

ORIGINAL ARTICLE

Financing infrastructure in Asia through bonds and capital markets

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ABSTRACT

The project finance scenario has changed significantly around the world after the 2008 financial crisis and following the subsequent Basel III recommendations. Project finance loans from commercial banks and financial institutions have largely dried up, leaving it mostly to the export credit agencies and the bilateral and multilateral development banks to provide the institutional credit. Unfortunately, those sources are not enough, given the huge needs for construction of new infrastructure and renovation of the old ones across Asia, Africa and Latin America. The need for capital markets, through market listed financial products across asset class, unlocking a large part of domestic and corporate savings, has never been felt as strongly before. This article seeks to analyze the development story of various Asian capital markets and examine financial products, which have succeeded in their short history in receiving investor interest. The article also delves into the challenges to market development, policy imperatives and the issues relating to market liquidity and credit rating, which are the most significant influencers for public market float and investor interest.

Keywords: *project finance; development finance; sustainable financing; export credit; infrastructure; capital market; project bond; securitization; infrastructure bonds; green bonds*

1. Introduction

The infrastructure investment need in Asia is estimated to be USD2 trillion¹ between 2016 and 2030 (UN ESCAP, 2019). Neither the governments, multilateral development banks (MDBs) nor the banking sector can provide financing in such quantum, making bond markets—both local and international—a crucial source to close the financing gap. Bond markets ensure an efficient and effective distribution of scarce financial resources for optimal benefit to the economy. Corporates and projects reduce overreliance on institutional credit and, inherently, short-term financing for deployment in long-term assets. For investors and savers, it offers more attractive investment opportunities in terms of returns, as compared with bank deposits, depending on their risk appetite, exit horizon, tax optimization requirements and cost of capital. Additionally, it also offers them an opportunity to diversify their portfolios and manage risk by choosing from a wide range of securities

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¹ United Nations, Economic and Social Commission for Asia and the Pacific (2019). Infrastructure financing for sustainable development in Asia and the Pacific. Sales No. E.19.II.F.11. Bangkok.

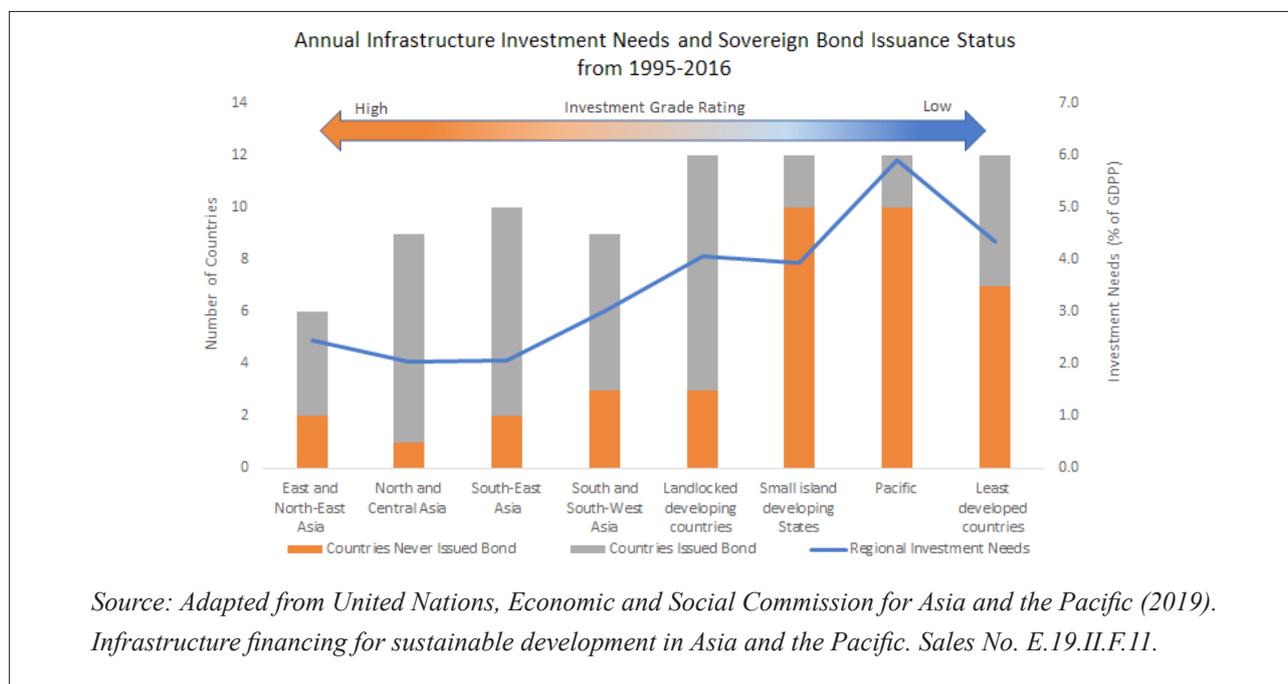


Figure 1. Annual infrastructure investment needs and sovereign bond issuance status from 1995–2016.

and financial instruments.

The pre-requisite for a successful project bond market is a well-developed sovereign bond and subsequently the corporate bond market. An International Finance Corporation (IFC) study² shows that the stock market capitalization of emerging economies remains significantly smaller than that of advanced economies. There is also a large variation among emerging economies in terms of the extent of development of their bond markets, ranging from countries where capital markets are very thinly capitalized, playing virtually no role, to countries where the markets are significantly developed, being involved in providing financing for the government and larger firms in the corporate sector. In some of the larger emerging market countries, such as China and India, capital markets are beginning to play a role in infrastructure financing. But in most emerging markets, the use of capital markets for financing large project financing needs still has a long way to go.

Specifically, the Asia-Pacific region is still in the early stage of the development of project-based bonds. While the need for infrastructure development is clear, it will require investors to collect more funds, borrowers to gain higher confidence in the bond market and governments to create an environment, which will encourage the issuance of project bonds. Generally, project-based bonds help to provide an additional source of liquidity for projects, either by funding greenfield projects or, more likely, by providing a refinancing option for projects after construction, thereby enabling bank lenders, governments and multilateral institutions to recycle their capital into new projects.

Internationally, project bonds have been mostly prevalent in the US and Canadian markets, which present a mature environment for investors to subscribe to and trade in such bonds through a transparent pricing mechanism. Even then, globally they account for only about 10 percent of global project debt. In the Asia-Pacific region, as per data available from previous literature, the volume

² Narayanaswamy *et al.* (2017).

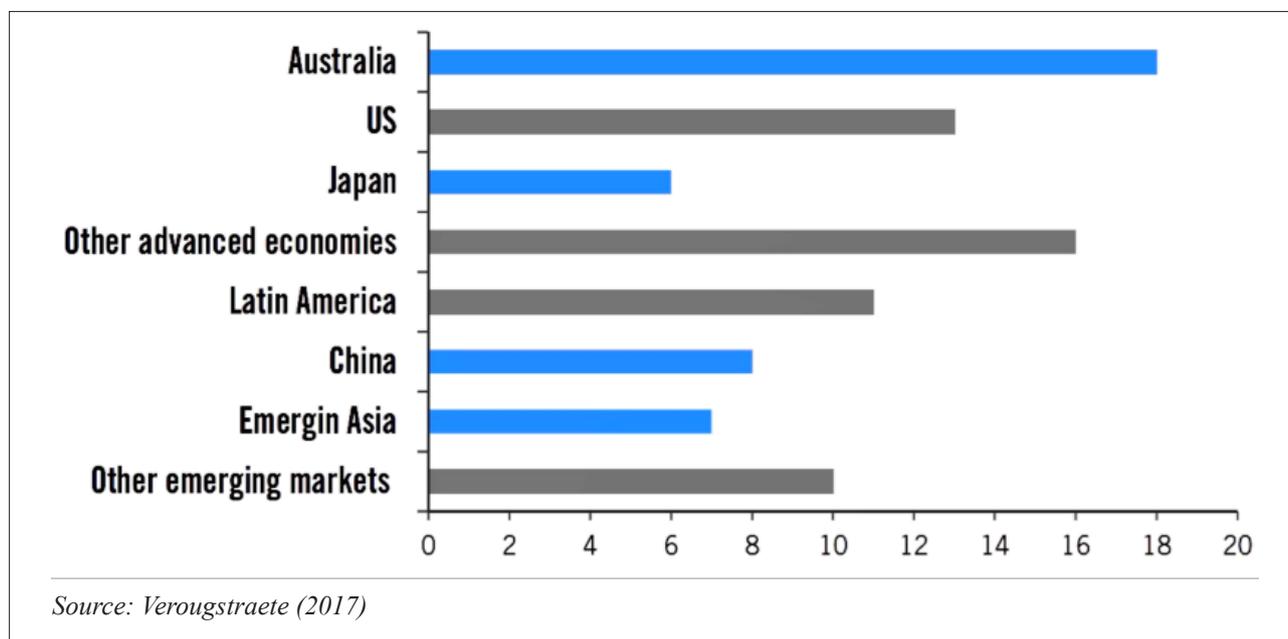


Figure 2. Average maturities of infrastructure-related debt securities bonds in years.

of project bonds ranged between USD1 billion and USD3 billion in recent years. The maturity tenor also seems to be shorter than in other, more developed markets, ranging around 7–8 years as compared with 12–15 years in the advanced economies, making these bonds ideal for refinancing of existing bank loans in the form of a take-out rather than being a primary project-financing mainstay.

2. Using bonds to raise financing for infrastructure

Traditionally, in infrastructure projects, debt financing can originate from various sources. Sources can be public loans/grants/bonds, commercial bank loans, shareholder loans and development finance institution (DFI) loans/grants/guaranteed-debt. However, the global financial crisis has resulted in stricter regulations on commercial banks, i.e., Basel III and their lending requirements, which means that infrastructure projects can no longer be funded by traditional or commercial bank loans alone. Basel III regulations require stricter monitoring and disclosures, ultimately leading to higher costs of lending and higher capital requirements for the banks. These higher costs are passed through to the special-purpose vehicles (SPVs), translating to diminished project internal rate of return (IRR).

Box 1. Basel III

Infrastructure finance is a particular concern in many emerging markets and developing economies given the limited sources of funding available and the high infrastructure gap in these countries. Increasingly tightening regulation under the Basel III norms have affected bank lending for infrastructure. According to Basel III, credit exposures to a single counterparty or group of connected counterparties are limited to 25 percent of a bank's Tier 1 capital thereby tightening how much a bank can be exposed to a given borrower or project. Given that infrastructure projects are typically large, this results in large banks to limit their debt to one project and smaller banks being unable to lend to large projects.

Secondly, under Basel III, there is a tightening of capital requirements for infrastructure projects by significantly higher risk weights, which increases the cost of lending. Such costs are prohibitive for use in large infrastructure projects.

Other factors include the liquidity requirements, under the net stable funding ratio (NSFR) and liquidity coverage ratio (LCR). These require banks to try and match long-term assets with long-term funding. This can result in an increase in the cost of funds especially for banks not having access to large-scale funding. It also limits the number of banks which are able to provide such funds. The LCR norms under Basel III requires 100 percent high-quality liquid assets for special-purpose vehicles, which are often used for project finance, and for the undrawn portions of revolving credit facilities. Such requirements are often difficult for banks to fulfill, making them unable and unwilling to finance infrastructure projects.

Source: Authors, based on Bank for International Settlements (2017).

