit rating of infrastructure bonds is to make subordinated debt tranches available to raise the credit rating of the senior tranches of the debt to investment grade. The amount of subordinated tranches will vary depending on the riskiness of the infrastructure project. More risky projects would require more subordinated tranches.

The securitization of infrastructure assets can allow banks to offload some of their long-term risk in infrastructure loans and help promote the development of a bond market. This would also allow banks to conserve their capital under the new Basel III rules. The pooling together of different infrastructure projects can help reduce the overall riskiness of the securities and improve their credit rating. However, securitization would require a well-developed bond market to provide liquidity and minimize risk. It would also involve having a regulatory framework that allows for the securitization of revenue streams, which may be lacking in lower-income economies.

Making data on infrastructure project costs and performance more transparent will facilitate the participation of institutional investors. Before investing in infrastructure projects, investors typically would like to examine the track record of similar projects. Without historical data on past financial performance, investors may be reluctant to invest because they lack the information to make the necessary estimate of future returns. Making historical data publicly available would improve transparency in the investment process. As a start, governments can make it mandatory

for infrastructure projects to provide information on key financial and performance variables that can help inform the process. Furthermore, ADB can serve as the repository of infrastructure information. Being an independent body that has extensive knowledge of the infrastructure sector, ADB is well placed to manage such a database and standardize how infrastructure project performance is measured and reported. If infrastructure projects are to proliferate in the region, standardized performance measures are needed for returns and risks. ADB can use its huge database on existing infrastructure projects to generate a new database on returns. Using its project experience, ADB can provide indicative costs and returns for infrastructure projects across a wide range of Asian countries. This is especially true for less-developed economies where information is particularly scarce.

The issue of the willingness of investors to put their money in infrastructure projects is closely related to the issue of cost recovery. The returns from an infrastructure project will have to come from user charges or subsidies. Difficulty in obtaining financing for infrastructure is usually linked to the lack of a clear cost recovery strategy. In certain sectors—such as in water and sanitation, and electricity—cost recovery through user charges is difficult. This is especially true in developing countries where collection is not only difficult, but access to infrastructure services is seen as a right. Hence, governments generally will have to step in and subsidize production. Even if cost recovery is available in a developing country, the incomes of a large part of the population may not be able to afford it. Therefore, subsidies need to be higher in developing countries, yet their tax base is less able to afford it. Without a clear revenue stream, private financing for infrastructure will remain inadequate. Hence, a key challenge is that where the demand for and benefit of infrastructure is the highest, the ability to pay is the lowest.

Finally, it is important to recognize that some of the concerns about investing in infrastructure projects are not due to financial factors. While developing bond markets and improving the

transparency of project information can help increase the availability of financing and reduce its cost, governments should also play their part to improve the investment climate for infrastructure projects. Given the long-term nature of infrastructure financing, governments should ensure that there is a stable long-term regulatory framework to reduce regulatory uncertainty.

Conclusion

Infrastructure financing needs in Asia are significant. The region cannot afford to skimp on infrastructure as maximizing the benefits of investment spending often depends on having an adequate level of infrastructure. Tighter global liquidity conditions and stronger prudential

regulations under Basel III are constraining lending from banks, which have traditionally provided the bulk of infrastructure project financing. At the same time, there is growing demand for financial assets with long-term maturities among institutional investors such as pension funds. This makes it natural to promote the development of infrastructure bonds that can help bridge the financing gap. A key hurdle to overcome is the shortage of quality infrastructure projects that can be bundled and offered to institutional investors who are usually mandated to invest in investment grade bonds. Guarantees and the creation of subordinated debt tranches can help improve the ratings of infrastructure bonds, while greater data transparency and a database of costs and past performance can help close the information gap for investors.