

Tapping Capital Markets & Institutional Investors for Infrastructure Development



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The darker area of the map represents the members and associate members of ESCAP.

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ABSTRACT

The paper studies the possibility of using capital markets to channel more resources for infrastructure development while mobilizing assets managed by institutional investors such as pension funds and insurance companies. To this end, the paper is structured as follows. First, it analyzes the level of capital market development in the region, and finds that most markets are still at a nascent stage in many economies and that banks dominate private financing in Asia and the Pacific. Second, it reviews the size of institutional investors in the region and suggests that prudential regulation might need to be adjusted to enable more infrastructure investments. Third, it highlights that different modalities are available to investors seeking infrastructure exposure and presents initiatives launched by different countries to support the development of infrastructure-related instruments. Fourth, the paper proposes a series of policy actions that governments could implement to further tap this source of financing. The paper concludes by proposing criteria to tailor the different options to each country's circumstances.

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INTRODUCTION

Countries in Asia and the Pacific face requirements in the order of trillions for their infrastructure development in the coming years (infrastructure is defined here as transport, power, telecommunications, and water supply and sanitation).

While the banking sector has traditionally played a major financing role, stricter capital adequacy requirements and maturity mismatches may constrained infrastructure lending in the future. Therefore capital markets should complement bank financing and provide an alternative intermediation mechanism between investors and project developers. For instance, capital markets are a way to connect investors seeking for higher yield investments to infrastructure projects in emerging countries. Likewise, capital markets can channel the abundant savings available in Asia within the region instead of having these resources flowing to more mature economies.¹

Against this backdrop, the objective of this paper is to examine how to tap such tremendous potential. To do so, the paper is structured as follows: the first section reviews the state of capital market development in the region; the second assesses the potential of institutional investors as a source of finance; the third presents different investment modalities; the fourth suggests a set of policy recommendations and the fifth concludes by identifying strategies tailored to country situations.

1 CAPITAL MARKET DEVELOPMENT

1.1. Diverse Stage

To finance infrastructure development, capital markets need to be relatively developed. While Asia is home to international hubs such as Hong Kong and Singapore, the region also includes low-income economies in which capital markets are still at an early stage of development. For example, financial systems differ from each other in terms of market size and participants as well as from an institutional and regulatory point of view.

The map provides a snapshot of the region's financial market development based on an index conceived by the International Monetary Fund (IMF), which comprises the following indicators: Stock market capitalization to GDP; Stock market total value traded to GDP; International debt securities of government to GDP; Total debt securities of financial corporation to GDP; and Total debt securities of nonfinancial corporation to GDP.²

This map illustrates the diversity in the region and suggests that capital markets will need to be further developed in some countries before they can contribute significantly to infrastructure development. For instance, Central Asian countries as well as those in the Pacific have particularly underdeveloped capital markets with many of them having neither a bond market nor a stock exchange.

1.2. Bank Domination

Another key feature of the financial sectors development in the region is the main role played by banks. Loans represent over 80 per cent of total debt funding for most Asian economies (see Figure 2). This is different from the US market where corporate bonds are a major source of financing.

The balance between loan and bond has yet slightly changed over time in the region. Some countries have witnessed their capital market taking a growing role while others have seen banks consolidating their dominance. For example, corporate bonds in China have increased more rapidly than bank lending thereby pushing down the ratio of bank loans as of total debt to 86.6% in 2015 compared to 91.7% in 2005. The overall size of the financial sector also grew exponentially from 140.3% to 243.6% (Total funding as of GDP). In a similar fashion, bank lending in the US has somewhat been substituted by corporate bonds with the same ratio declining from 69.7% to 33% over this ten-year period.