Nowadays, bonds can be structured in many ways and issued by different entities. When the bonds are used to finance infrastructure assets, these bonds are called “infrastructure bonds”. The underlying foundation of infrastructure bonds is that they are all project-based, paid by the project revenues and proceeds can be only used for a specific set of investments as defined in the bond-offering memorandums. Infrastructure bonds will be the focus of the paper irrespective of whether the issuer is a public or private entity.

An infrastructure asset is the basic physical and institutional structure and facilities, such as buildings, roads and power supplies needed for the operation and provision of services to benefit the society. A few characteristics which make infrastructure assets unique for bond investors are that these assets have a long life, ranging from 10 years to more than 50 years at a time, for profit-revenues have a long ramp-up period; the rates of return are normally stable but, over the lifetime, are publicly owned, bringing heavy involvement of the government; and concession contracts are exposed to construction and demand risks. This brings two levels of complexity to the investors: understanding the novelty of project bonds and understanding the fixed-income asset class itself. For example, institutional investors such as pension funds are not in the business of structuring power plants. They are more focused on safe and “risk-free” investments which provide a stable long-term return to pensioners. Most pension funds are not familiar with emerging markets nor with the procedures required for project bonds in these markets.

Table 1. Comparison between bonds and loans

Advantages of a bond	Advantages of a loan
Provides access to long-term finance, matching the long-term maturation cycle of infrastructure projects	Provides access to long-term finance, matching the long-term maturation cycle of infrastructure projects; however, tenors are shorter than for bonds
Gives access to newer investors who do not normally enter the world of infrastructure financing	SPV's relationship with the lender gives project finance technique its main strength, e.g., step-in rights, direct agreements and ring-fencing debt payments
Ability to lock in a long-term interest rate at issuance through the life of the bond; loan rates can change according to the risk profile of the project phase at the time, e.g., construction-phase rates are higher	The terms of a long-term loan can often be modified and restructured to benefit the borrowing party; flexible refinancing options
SPV has more flexibility to operate and make decisions; lenders would require deeper oversight in daily operations	Less administrative paperwork than going through the process of issuing bonds. To sell bonds to the public, the issuing company must spend time and money on advertising, while taking steps to ensure that it adheres to market regulator requirements

Infrastructure bonds have not yet become mainstream in the capital markets. There are many ways to dissect what makes this asset class harder to benchmark against other fixed-income categories (other types of bonds, CDs, ETFs). From a portfolio management perspective, the lack of uniform data to benchmark an asset class weakens the predictability of returns to the investors. Each infrastructure project is unique, and each project risk allocation is different, resulting in different expectation of returns. For example, most economic infrastructures such as transport, energy and ICT have a higher percent of regulated long-term concession contracts which secure revenues for debt repayment. This is not as obvious in social infrastructure projects, such as in schools and hospitals, and is difficult to predict a fixed schedule of revenues over the long term.

3. Typology of bonds

There are largely three categories of issuers who can reasonably meet disclosure requirements for accessing capital markets for raising debt through bond issuance. These are (a) well-rated and often listed public sector entities such as national governments, government-backed or sub-national governments and state-owned entities, (b) large infrastructure companies with a diversified project portfolio and investment-grade rating and (c) project finance companies or special-purpose vehicles (SPVs), promoted by strong sponsors and having either a stand-alone or credit-enhanced investment-grade rating. Traditionally, as the primary debt capital market matures, countries will first see sovereign issues, followed by corporate bonds and then project finance bonds.

Table 2. Typology of bonds

Bond Issuer	Bond Type	Description	Largest Users (Buyers/holders)
Government Bonds	Sovereign Bond	Bond issued by a national government to support government spending. Usually denominated in domestic currency and often seen as a risk-free investment.	Local/foreign financial institutions, insurance and pension funds, SWFs, local banks, mutual funds, etc. ³
	Subnational – General Obligation	Bond issued by subnational entities ⁴ , where the repayment is guaranteed by the issuing entity’s credit and taxing power. A general obligation bond (GO) is secured by an issuing government’s pledge to use all available resources—even tax revenues—to repay holders of the bond. General obligation bonds are usually used to fund government projects that will serve the public community which are generally non-profitable.	Majority are local investors, high-worth individuals, households/family offices, mutual funds, SWFs, insurance and pensions funds, etc. ⁵
	Subnational – Project-Specific	A revenue bond, issued by subnational entities to finance a project and secured by the project’s revenue source. ⁶ Usually financed to support specific infrastructure projects such as a toll-bridge, highway or local stadium.	Majority are local investors, high-worth individuals, households/family offices, mutual funds, SWFs, insurance and pensions funds, etc. ⁷ Some foreign holders with f/x guarantee from government or a DFI.
Corporate Bonds	Corporate Treasury	Bond issued by corporates; the backing for the bond is usually the payment ability of the company, which is typically money to be earned from future operations. In some cases, the company’s physical assets may be used as collateral for bonds. ⁸ Corporate bonds tend to have higher risks than sovereign bonds that corporates’ assets may be collateralized for bonds.	Foreign holders, insurance companies, mutual funds, households, private pension funds, etc. ⁹
	Project-Specific	Bond issued by corporates or SPVs to finance projects such as infrastructure, which will be paid back by the revenue generated from the project. ¹⁰	Insurance companies, asset managers, infrastructure debt funds, local investors, local commercial banks’ treasury ¹¹

Source: Authors, based on various reports

³ Available at <https://asianbondsonline.adb.org/data-portal/>.

⁴ Subnational entities include states or provinces, counties, cities, towns, public utility companies, school districts and other special-purpose government entities that have the capacity to incur debt. More information available in Canuto and Liu (2010).

⁵ Invesco (2016).

⁶ Definition available at <https://www.investopedia.com/terms/r/revenuebond.asp>.

⁷ About two-thirds of subnational bond investors from 2005–09 were revenue bond holders. More information available in Canuto and Liu (2010).

⁸ Definition available at <https://www.investopedia.com/terms/c/corporatebond.asp>.

⁹ Asia Securities Industry & Financial Markets Association (ASIFMA) (2016).

¹⁰ Definition available at <http://www.vernimmen.com/Practice/Glossary/definition/Project%20bond.html>.

¹¹ 2018 Annual Report - Crédit Agricole CIB

3.1. Public financing for infrastructure using bonds

3.1.1 Sovereign bonds

Sometimes termed as “risk-free”, sovereign bonds are issued by the country’s treasury for public spending. They are considered “risk-free” because there is minimal risk of non-repayment as the treasury has the ability to raise taxes or print more money to repay the bond. In order for a sovereign bond to be project-specific, bonds need to have a designated account for such investments where both proceeds and revenues generated from the projects can be managed. Project-specific sovereign bonds are issued on an exception basis in absence of an implementing entity for the project or when the entity does not have a balance sheet to manage its own asset-liabilities. These are cases where there is no clear-cut revenue stream from projects and involve huge designated investments such as social welfare or larger public measures, e.g., the environment. Some recent examples are presented below, where sovereign bonds were issued for identifiable programs of investment.

- Green Bonds are regular bonds having the caveat that the funds raised by the issuer should be earmarked towards financing “green” or environmentally friendly projects. The product was conceived in 2007 by the European Investment Bank and the World Bank, and subsequently, in 2013, corporates started participating, leading to its overall familiarity. The projects which Green Bonds can finance could be in areas of renewable energy, clean transportation and sustainable water management. Green Bonds enhance the issuers’ reputation by showcasing their commitment towards sustainable development and providing issuers access to specific investors who invest only in green ventures. Global issuances of sovereign green bonds are increasing year by year and more countries are expected to join the movement. In September 2018, India’s largest public sector bank, State Bank of India (SIB), issued its inaugural green bond raising USD650 million. The five-year 4.5%-coupon bond was rated BBB-/stable by Fitch and priced at 99.523% to offer a yield of 4.608%. This was equivalent to a spread of approximately 360 bp¹² below the 5-year Indian sovereign bond at the time.
- Green sukuk bond by Indonesia: A more recent phenomenon is the increased green bond issuance activity from members of ASEAN, led by green sukuk (Islamic bonds). In 2018, Indonesia became the first Asian sovereign green bond issuer when it raised USD1.25 billion via a green sukuk to finance a wide range of climate mitigation, adaptation and resilience projects. As a result, Indonesia was ranked 12th globally in the first half of 2018 in terms of green bond issuance by volume. Due to strong investor demand, the 5-year-tenor sukuk was issued at a reduced yield of 3.75%, equivalent to a spread of 245 bp below the 5-year Indonesian government bond, with a coupon rate of 4.05%. The bond was rated at Baa3, BBB- and BBB by Moody’s, S&P and Fitch, respectively.
- Social Impact Bonds form the cornerstone for socially responsible public-private partnerships, which allows private impact investors to invest capital upfront for public projects which deliver social and environmental outcomes. If the project succeeds, the investors are repaid by the host government (Social Impact Bonds) or an aid/philanthropic agency (Development Impact Bonds) with capital plus return on the same. If the project fails, the returns and part of the capital are lost. While commonly referred to as a “bond”, the arrangement replicates,

¹² Data available from <http://www.worldgovernmentbonds.com/bond-historical-data/india/5-years/>.

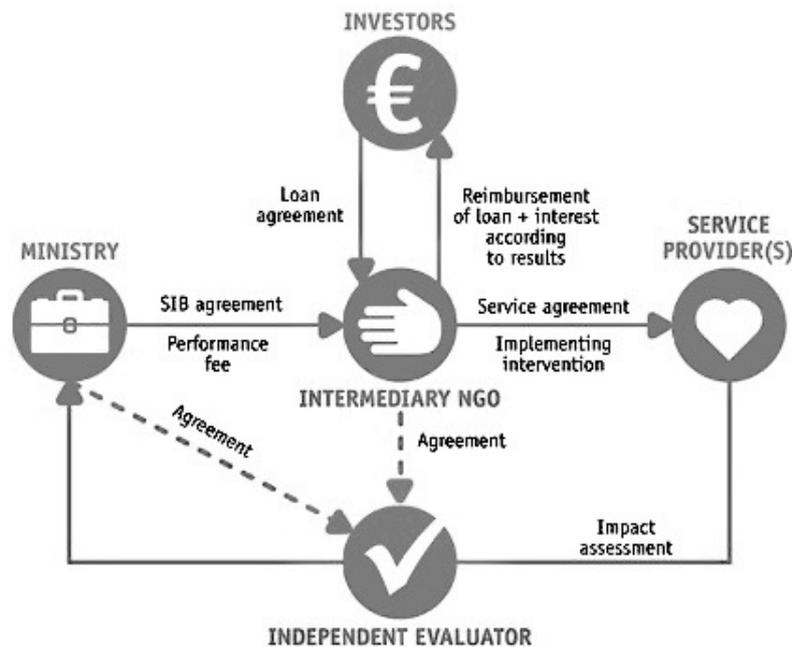


Figure 3. Structure of Social Impact Bonds

in essence, a payment-for-result scheme. The approach is also referred to as pay-for-success in the United States and as a social benefit bond in Australia. Social impact bonds have been linked to national outcome-based facilities to grow in scale and impact.

- The objectives are to a) align impact investment with measurable social and environmental outcomes, b) grant affordable access to capital to public projects, c) provide greater certainty on revenues for the execution of public projects, and d) introduce rigorous performance management approach by linking payments to performance.
- A Blue Bond is a debt instrument issued by governments, development banks or others to raise capital from impact investors to finance marine- and ocean-related projects that have positive environmental, economic and climate benefits. The Blue Bond is inspired by the Green Bond concept, which investors are more familiar with. Recently, the Seychelles Sovereign Blue Bond was issued in October 2018 with a ceiling value of USD15 million and with a maturity of 10 years. The Blue Bond, as well as the program of marine- and ocean-related activities it will support, was prepared with assistance from the World Bank (WB) and the Global Environment Facility (GEF) based on existing WB project loans and GEF grant where internal controls were already set up. The support was inclusive of a partial World Bank guarantee of USD5 million and a concessional loan from the Global Environment Facility of an additional USD5 million, for partially subsidizing the payment of the bond coupons. The multilateral credit enhancement mechanism allowed for the reduction of the bond price by partially de-risking the investment of impact investors and also by reducing the effective interest rate for Seychelles by subsidizing the coupons. The bond proceeds are linked to the World Bank project and its activities and follow the internal controls set up for the World Bank loan and GEF grant.

3.1.2 Sub-sovereign bonds

Sub-sovereign entities issue infrastructure bonds to finance specific projects in their jurisdictions which are backed by project revenues. State-owned entities across the Asia-Pacific region have been attractive areas for credit investors as most sub-sovereign state-owned entities especially utilities offer an attractive risk/reward profile relative to the sovereigns (see Box 2 for examples). This is because state-owned utilities are wholly or partially owned by governments and are mostly a performing asset. The political nature of infrastructure and the general perception of providing adequate infrastructure being a government responsibility make state-owned utilities benefit from a range of operational advantages, partly as a result of the government's vested interest.

- India—the state-owned power and state-owned utilities of National Thermal Power Corporation (NTPC) and Power Grid Corporation: Indian utility public projects are governed under a regulatory provision of assured pre-tax return on equity together with fuel and operating cost pass-through. This minimizes net cash flow uncertainties to a large extent, thereby making loans and bonds a low-risk proposition in these entities.
- China—the water treatment public utilities: Quasi-sovereign operators can often win contracts from local governments because their sovereign backing provides for higher assurance on the operational and financial stability of the projects undertaken by the utilities.

State-owned utilities are often found to have access to lower financing costs and better leverage compared with their private sector counterparts. This makes utilities more competitive financially and allows them to raise financing initially primarily through bank debt. This bank debt can then be refinanced through rated publicly listed corporate bonds at more competitive yields, based on the utilities' stand-alone or sovereign-backed, credit-enhanced credit rating. However, it should be noted that while investor interest is strong in the sovereign and sub-sovereign state-owned entities in the Asia-Pacific region, only a few have been successful in consistently raising financing through bond issuance. Exceptions have been based on their dominant market positions and ability to scale up investments with strong regulatory framework support.

Box 2. Bond issuance by sovereign-backed state-owned utilities in Asia

Kazakhstan Temir Zholy JSC (KTZ) is a 100-percent state-controlled, vertically integrated rail group operating the national rail network of the Republic of Kazakhstan as a monopoly rail infrastructure service-provider. In 2017, KTZ Finance, a 99-percent subsidiary of KTZ, launched a 5-year, RUB15.0 billion senior unsecured ruble-denominated bond maturing in 2022 with a rating of Baa3 from Moody's Investors Service. The proceeds of the issue were on-lent to KTZ, which also provided a surety undertaking for the bond. The surety is in a form that should give bondholders the ability to make a guarantee claim on KTZ for repayment of the bonds and accumulated coupon interest if KTZ Finance defaults. More recently, in 2018, KTZ itself raised CHF170 million Eurobond for refinancing its existing non-CHF hard-currency debt.

Electricity Generating Authority of Thailand (EGAT) is Thailand's national electricity generating and transmission company wholly owned by the Kingdom of Thailand. Following

the Asian financial crisis of 1997–98, EGAT made its first international bond issuance in 1998 for raising USD300 million on a 10-year-maturity, Luxemburg-listed instrument, the servicing of which was guaranteed by the Government of Thailand, which was rated at BBB- by S&P. In spite of its investment-grade rating, the bond needed partial credit guarantee from the World Bank, which got the bonds fully placed. More recently, in June 2018, EGAT, with an S&P foreign currency rating of BBB+ and a domestic rating of AAA from TRIS Rating, placed its first non-guaranteed local currency bonds, raising THB3 billion and THB7 billion series of 15- and 20-year maturities, respectively.

Indian Railway Finance Corporation Limited (IRFC) is a wholly owned entity of the Government of India, being under the administrative control of Ministry of Railways (MOR) and playing a critical role in the Indian government’s plans and policies, given its exclusive role as a financier to MOR. In December 2017, IRFC placed its first Green Bonds in the international market, raising USD500 million through 10-year unsecured green bonds from offshore US and investors in Asia, Europe and the Middle East. Proceeds of the bond are to be used to finance the eligible Green Projects under Dedicated Freight Railway Lines and Public Passenger Transport. The issuance was particularly significant because at a spread of 145 bps over US 10-year Treasury, it marked the tightest 10-year spread paid by an Indian public sector corporate in the USD markets in recent times.

China Three Gorges Corporation (CTG) is a Chinese wholly state-owned entity, established in 1993 with the approval of the State Council to build and operate the Three Gorges Project, positioning itself as a clean energy group, focusing on large-scale hydropower development and operation. In 2019, China Yangtze Power Co. Ltd. (CYPC), its subsidiary which took over the operations and management of operations of Three Gorges Project in 2002, raised RMB3.5 billion through issuing 10-year-maturity corporate bonds of 4.78% coupon, rated AAA from China Chengxin International Credit Rating, with a provision of full amount and unconditional irrevocable joint and several liability guarantee by CTG. More recently, in 2017, CTG issued its first offshore green bond under a coupon rate of 1.3%, raising EUR650 million for wind projects in Germany and Portugal, attracting a wide investor base from Germany, France, Switzerland, UK, Italy, Norway, Spain, Netherlands, Portugal, Republic of Korea, Japan, UAE, Singapore and Malaysia. At its issuance, it was oversubscribed by 3.1 times.

Source: Authors, based on websites

3.2. Private financing for infrastructure

3.2.1 Corporate bonds

Corporations issue an infrastructure bond to finance projects done on a “corporate finance” basis. In a corporate finance structure, financing for a project is based on the balance sheet of the corporate sponsor of the project, who is in charge of the development and operation of the project, rather than the project’s cash flow. This is typically the mechanism used in lower-value projects where the cost of the financing is not significant enough to warrant a project financing mechanism or where the operator is so large that it chooses to fund the project from its own balance sheet. The benefit of corporate finance is that the cost of funding will be the cost of funding of the private operator itself

and so it is typically lower than the cost of funding of project finance. It is also less complicated than project finance. However, there is an opportunity cost attached to corporate financing because of the limited balance sheet size of a single corporate. As a result, the more a company invests in one project, the less it will be able to fund or invest in other projects. In a corporate bond structure, the rating, pricing and security will be based on the company itself and not on the project.

A sponsor company bond issuance is mostly a corporate-level bond issuance by a multi-asset infrastructure company, backed by the existing cash flow of its operational businesses. Most corporates issue bonds in the currency they have the most asset holdings in, usually the local currency. Typically, depending on the credit rating and the underlying structure, these bonds can be issued as either asset-backed notes or cash flow securitization products.

In terms of issuance of corporate bonds, however, the Asia-Pacific region has been behind other regions with a total size of USD5 trillion as of 2017, compared with USD41 trillion for the USA in the same year. This results from a) a large-scale crowding out of the Asian corporate issuers by sovereign and sub-sovereign entities as discussed earlier and b) low level of development and shallow depth in most Asian bond markets. There are a few exceptions, such as the Republic of Korea and Malaysia (Hong Kong and Singapore also have very elevated corporate debt ratios but that is partly because of the relatively small size of their economies). There has, however, been notable progress in recent years in other markets, such as China, Thailand and, to a lesser extent, the Philippines, as can be seen in the chart below.

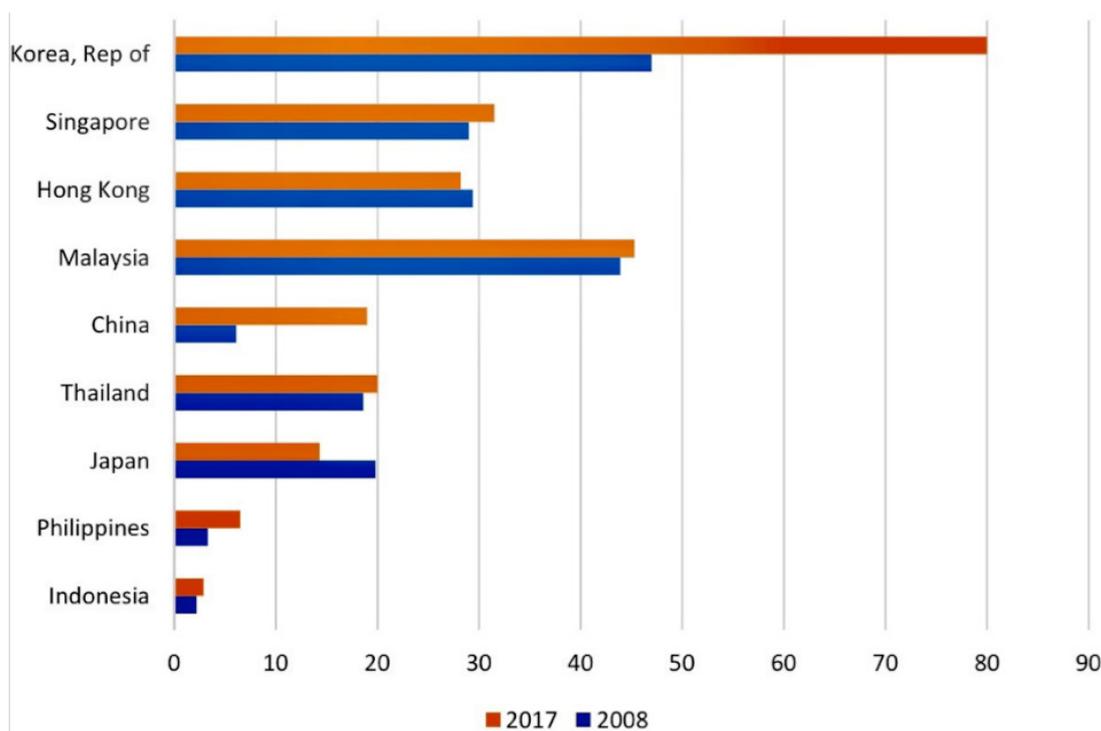


Figure 4. Growth of corporate long-term corporate bonds (LCBs) in select countries as a percent of GDP