On the other hand, Japan shows the opposite picture with the ratio of bank loans as of total debt increasing from 66% in 2005 to 90.7% in 2015. This may be explained by the prolonged period of monetary easing and low interest rates

Figure 1: Financial Market Development Index (2014)

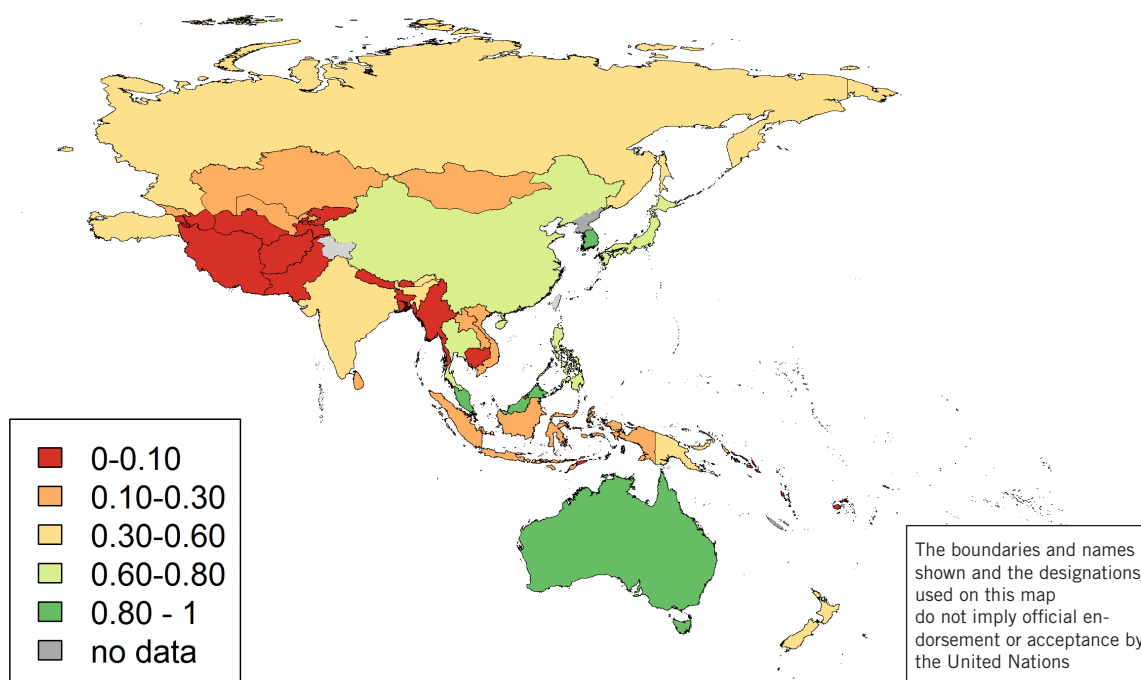
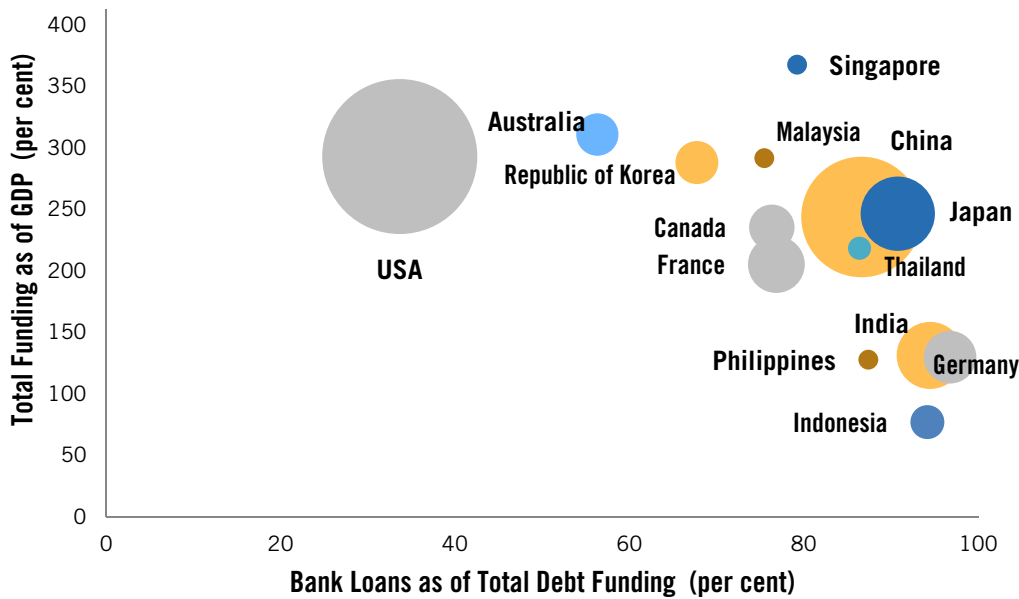