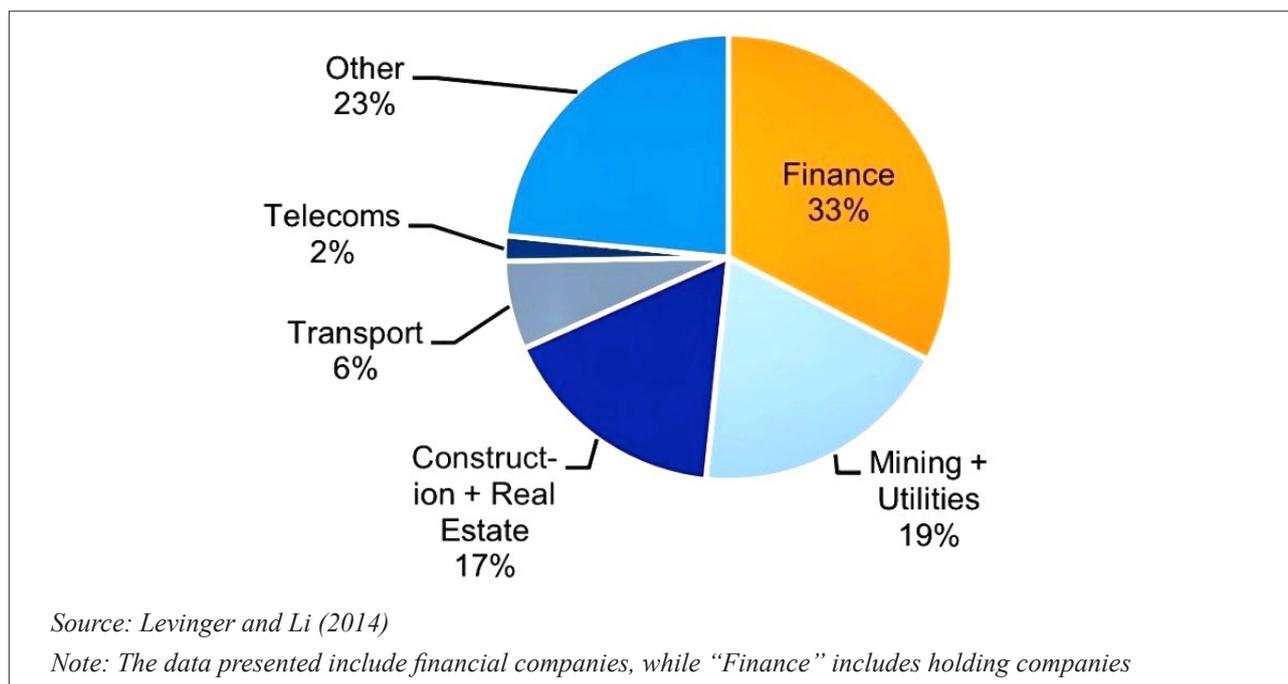


Figure 5. Growth of corporate long-term corporate bonds (LCBs) in select countries as a percent of GDP

In China, as of 2019, gross corporate debt has soared to 300 percent of GDP, which is significant given that China’s GDP is the second largest in the world after the US. In Japan and the Republic of Korea, the ratio was 100 percent of GDP.¹³ It has historically been observed in earlier literature¹⁴ that, in a developed corporate bond market, the issuance of corporate bonds has largely been dominated by infrastructure companies. Using available data, which pertains to 2013 and was originally cited in a Deutsche Bank research,¹⁵ it could be seen that other than financial sector issuers, which accounted for 33 percent of total corporate bond issuance, conventional infrastructure sectors were cumulatively the largest issuers over the years.

The purpose of corporate bond issuance is two-fold: a) refinance the existing loan at a lesser cost and longer tenor and b) optimize leverage to create a cash pool for downstream investment. The strategy is particularly effective for large-holding structures with operational assets that are mostly or entirely debt-free and have a reasonable period of concession life still outstanding. Such situations enable the company and its bankers to package the residual free cash flow from these assets into a securitized pool against which bonds can be issued. The credit rating of such a product will depend largely on the operating risk of the asset, the track record of the corporation’s credit and the payment risk of the off-taker. Since these corporates have a reasonable operational track record already established, rating agencies are expected to take a favorable view as long as the management is creditworthy. The corporations can then reutilize the resultant cash flow for the development of new projects and investment as sponsor equity in those projects without any dilution in shareholding.

Some of the advantages of Corporate Bonds are as follows:

¹³ Rowley (2018).

¹⁴ Verougstraete (2017).

¹⁵ Levinger and Li (2014).

Useful for meeting long-term capital requirements of infrastructure companies especially in situations when the equity market is illiquid,

- Issuer does not have to dilute equity or issue preference shares for new project investment,
- Help in reducing the overall cost of borrowings as compared with bank rates,
- Rating of the bonds helps the investor to take an informed decision and earn a higher return than similarly rated sovereign or sub-sovereign bond,
- For the investor, there is a safety net in the form of access to unencumbered cash flow, and
- In the case of listed bonds, there is liquidity for exit and upside of capital appreciation.

3.2.2 Project finance bonds

Project finance bonds are issued to finance an infrastructure project and paid back exclusively by the cash flows generated by the project without recourse to other flows generated by the initiator of the project. These types of bonds are also called “revenue bonds”, as the payment is dependent on the revenue earned from the underlying asset. Project finance, also known as “limited recourse or non-recourse financing”, is a technique to negotiate and establish the long-term debt financing of a project, where the basis of the loan is the cash flow generated by the project alone. A special-purpose vehicle (SPV) is usually set up by the investors for the project only. SPV is the entity which constructs and operates the project and has no other business. A company’s equity investment in the SPV is deemed as an asset instead of a liability. The SPV will be dependent on revenue streams from the contractual arrangements and/or from tariffs from end users. The revenues will only commence once construction is completed and the project is in operation. When an SPV issues a project bond, repayment is based on future cash flows of the SPV. Unlike a corporate, an SPV does not have a track record of established performance and creditworthiness.

In absence of a proven revenue to repay the debt, as a result, lenders generally are wary to give loan or buy a bond upfront before construction is completed. Due to this uncertainty, lenders will want to carry out extensive due diligence on the potential viability of the project and a detailed review of whether the project risk allocation protects the project company sufficiently. This is known commonly as verifying the project’s “bankability”. While most projects will seek to issue such bonds on a non-recourse basis, it often becomes difficult to do so for a project financing component in absence of a stand-alone investment-grade rating in most cases. In such situations, apart from detailed risk allocation structure and risk-specific mitigation models, the project sponsor needs to provide certain credit enhancements in the form of sponsor guarantees, bond insurances or MDB/ECA backstops in the form of partial credit guarantees. The MDB and ECA guarantees are particularly relevant in a situation of political risk or a sovereign off-taker’s payment default risk. Notwithstanding the guarantees, the contracting structure of the project becomes crucial for investors to participate in the bond issuance. Investors will seek comfort from the project’s underlying contracts and their covenants which successfully identify, unbundle and allocate the risks to a bankable counterparty under the contracts.

Box 3a. Tiwi-MakBan Climate Project Bond, Philippines, 2015

The bonds, for PHP10.7 billion (equivalent to USD225 million), were placed in 2015 to raise project-level financing for two of the world's largest (442-MW and 234-MW) geothermal projects, which feature:

- The first credit-enhanced local-currency project bond in the region (except Malaysia).
- The first local currency, credit-enhanced project bond in the Philippines, with 75 percent PCG by ADB, leading to rating uplift to a target of BBB/A-.
- The first Climate Bond certified in emerging markets for a single project and the first Green Bond in the Philippines.
- Tenor of 5-10 years.

The Tiwi-MakBan Project Bond model demonstrates the opportunity for Asian issuers to access domestic debt capital markets for projects that would not otherwise qualify for financing. The model can be used initially to recycle capital in brownfield projects and therefore free up capacity for new projects. In the medium term, the model can be used to fund the construction phase of projects. This will require further structuring features, such as deferred purchase notes and completion guarantees, as has been successfully implemented in Europe.

Source: Thomas (2016)

Box 3b. Paiton Energy Debt Refinancing Project Bond, Indonesia, 2017

The USD2.75 billion debt financing for Minejesa Capital B.V. in 2017 represents the first project bond for an Asian credit in the international debt capital markets for more than a decade and is one of the largest transactions in recent times in the project bond space. The transaction concluded at extremely competitive pricing. Proceeds of the issue were used to fund the activities of Indonesian independent power producer PT Paiton Energy.

The financing package was a mixture of a USD800-million 20-year amortizing bond, a USD1.2-billion 13-year amortizing bond and a six-year USD750-million (equivalent) amortizing corporate loan facility with tranches denominated in USD and JPY. The bonds are listed on the Singapore Exchange (SGX).

The funds were raised to prepay outstanding senior debt facilities and subordinated shareholders loans and for general corporate purposes. PT Paiton Energy provided an unconditional guarantee of the debt financing package.

Source: Inframation (2017)

3.3. Buyers and investors of infrastructure bonds

There are several buyers of infrastructure bonds in today's market:

a) Households/family offices

Households and high-net-worth individual investors often view bonds as an instrument to

achieve their long-term saving goals or to hedge against risky investments. Private individuals, in many cases, purchase government bonds due to its advantage of credit-risk-free feature albeit it may give lower yields than other riskier assets. Moreover, its safe nature also makes a great hedging tool for interest rate risk, and as underlying assets and collateral for related markets, such as the repo, futures and options markets.¹⁶

b) Financial institutions/mutual funds

The most common type of bonds held by financial institutions such as commercial banks and mutual funds are central bank bonds or interbank bonds in the form of reverse repo,¹⁷ where other financial institutions sell the bonds in order to comply with the reserve requirements or raise short-term capitals, earning interbank rates; for example, LIBOR (London-Interbank Offered Rate) is an example of interbank lending rate.

c) Insurance and pension funds

Insurance and pension funds are usually big purchasers of both government and corporate bonds. Historically, these funds are one of the largest purchasers of government bonds such as subnational bonds as a way to increase fixed-income portfolio diversification. Property-casualty insurers tend to purchase short and intermediate maturity sovereign bonds, while life insurance and pensions funds have typically focused on longer duration bonds to match the long-term nature of their policies.¹⁸

d) Foreign governments and Sovereign Wealth Funds (SWFs)

Foreign governments are sometimes the biggest buyers of domestic government bonds. For sovereign governments, when in need of finance, issuing government bonds to foreign governments can be a great alternative to seigniorage, an approach to raise funding through printing money, if inflation is a major concern to the issuing government. For foreign governments, purchasing sovereign bonds as a source of fixed income displays a significantly low risk as well, especially when the borrowing governments have high credit ratings.

e) Infrastructure funds

Infrastructure funds are financial intermediation structures put together by experienced fund management teams, serving as a bridge between investors and developers of infrastructure projects. These funds can be structured as an off-market private equity/debt proposal or a market-based mutual fund proposal. There is a third kind, which has been prevalent in India over the last five years, which are market-regulator-governed “Alternate Investment Funds, or AIFs”, which pool in public capital under an approved license from the regulator for investing in private assets.

Infrastructure Funds, by their very nature, are designed to take large debt or equity exposures in large and greenfield or brownfield infrastructure projects, which are not normally preferred by the traditional fund or institutional investors. These funds have a longer fund life and investment

¹⁶ More information available at <https://www.bis.org/publ/cgfs13.pdf>.

¹⁷ A repurchase agreement (repo) is an agreement to sell securities (referred to as “collateral”) at a given price, coupled with an agreement to repurchase these securities at a pre-specified price at a later date. A reverse repo is the same set of transactions seen from the perspective of the party lending cash and receiving the securities as collateral. Definition available at <https://www.bis.org/publ/cgfs59.pdf>.

¹⁸ Invesco (2016).

Box 4. Example of AIF in India: National Investment and Infrastructure Fund (NIIF)

Announced under Budget 2015, the Government of India set up the National Investment and Infrastructure Fund (NIIF) as an alternative investment fund (AIF) in December 2016 with the objective of maximizing the economic impact through the support of infrastructure development. Having a planned corpus of USD6 billion for supporting infrastructure development and financing by way of providing a long tenor source of funding, the fund has a 49% investment holding by the Government of India, with the rest being held by Abu Dhabi Investment Authority, Temasek and HDFC Group. NIIF is a fund of funds with the ability to make direct investments as required and currently manage a total corpus of USD3 billion over its three fund categories.

NIIF received the distinction of being adjudged as the Most Innovative structure in Asia-Pacific under the Finance category by the Financial Times (London). Given the long gestation periods of large infrastructure projects, there is a huge requirement for sources of long-term finance. In light of the recent failures, key amongst them being IL&FS, banks are shying away from providing long-term financing to infrastructure. This makes the role of NIIF especially important in the current challenging credit environment.

holding appetite, allowing them to remain invested for the entire construction period of often long-gestation projects and subsequently down-sell their equity holding in the post-operational era to construction-risk-averse strategic investors. They play a significant role in addressing a gap which has been extremely difficult to fill hitherto by capital deficient project developers in the Asia-Pacific region, often requiring them to seek equity/debt and project participation from project contractors and operators, creating an inherently conflicting situation.

Box 5. Examples of infrastructure funds

The Governments of the Republic of Korea and Thailand have provided tax incentives for the establishment of infrastructure funds. The funds not only offer income tax benefits to investors, but also provide for favorable tax treatment for transfer of assets from existing operators to Thai Infrastructure Financing Funds. To date, the Thai funds have been used by infrastructure operators for securitizing project cash flows of operational assets.

Similarly, in India, there have been several successful initiatives in the form of publicly traded mutual funds focusing on infrastructure asset class as well as financial-institution-promoted Infrastructure Debt Funds (IDFs) under the mandate from the central bank. The IDFs were first launched in 2013 as an intermediary vehicle capable of refinancing PPP project loans through a take-out financing mechanism, once they are operational through the issuance of project bonds. The government provided a fiscal incentive in the form of tax breaks to investors investing in these bonds, which resulted in the shoring up of large bond investments by several financial institutions. In subsequent years, the capital market regulator issued guidelines for the launch of AIFs, which created an investment pool in the hand of several investment managers for deployment into unlisted assets.

4. Bond market development strategies

Infrastructure bond market development in the Asia-Pacific region has a long way to go. Several Asia-Pacific economies have made significant progress in recent years in creating local currency bond market ecosystems in their respective countries, albeit with varying levels of development. While the markets of Hong Kong, Korea, Malaysia and Singapore are at the forefront in terms of development, the markets in the People's Republic of China (PRC), India, Indonesia and Thailand are restricted by the lack of depth and liquidity, while markets in most other countries are still in their nascent stage. While the issues to be addressed differ widely from one market to another, some objectives may be identified as crucial in general for the improvement of market and product acceptability in the region. The Asia-Pacific countries can largely be categorized into three categories, namely:

- a. Mature capital markets for infrastructure financing in both domestic and international issuances.
- b. Emerging markets, perhaps with a few issuances and a developed primary market but in the early stages of a secondary market.
- c. Frontier markets, perhaps in the beginning stage of regulations, with issuance of maybe one and plan to do more.

According to the UN ESCAP Survey 2019¹⁹, there is a positive relationship between investment needs and the capital market status of countries. The higher the needs, the less developed bond market is in the Asia-Pacific region.

	Mature Markets	Emerging Markets	Frontier Markets
Credit Rating	High rating, mostly investment grade	Medium rating, lower level of investment grade or marginal non-investment grade	Speculative and/or junk grade; sub-investment-grade rating
Market Development	Developed debt capital markets, with high degree of market making and trading of a variety of sophisticated products and derivatives	Limited option for investors, though there are enough marketable projects, albeit with low credit rating and of smaller ticket size	Non-existent or highly limited capital market situation with issuances being largely made through private placement
Market Products			
<i>Sovereign Bond</i>	✓	✓	✓
<i>Corporate Bond</i>	✓	✓	
<i>Infrastructure Bond (Sovereign or corporate-backed)</i>	✓	✓	
<i>Infrastructure Bond (limited or non-recourse)</i>	✓		

Source: Authors

Figure 6. Status of capital markets development.

¹⁹ United Nations, Economic and Social Commission for Asia and the Pacific (2019). Infrastructure financing for sustainable development in Asia and the Pacific. Sales No. E.19.II.F.11. Bangkok.

Depending on the status of market development and integration, regional economies can pursue their financing objectives tailored to investor comfort and overall target to minimize risk in a given financing ecosystem.

4.1. For frontier markets

i. Macroeconomic stability

Investors are drawn to markets which present a stable macroeconomic environment. While investing in local currency bonds, macroeconomic volatility in respect of interest rates, exchange rates, inflation and other parameters, together with informational asymmetries, lead to vulnerabilities in the financial system. Global investors, seeking a natural hedge for their investment, always seek out low inflation and stable exchange rate regime. Additionally, a high rate of domestic savings and extensive market participation by domestic institutional and retail investors are also important determinants of bond market development in frontier markets.

ii. Strong financial sector infrastructure

A well-developed banking sector is crucial for the development of a bond market in frontier economies. One of the constraints faced by domestic commercial banks is the ability to offer a long-term debt, which is needed for infrastructure projects. They mostly function in retail space and offer short- to medium-term loans in small denominations. Initially, the bond market is a complement rather than a substitute for the banking sector, playing largely the role of augmenting the financing resources primarily made available by the banking system. Developing the local financial intermediation sector in a manner that it cannot only be the primary source of project finance, but also be a participant in the capital market as a subscriber of infrastructure bonds together with being an issuer of corporate bonds, can go a large way in deepening the capital markets of the country.

iii. Capital market infrastructure

Markets need an operating infrastructure, comprising exchanges and trading platforms, clearing houses and custodians. All these need to develop in a manner that is efficient, transparent in their dealings and subject to stringent regulatory oversight. In terms of how a capital market evolves, the existence of a stock market and government bond market generally comes first and is a prerequisite to developing a project-based bond market. An infrastructure bond market also needs an ecosystem of credible support institutions: bond arrangers, trustees, rating agencies, independent engineers, consultants and agents. In order to develop project bonds as a “safe” asset class, each stakeholder will have to play a key role to develop the market; otherwise, a single default—especially at the start—could have a huge impact on the whole asset class for investors in the future.²⁰

iv. Developing and deepening the “risk-free” bond market

“Risk-free” assets, such as government bonds, should be open to investors. Once investors are comfortable with investing in “plain-vanilla” products, they would feel more comfortable to go up the risk curve and invest in more sophisticated products such as infrastructure bonds. One cannot therefore see the development of infrastructure bonds as being removed from the development of government and corporate bond markets including a deep liquid yield curve, repo markets and

²⁰ Asia Securities Industry & Financial Markets Association (2016).

futures contracts. They are inevitably linked and therefore should be treated similarly. Making infrastructure bonds have the same withholding tax waivers as government bonds is equally important. Today, corporate and project finance bonds are frequently disadvantaged against the respective risk-free benchmarks for both domestic and foreign investors—a gap that needs to be narrowed.

v. Building tendering procedures for bond financing

Procuring authorities need to possess ample capacity to lead tenders involving bond financing. The tender process needs sufficient time for the bidders to arrange the market assessment of the bond for bids and compliance with regulatory requirements including from credit rating companies to rate the bond issuance. Procuring authorities may have to compare bond proposals from several bidders. They will therefore need to be able to assess the differences in placement capability, pricing levels, pricing features and means of managing pricing risk—a process which is more complicated in bond financing as the pricing of a bond is only confirmed upon issuance (i.e., at financial close). This could be mitigated by requiring bidders to submit at the final bid offer an indicative bond pricing so that the final bids can be priced and submitted. Bids should include an explanation of pricing methodology used and any reference to similar bond issues for ease of comparison. However, there is always a risk of variations in pricing between bids and financial close.

vi. Securities regulation

Regulatory framework ensures a transparent and efficient market, discouraging and sanctioning improper trading practices. In emerging markets, the standard regulatory framework for debt offerings contains requirements that are more suited for corporate finance. These are not fully suited for projects structured on a non-recourse basis, such as the need for the issuer to meet specific financial ratios or have a minimum number of years of operation. Thus, it is critical that securities regulators review the frameworks and adjust them as necessary to be able to fit non-recourse or limited recourse financing. Some aspects which need more attention are (i) disclosure practices of confidential sensitive information on infrastructure projects (see Box 6 on private placements of project bonds), (ii) managing intercreditor arrangements to provide waivers and consents in the underlying project, (iii) having more certainty of pricing, (iv) greater flexibility for tailor-made solutions aligned with the diversity of infrastructure assets, (v) issuer-neutral tax withholding exemption, (vi) ability to enforce security, i.e., whether physical assets and/or concession agreements be recognized as effective security enforceable by creditors, and (vi) dealing with negative carry costs.

Box 6. Market regulations for corporate bonds

There has been an emergence of strong regulatory frameworks in the region to encourage the development of local corporate bond markets. While the regulations for government bonds have been in place, local corporate bond markets have required further enhancements. Some of the key regulatory provisions in the region are listed below.

- In China, locally-listed banks have been allowed to buy and sell bonds on the stock exchanges, and corporations (including foreign firms) have been given permission to issue securities in the interbank bond market. Recently, the market has been opened up

for corporate entities to issue project bonds.

- The Hong Kong Special Administrative Region (SAR) launched an electronic trading platform for government and corporate bonds in 2007 to improve liquidity and price transparency.
- India has taken a series of measures, starting first with amending the Securities and Exchange Board of India (SEBI) Act to bring corporate bonds under the regulatory powers of the central bank, to recently proposing a mandatory tenor for AA-rated borrowers to raise 25% of their annual borrowing through the bond market. The provision took out the earlier compulsion for the creation and funding of a redemption reserve as well. These were supported by other market-friendly deregulations such as increasing the limit on FII investment in local currency corporate bonds, the creation of a foreign exchange swap facility for public and private sector banks with foreign branches or subsidiaries and enhancing the limits on Indian mutual funds for overseas investments.
- Indonesia had set up, in 2008, a bond pricing agency to provide reference prices for government and corporate bonds.
- The government of Korea established a ₩10-trillion bond market stabilization fund to foster the development of the market, together with an amendment in market regulation for facilitating exchange and off-exchange securities trading and attracting foreign investors to the bond market. Transparency in the pricing of bonds was also enhanced by requiring securities companies to report standardized bids and offers for all off-exchange traded bonds in real-time to the Korea Securities Dealers Association.
- Bursa Malaysia has waived the listing fees for debt securities denominated in ringgit and foreign currencies. The authorities implemented a phased liberalization of foreign exchange by loosening the limits on residents pertaining to foreign currency and ringgit-denominated credit facilities, and foreign currency and ringgit borrowing. Financial liberalization measures (new banking licenses, foreign strategic partnerships in banking and insurance with higher foreign equity limits, and greater operational flexibility for locally-incorporated foreign financial institutions) have also facilitated foreign participation in domestic capital markets.
- The government of Singapore has issued debt to help develop the yield curve, despite its large fiscal surpluses a low debt-to-GDP ratio. The Monetary Authority of Singapore (MAS) has taken measures to encourage AAA-rated issuance in the Singapore dollar bond market. Banks can use these securities to satisfy liquidity and reserve requirements through investments in sovereign and sub-sovereign entities rated AAA and with risk weights of zero under the Basel rules.
- Thailand allows foreign governments and financial institutions to issue local currency bonds onshore. Tax-incentivized regimes have been created to encourage Thai corporations to issue bonds. The regulations on the borrowing and lending of securities and short selling have been amended to improve risk management and enhance investor protection as well as the independence, operational flexibility and supervisory effectiveness of the regulator. Exchange controls have been relaxed on capital flows and for the holding of foreign currency investments by domestic institutional investors.

Source: Authors, adapted from Goswami and Sharma (2011)

vii. Putting in place a regulated credit rating system

The Asia-Pacific region has the largest number of credit rating institutions. Of the forty-five registered entities, almost half of which are subsidiaries or affiliates of the big three global credit rating agencies (Moody's, Fitch and Standard and Poor's). In spite of this, the biggest drawback of local rating agencies is the conflicted ecosystem in which the business thrives and cross-sells its services. Their independent nature often gets questioned because the rating business in Asia has shallow regulatory oversight and the dependence of the rating agencies is on businesses provided by local issuers, as well as the revenue model of their cross-selling consulting services to such issuers creating a fundamental conflict of commercial interest. Additionally, most of these agencies have very little and non-regular access to genuine and authentic corporate information in a sustainable manner, creating further impediments in their ability to issue a well-informed credit rating. This issue can be largely addressed through the creation of appropriate country-level regulations to counterbalance any inherent conflict and then instituting a strong regulatory oversight and reporting mechanism. For example, The Securities and Exchange Board of India (Credit Rating Agencies) Regulations, 1999, empowers SEBI to regulate credit rating agencies operating in India.

4.2. For emerging markets

i. Investor protection

An important determinant of bond market development is the level of investor protection in publicly traded products. Bond market's deepening and growth are likely to be higher in countries with strong investor protection because investors do not fear expropriation as much. Bond buyers especially foreign investors and institutional investors are often wary of the lack of transparent, adequate and timely reporting by bond issuers as laid out in the prospectuses. Buyers are equally wary of insider trading and preferential off-market deals, which can erode their investment value. A strong regulation, providing suitable protection of bondholder rights, thus becomes crucial for large-scale market participation by investors and overall growth and development of local capital markets. A sound investor protection framework includes (i) a bankruptcy law in order to determine the rights and obligations of market participants, (ii) best execution of placements, (iii) separate treatment and management of intermediaries and clients assets, (iv) acquisition of licenses for brokers and advisors to operate and (v) legal resources against market participants and efficient conflict resolution, which means that investors can initiate legal actions against brokers, dealers, corporate issuers, clearing houses and even the government itself to exert their bondholder rights.

ii. Selection of "right" infrastructure project to issue a bond

For the emerging economies, seeking to evolve and grow their capital markets as a gateway to raise long-term capital for infrastructure projects, they could start with low-hanging fruits. Brownfield projects such as in renewable energy, hard currency producing investments such as ports and airports and availability-payment-type toll road projects may be the best options in terms of their low complexity and built-in exclusivity and revenue adequacy mechanisms. Most investment funds have a mandate for sustainable infrastructure investments in their portfolio. Water supply concessions, where the off-take is a take or pay by a state-owned incumbent utility, can be less risky as revenues are relatively certain. The main risk would be the financial health of the off-taker under the concession (typically, a municipal corporation) and the supply of raw water (for example, India).

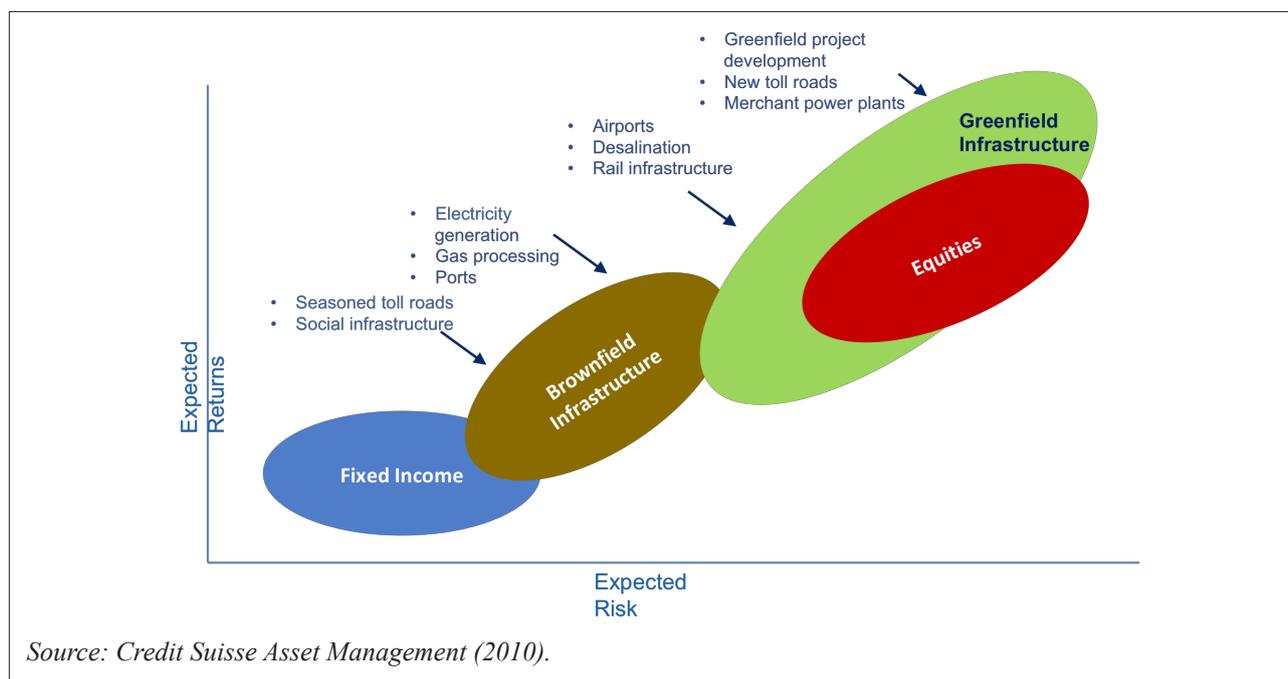


Figure 7. Risk-return of infrastructure investments in relation to traditional infrastructure asset

The next tier will be greenfield projects and contracts, where the public off-taker is untested by the market.

Sound financial structuring of the infrastructure project

There are some infrastructure-specific fundamentals which are essential to set up and induce a healthy infrastructure bond market. Bond investors have substantially the same “bankability” requirements in infrastructure projects as bank debt lenders.²¹ Bankability conditions in a project would include fiscal responsibility and affordability with optimal risk allocation between the parties to ensure the successful implementation of the project. At the same time, when things go wrong, the contract should be enforceable with clear dispute resolution agreements. Project risks can be broadly divided into two phases: construction and operation. Bond repayment is dependent on the project’s revenue.

- During construction, normally a project does not yield revenues, while the bond proceeds are all committed to the project already. See Box 7 on further details on construction risk and the resulting negative carry.
- During the operation phase, for projects where the private sector is bearing the demand risk (e.g., toll payments in road projects), investors may require government guarantees of a proportion of the revenue stream. In an “availability payment” model, regular payment is made by public procuring authorities to the project company for performance (assessed against KPIs specified in the concession agreement), irrespective of the demand for the project. Oftentimes, investors are wary of long-term government commitments to pay the availability payments and seek a backstop from MDBs in the form of guarantees, e.g., Tiki MakWan Bond in the Philippines.

²¹ Asia Securities Industry & Financial Markets Association (2016).

Box 7. Understanding construction risk and negative carry

Bonds with construction risk are usually deemed the most difficult for the bondholders to handle. The level of difficulty may vary depending on the construction's duration, novelty, complexity, susceptibility to delay and the experience and resources of the SPV. Construction risk causes unpredictability which cannot be controlled; bonds with this kind of uncertainty are unattractive to investors.

From a bond investor's perspective, construction risk arises from two primary components. The first is the credit risk, referred to as the risk that the bond will never be paid back or the collateral will have to be sold at a loss if the project is not completed. This issue usually appears as there is no recourse to a creditworthy sponsor, e.g., a financial guarantor providing a completion guaranty related to construction, which greatly deters investors for fear of potential default. The second problem is the timing risk, referred to as the risk of delayed revenue generation and payments due to construction delays. It can be seen that fixed-income investors typically have a greater preference than banks for predictable payments on designated dates, from the fact that payments on project bonds are usually rated by rating agencies, either corporate-style (i.e., timely interest and timely principal on scheduled dates) or structured finance-style (i.e., timely interest on scheduled payment dates and ultimate principal on the final payment date). Thus, the timing risk plays a critical role when investors make their investment decisions.

Reserve accounts, whose sources may come from bond proceeds, the project revenue or a reimbursement right to a creditworthy counterparty, are often used to address the risk-related issues such as paying debt service or other key expenses. However, the reserve accounts have to be sized accordingly; in other words, they need to be large enough to absorb possible delays but small enough to be cost-efficient as a project is often susceptible to negative carry (absorbing the cost of reserve accounts from the bond offering to fund construction-accruing interest at the long-term rate; this idle cash is invested in the short term and is hence a lower-yielding investment, i.e., the cost of holding a bond exceeds the income earned). Therefore, while reserve accounts may mitigate the delay risk, they may bring out the negative carry issue for the project if they are excessively sized.

iv. Consent and intercreditor arrangements

A typical infrastructure project financing has many creditors. Commercial lenders will have a complex package of documentation with covenants to prepare for any event during the contract, such as early termination. Bond documentation is less cumbersome as compared with a loan. However, events not contemplated at the time of financial close will almost certainly arise during the life of any financing. Bondholder consent will usually be required for an amendment or waiver of the relevant terms of the finance documentation. In the context of an infrastructure bond, the typical mechanism of seeking consent through a trustee is more complicated and potentially more time-consuming than interfacing with a bank experienced in project financing. Reconciling the interests of a large group of lenders (potentially commercial banks, export credit and development agencies and bondholders), often with divergent interests, can be particularly challenging. Project

companies will need to work with procuring authorities and a team of legal advisors to determine the best arrangement.

v. Understanding macroeconomic factors affecting bond repayment

Project revenues, and consequently bond repayment, may be affected by inflation and foreign exchange fluctuations. Over the life of a 30-year concession, inflation in operating costs is a significant risk. Procuring authorities can assist by indexing a portion of any availability payments payable to the project company or permitting increases in user-charges to compensate for inflation. Similarly, foreign bondholders are exposed to currency risk as the project revenues are in local currency and bond payments are in hard currency. Obviously, the ultimate solution for currency risk is developing a large domestic investor base and domestic debt capital markets. Foreign investors will want to hedge and look for currency swaps. Infrastructure assets are amongst the most difficult to hedge even when swap markets function well due to cash-flow-based project finance lending and the common need for waivers during the construction phase. It will be important that the termination payments payable under concession agreements provide appropriate compensation for the additional costs incurred in case of early termination. Most importantly, the bondholders will want assurance that the relevant procuring authority has sufficient creditworthiness (or credit support backed by the government or an MDB) to make these payment obligations enforceable.

vi. Establishing infrastructure bond-specific benchmarks

There is no benchmark yield curve solely for infrastructure bonds and terms, i.e., prices, coupons and tenors are difficult to determine. In developed economies, supply and demand determine the interest rate curve of government bonds, with the coupon on government bonds being the lowest and serving as a point of reference for other bond issuers such as corporates or SPVs. Bond market investors tend to prefer plain-vanilla investments, preferably with solid ratings attached. Standard products are easy to understand and are priced against a benchmark. However, infrastructure bonds are not standard. The underlying infrastructure asset itself is unique in nature. In reality, infrastructure bonds, especially SPV-issued bonds, are benchmarked against corporate bond indexes. This currently happens due to the lack of alternatives or lack of experience/knowledge. As a result, there is no reliable long-term yield curve, which reflects risk/return values over time. This is a challenge as bond markets can only develop if businesses can issue bonds that raise both cheaper capital and with longer tenors. SPVs will switch to bond-based financing only if the cost of capital is lower than a commercial loan. Investors need appropriate return benchmarks for infrastructure, given the distinct nature of the asset class (e.g., lower volatility of returns, higher recoveries, etc.).

vii. Strengthening credit rating mechanism for infrastructure bonds

Many institutional investors, which make up a large portion of the infrastructure bond buyers, require as a minimum an “investment-grade” credit rating. Regardless of the strength of the project company, or the infrastructure project’s risk mitigation measures, most bond issuances originating in emerging markets have lacked the ability to obtain a sufficiently robust credit rating as a result of the poor sovereign rating of the host country. Credit ratings provide investors with reliable assessment and support them in making informed decisions. Ratings form an important evaluation instrument in credit markets, especially in emerging markets where there are significant information asymmetries. The rating of bonds for greenfield and brownfield infrastructure projects is a relatively more

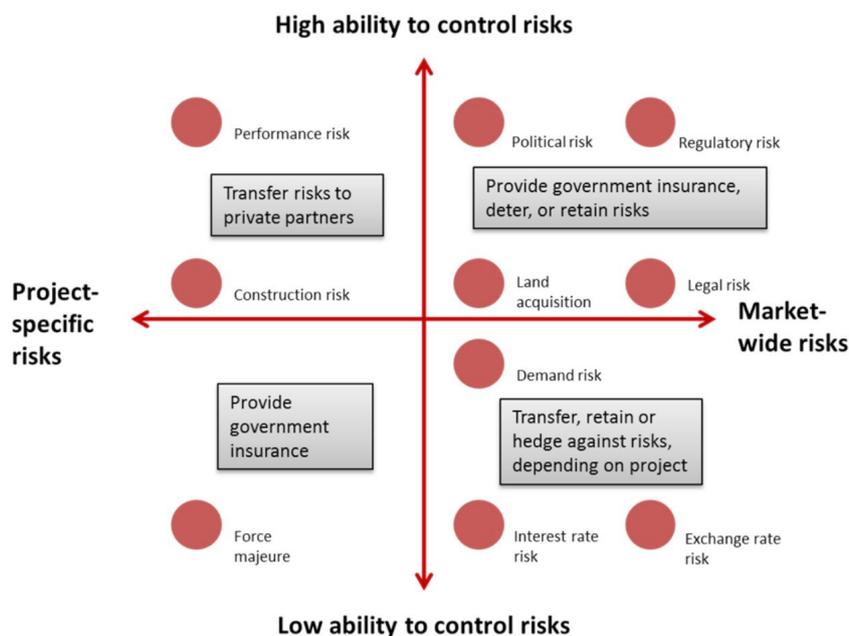


Figure 8. Risks factors in an infrastructure project

recent concept. Rating agencies have to develop methodologies that consider the specificities of infrastructure projects, such as their steady and assured annuity-type revenue stream, pass-through cost structure and the various fiscal and non-fiscal support these projects enjoy. Credit rating reflects the expected loss associated with payments contractually promised under the financing agreements of an infrastructure project, accounting for the time value of money at the rate promised to the investor or the weighted average cost of capital of the infrastructure project. The expected loss reflects, in turn, i) the likelihood of an event which will lead to the reduction in payments promised to the investor and ii) the loss severity expected when this event occurs. A step in this direction has been taken in India, where operational infrastructure projects are rated on a different framework. By introducing credit rating systems that reflect the unique nature of the infrastructure sector, countries may open up more long-term funding.

vii. Developing credit enhancement mechanisms

Once there is sufficient market support for the issuance of long-tenor infrastructure bonds, the bankability of the bonds will be largely governed by their risk profile. The lower sovereign rating of most countries in the region in itself creates a hurdle for international investors. Since most of the bond issuers are rated below the sovereign, many of these issues do not attain an investment-grade rating on their market offering. Thus, improving the risk profile of an issue is crucial for it to attract appropriate investor interest, and the same can be achieved through a combination of fiscal and regulatory policies. Structurally, the risk profile of an infrastructure bond can be attained through guarantee and insurance products and strong cross-default covenants backstopped by appropriate bankruptcy laws, a lot of which need regulatory support in favor of investor protection. The risk profile can also be improved through fiscally committed support in terms of tax benefits, duty waivers and appropriate guarantees against default by a sovereign or sub-sovereign off-taker. Initially, these guarantees can be provided on one-off MDB-supported products as seen in frontier and emerging markets. Eventually, countries would need to build in-house credit enhancement products which are more suited to domestic regulations and needs.

Box 8. Guarantee schemes for infrastructure bonds

Indonesia Infrastructure Guarantee Fund (IIGF) was introduced in 2009 by the Indonesian Ministry of Finance as a state-owned enterprise to improve the creditworthiness and quality of public-private partnership (PPP) for infrastructure projects in Indonesia. The scheme provides guarantees for single or several financial obligations of a public contracting agency that participates in a PPP consortium. IIGF will provide compensation if the economic feasibility of the PPP project is compromised due to events caused by the public contracting agency. The covered risks by IIGF include (i) the inability and unwillingness of the public contracting agency to pay and (ii) early termination or project default due to government action/inaction such as changes in law, expropriation, currency inconvertibility and non-transfer force majeure affecting the contracting authority.

Source: International Institute for Sustainable Development (<https://iisd.org/credit-enhancement-instruments/institution/indonesia-infrastructure-guarantee-fund>)

The Project Bond Initiative, a joint initiative by the European Commission and the European Investment Bank (EIB), is designed to enable eligible infrastructure projects promoters, usually public-private partnerships (PPPs), to attract additional private finance from institutional investors such as insurance companies and pension funds by providing partial credit enhancement to attract capital market investors. The mechanism of improving the credit standing of projects relies on the capacity to separate the debt of the project company into tranches: a senior and a subordinated tranche. The provision of the subordinated tranche increases the credit quality of the senior tranche to a level where most institutional investors are comfortable holding the bond for a long period. The subordinated tranche—namely the Project Bond Credit Enhancement (PBCE), provided by the EIB with EC support—can take the form of a loan, which is given to the project company from the outset, or a contingent credit line, which can be drawn upon if the revenues generated by the project are not sufficient to ensure senior debt service. The support will be available during the lifetime of the project, including the construction phase.

Source: An outline guide to Project Bonds Credit Enhancement and the Project Bond Initiative; European Investment Bank, December, 2012

ix. Broadening and deepening the investor base

In most countries in Asia, domestic banks are the largest group of investors in locally issued corporate bond markets. However, tighter provisioning and capital adequacy requirements may force them to bring down exposure. Infrastructure bonds typically follow the corporate bond profile. It is also important to broaden and diversify the investor base in order to manage volatility and reduce exposure to the sector-specific risk of one type of investor. In the absence of diversity in the investor base, any effort to extend the yield curve for long-maturity products is likely to cause the transfer of interest rate and liquidity risks from the government to the banking sector. Hence, simultaneously with market reform and the strengthening of regulatory and institutional frameworks, the governments should also make targeted efforts to promote cross-border movement of capital.

This is particularly true for the frontier and emerging markets where a local investor community is either non-existent or is not knowledgeable enough to appreciate the investment considerations of an infrastructure bond. Thus, encouraging foreign institutional investors, such as pension funds and insurance companies, will contribute to the development of long-term bond markets.

Additionally, foreign investors, often having different investment horizons and preferences as compared with domestic investors, can create improved demand structure and secondary market liquidity. The market can be opened up for foreign financial institutions to act as facilitators of institutional investment, channeling investments from overseas investors and creating a market-making ecosystem. The countries also have the possibility to work with multilateral development banks, which could issue bonds in local markets, creating a long-term maturity profile and yield curve. Both the Asian Development Bank (ADB) and IFC have successfully issued several series of local currency bonds in China, India, Korea, Malaysia, Philippines and Thailand, with the proceeds being utilized to finance local infrastructure projects, offering them long-maturity loans and a natural hedge against currency fluctuations.

Box 9. Financial regulations for local institutional investors to invest in infrastructure: The case of India

To fund infrastructure projects which typically have long gestation periods, companies need access to long-term funds. Globally, such funds have been raised via the capital markets, where the major investors are pension and insurance managers. In India, however, both these categories are governed by regulations which severely constrain their participation in an unrated infrastructure-financing product.

Of the savings of the population of India, nearly half are kept in banks or invested in mutual funds. Both these savings are of short term in nature. The balance, the long-term savings, is accounted for by insurance and pension firms. Insurance companies, which are custodians of the retirement funds and savings of millions of middle-class households, are bound by regulations stipulated by the Insurance Regulatory and Development Authority of India (IRDAI).

IRDAI stipulates that life insurers invest 50% in government bonds, 35% in other approved securities and 15% in infrastructure firms. IRDAI requires 75 percent of investment (of the insurance company's funds) in AAA-rated papers and only up to 15 percent can be invested in other investments (including rated lower than AA). Furthermore, it allows up to 5 percent of investment in A-rated or lower-rated papers. Such restrictions inhibit the development of an active bond market.

Although on paper, life insurers are mandated to invest in infrastructure, the rating requirements prohibit them from investing in infrastructure projects, which typically have an average rating of BBB when the project is under construction. IRDAI allows exposure of up to 25 percent of the net worth of companies. Since infrastructure companies are typically highly leveraged, their net worth is correspondingly low, which prevents insurance companies from lending large sums to infrastructure companies.

Pension Fund Regulatory and Development Authority (PFRDA) has no mandate to invest in infrastructure. Pension funds in India usually invest in government securities, AAA-rated papers or AA-rated papers of financial institutions.

There is a need for a sophisticated regulatory oversight, risk underwriting by the government and an overhaul of regulations, such as a different rating scale for infrastructure projects, in order to sufficiently manage risks posed by the sector and hence allow pension and insurance funds to bridge the financing gap.

Box 10. Private placement versus public placement of bonds

A private offering of bonds is targeted at specific investors who are more sophisticated in terms of their understanding of financial markets and risk factors, such as credit institutions, insurance and pension funds, sovereign funds, etc. While it compromises on the depth of market reach, private placement benefits an issuer by being a much faster process and requiring much less disclosure.

To decide whether a bond offering is public or private, the market regulator typically considers how many investors have been offered an opportunity to invest, the number of bonds being offered, their pricing and how the offering is being marketed. But the biggest factors often are the relationship of the issuer with the potential investors and the relationship of these investors among one another. If the issuer has a long-standing relationship with these investors, or if the investors are a close-knit group that invests together often, these factors could weigh in favor of finding the offering private.

The advantage of a private placement is that the issuer does not need to provide as much disclosure to investors. Also, unlike a public offering, a private placement will not normally require an underwriter, causing savings in issue expenses. A private placement can also be useful if the bond offering is required to be confidential and has received significant pre-issue traction from a select group of institutional investors.

The disadvantage of a private placement is that it significantly narrows the range of investors an issuer can reach, which will further mean that the participating investors will have to be deep-pocketed and being available to invest in much larger ticket sizes. Furthermore, because of the restrictions which are generally imposed on the marketing of a private placement offering, the process has to be maintained at the individual investor level. Also, the lack of liquidity for exit may distort the pricing mechanism and commercial terms, with it being very difficult to achieve a transparent price discovery among a small pool of participating investors.

Source: Authors

x. Improving the size and liquidity in secondary markets

The secondary bond markets in Asia, in general, are afflicted with low trading volumes and scant liquidity support. These features are inherently valued by investors in assessing the maturity

of a market that can provide them an easy pre-term exit at transparent and realistic exit costs. The biggest indicator of constrained market liquidity is in the large bid-ask spread, which is a very typical characteristic for listed bonds across Asia, implying that there is very little real-time market making by appropriate capital market intermediaries. Similarly, the corporate bond turnover ratio, which provides a measure of the value of traded bonds against total outstanding bonds, is also low. Both of these parameters indicate shortcomings in institutional capabilities in market making and underwriting large buy-ins, backed by margins, as well as in consistently procuring specific and accurate information necessary for efficient and transparent risk pricing.

In the short term, a structured pre-term exit option, backed by a bankable commitment in the form of bond buybacks and exchanges, can significantly improve liquidity. This can be employed together with building an active cash management capacity along with broadening the range of sophisticated market instruments and derivatives. In most markets, there is also a need to improve and strengthen legal infrastructure, capabilities and enforceability in respect of repurchase or “repo” agreements and derivative contracts. Key reforms may include²² (i) enhancing market architecture to provide transparency, (ii) promoting market-making activities, (iii) introducing prudential norms and risk management practices for market participants, (iv) increasing the size of benchmark bonds and extending the yield curve, (v) moving towards the market-based implementation of monetary policy by stimulating the interbank repo market, (vi) fostering institutional investment and (vii) promoting foreign participation.

Box 11. Primary and secondary capital markets

Primary markets: The primary market is where new securities are issued in the form of either equity or debt and sold directly by issuers such as companies and government entities to investors to get financing. Equity is the stock capital of a company, while debt consists of the loans taken by the business. This market, which is facilitated by underwriting groups composed of investment banks, finance syndicate or securities dealers that set the securities’ initial price and oversee the sale to investors, plays a vital role in the capital market as it is where capital formation takes place. Once the initial sale is complete, further trading is done on the secondary market. The initial public offering (IPO) is attractive to investors as they typically pay less for securities on the primary market than on the secondary market.

Secondary markets: The secondary market is where previously issued securities are bought and sold by investors. Investors come to stock exchanges such as the London Stock Exchange, the New York Stock Exchange, and Nasdaq to trade stocks that are not new, while most bonds and structured financial instruments are traded over the counter or via a broker/dealer. Primary market prices are often set in advance, but prices in the secondary market are determined by the basics of supply and demand. For instance, if most of the investors believe a stock will rise in value and rush to buy it, the stock’s price will typically rise. However, if a company fails to demonstrate sufficient earnings, its stock price may decline as investors’ demand for that security diminishes. Most capital markets actively occur in the secondary market.

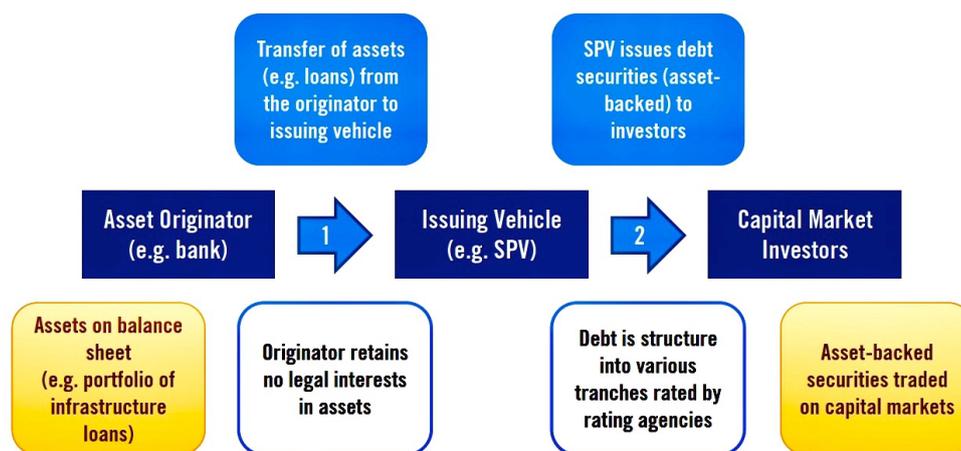
Source: Authors

²² Park (2016).

xi. Providing opportunities for securitization/refinancing

Infrastructure is an asset class which has emerged over the last three decades in a much ring-fenced financial instrument cluster. The result has been the creation of certain products which have evolved into bankable propositions irrespective of their jurisdiction or infrastructure sub-sector. Future flow securitization is one such timeless product which has been repeatedly used for raising financing in the capital markets, adjusted for the risk profile of the underlying asset and cash flows through the introduction of multi-layered credit enhancement mechanisms depending on specific project and investor needs. It is the process in which financial assets are pooled and repackaged into interest-bearing securities, with the underlying interest and principal payments being passed through to the purchasers of securities.

In Asia, an initial way to kick-start the project bond market could be to package existing loans to a project that banks have already financed into a bond that could be issued in order to refinance those loans and take them off the banks' balance sheets. This could start with an existing strong and mature project with a stable revenue stream and well-structured bankable contracts. The bank can deploy the proceeds to finance newer projects, creating an ecosystem between developers, commercial lenders and bond investors for sustained recycling of financing resources. This may, however, have issues with existing lenders as they may be reluctant to exit their senior credit position in a successful project. Also, the regulatory and tax interface becomes crucial in such refinancing, involving the stamp duty on the transfer of assets and registration of a securitized pool.



Source: Source: <http://www.imf.org/external/pubs/ft/fandd/2008/09/pdf/basics.pdf> and <http://www.unescap.org/sites/default/files/3a%20-%20ADB%20-%20Enabling%20Monetization%20of%20Infra%20Assets.pdf>

Figure 9. How securitization works.

xii. Regional Infrastructure Funds

Along with local infrastructure funds, there have also been initiatives to create Regional Infrastructure Funds for addressing intra-regional financing needs, particularly for connectivity projects. A Regional Infrastructure Fund (RIF) is a rolling infrastructure fund operated at the regional level and for which regional partners are held accountable. Its primary purpose is to facilitate the timely provision of capital in regionally or sub-regionally significant infrastructure that supports the delivery of planned growth as set out in the regional economic strategy. A RIF also provides an effective mechanism for progressing projects from outline proposals to regionally prioritized schemes with robust financial, economic and business cases. A RIF will typically need to be designed to reflect the particular infrastructure needs and priorities of the region in question, as well as specific governance requirements.

RIFs can also be created as regional companies that would finance and manage regional projects for specific sectors, such as roads, railways, seaports and energy. Major Asian countries could invest in these companies initially at the sovereign level to nurture project development, thus creating a platform for larger private sector participation at a later stage. Subsequently, once operational, the project companies could raise funds in the capital markets through equity or project bonds by monetizing predictable annuity payments. The sale of public shares throughout the region would help deepen equity markets and provide a needed outlet for household savings and institutions' investment funds.

xiii. Local Infrastructure Investment Trusts

Local Infrastructure Investment Trust (LIIT) is an emerging mechanism for cross-border debt and equity financing. LIIT invests in long-term equity positions in local utility corporations and raising resources through equity, quasi-equity and debt issues in domestic and international markets. LIIT would buy equity positions in local utility companies from first-round investors, including

Table 3. Specifics of Asian and ASEAN infrastructure funds

Asian Infrastructure Fund/AIF Capital	ASEAN Infrastructure Fund
<ul style="list-style-type: none"> • Hong Kong-domiciled fund with USD750 million closed in 1994 with a fund life of ten years; current assets under management (AUM) >USD2 billion. • A Pan-Asian approach to invest in infrastructure projects engaged in power generation, T&D, gas production and distribution, transportation, telecom, water supply and waste management. • Co-sponsored by Frank Russell Company with initial investors from ADB, IFC and Asian Infrastructure Development. • Early investments in project finance included the first IPP in India, IPP business in Taiwan and China, fixed-line telecom in Philippines and container terminal and warehousing in Hong Kong. 	<ul style="list-style-type: none"> • An innovative regional co-op and integration initiative for funding the region's large unfunded infrastructure requirements. • Formed in 2012 with ADB support and domiciled in Malaysia with a corpus of USD485 million; investments are from Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic and Malaysia. • The objective is to provide financial assistance of up to USD300 annually to the ASEAN region's infrastructure projects, contributing to poverty reduction, inclusive growth, environmental sustainability and regional integration. • First investment of USD25 million loan in T-network expansion project in Indonesia.

Source: Authors

infrastructure private equity funds, and would sell its shares and issue bonds to institutional investors, insurance companies and pension funds. Such a vehicle can provide the benefits of guarantees to projects in the absence of formal project guarantee mechanisms and project insurance.

5. Role of development finance institutions (DFIs)

Multilateral development banks can play a crucial role in deepening the regional capital markets by playing the role of an honest broker and coordinator in regional forums. Additionally, at the country-specific level, MDB support can take the form of augmenting or supplementing national budgets through sovereign lending, leveraging private sector participation through guarantees covering political and credit risks, financing feasibility studies through technical assistance and providing project-structuring support, and improving business and governance practices. To increase the local-level retail participation in capital markets, there is a need to de-risk projects from currency and political risks. Guarantees and credit enhancement by MDBs can play an important role in this regard with mechanisms to transfer specific risks from investors and lenders to guarantee providers.

Worldwide, IFC has played a significant role in developing the local capital markets by facilitating local currency bond issuance by project companies. Over the past five years, IFC has committed over USD2.3 billion equivalent in 13 local Asian currencies, being the first international issuer of CNY “Panda” bonds (2005 and 2006), followed by CNH Dim Sum Bond (2011) for the utilization of proceeds in mainland China. It was also the first multilateral institution to issue a green bond in the offshore markets and create a long-term currency swap in several markets to create an ecosystem for long-term local currency financing. In India, IFC has successfully launched both onshore (“Maharaja”) (2014) and offshore Rupee (“Masala”) bond programs (2013–2015), creating yield curves in both markets. It was also the first DFI to provide the first Partial Credit Guarantee on a corporate bond issuance in the Indonesian domestic bond market (2014).

Likewise, the Asian Development Bank has run programs in several countries such as Thailand, Bangladesh, Mongolia, Pakistan and India, among others, targeting the development of local capital markets to support infrastructure financing and other investments. The programs typically support (a) policy reforms to establish a legal and regulatory framework for the market to grow, (b) the strengthening of the local market regulator and regulatory environment, (c) the broadening of supply of financial instruments and (d) the improvement in market efficiency, market infrastructure liquidity and transparency.

6. Conclusion

There are general awareness and consensus in the infrastructure community that there is a huge potential pool of liquidity from the bond markets. This pool can be used to finance a portion of the massive infrastructure needs in emerging markets and developing economies. However, the participation rate of bond markets remains considerably low, not just in developing economies but also in developed countries.

There are several barriers to being able to effectively channel bond market investor flows into the infrastructure sector, including the absence of a significant project pipeline to enable the qualification of infrastructure projects as an investable asset class, the inherent nature and

risks associated with infrastructure projects, the lack of adequate information and the inability of institutional investors to assess risks and monitor the projects over the full life-cycle of the project.

The binding constraint in developing countries in Asia-Pacific is the development of sovereign bonds and capital market infrastructure. While there are projects under preparation with MDB support, the willingness of the governments to develop its capital markets and associated regulations will accelerate the shift towards project bond financing.

Strategies to move forward in the paper provides a reasonable approach to change the business-as-usual mode from commercial bank financing to debt capital market financing. The region is diverse in terms of market maturity. Each country will need to devise its own path best suited to market conditions. The next step would be to formulate the country-specific pathway to the development of the project bond market.

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