Figure 2: Funding Structure in Selected Countries (2015)



Remark: Total Funding is the sum of bank loans, corporate bond funding and equity funding. Bubble sizes are proportional to GDP. Source: Authors' calculation based on data from IMF, BIS, ADB, World Bank

in Japan, which has made bank lending cheaper and abundant. For instance in the project finance industry, the Japanese major banks, such as Mizuho, MUFG and SMBC, have been able to provide competitive pricing for project finance while keeping those loans on their balance sheet. This has limited the need for capital market financing for infrastructure projects. Likewise, the high liquidity of Filipino banks made possible the financing of PPP projects domestically.

1.3. Bond versus Loans

The overall bank domination in the region is not an issue per se. This might nevertheless create limitations for infrastructure project financing, notably with regard to:

- **Maturity:** Infrastructure projects require long-term loans to avoid refinancing risks.³ However, banks have generally short-term liabilities (such as deposits) and holding long-term assets on their balance sheets generate maturity mismatches⁴. Capital markets can instead mobilize investors having a long-term horizon such as pension funds, insurance companies and sovereign wealth funds.
- **Credit limit:** Banks have typically single borrower limits to avoid the concentration of risks on a few counterparts. This put a ceiling to their capacity to extend loans to the few large private companies capable of embarking on infrastructure projects. On the contrary, bonds spread credit risks over a large pool of investors. Also, bonds, unlike loans, are tradable so the credit risk of bonds may be transferred to other parties before maturity.

- **Pricing:** Bank regulations, such those of Basel III, tend to make loans relatively more expensive through stricter rules in terms of provisions, capital adequacy and liquidity ratios.⁵ Such regulations are pushing banks to consider moving their project finance portfolio off their balance sheets (for instance through securitization).

These limitations and tighter banking regulations highlight the need for bonds to complement loans for infrastructure financing. Bank financing will nevertheless continue to play a key role, especially in the initial phase of an infrastructure project where the risk is typically higher. Indeed, banks are better equipped to manage construction risk and have specialized teams that closely monitor projects during their early days. Also loans, unlike bonds, allow for gradual disbursement of funds in line with the needs of an infrastructure project, thereby avoiding negative carry forward for the project owner.⁶

During the design/construction phase, it is also common for project developers to request waivers to debt covenants and restructure the debt in order to cope with unforeseen events. While such renegotiation can be done relatively easily with banks, it is more complex with bond financing. The latter could require negotiating with a multitude of bond holders. To have the best of both worlds, the ideal scheme is to finance projects initially through loans and then refinance them through bonds after the construction phase.

2 INSTITUTIONAL INVESTORS

Mobilizing institutional investors' resources can be a "game changer" for infrastructure. The OECD estimates that their assets under management reached \$70 trillion as of 2013, mainly concentrated in government debt instruments. If only a small fraction of these resources are allocated to infrastructure projects, the impact will be significant. For instance, assuming a shift of five per cent in Asian institutional investors' allocation in favour of infrastructure over the next ten years would create an additional annual flow of around \$80 billion. However, this would require the availability of sufficient investable infrastructure assets in the region and a structural change in investors' behaviours.

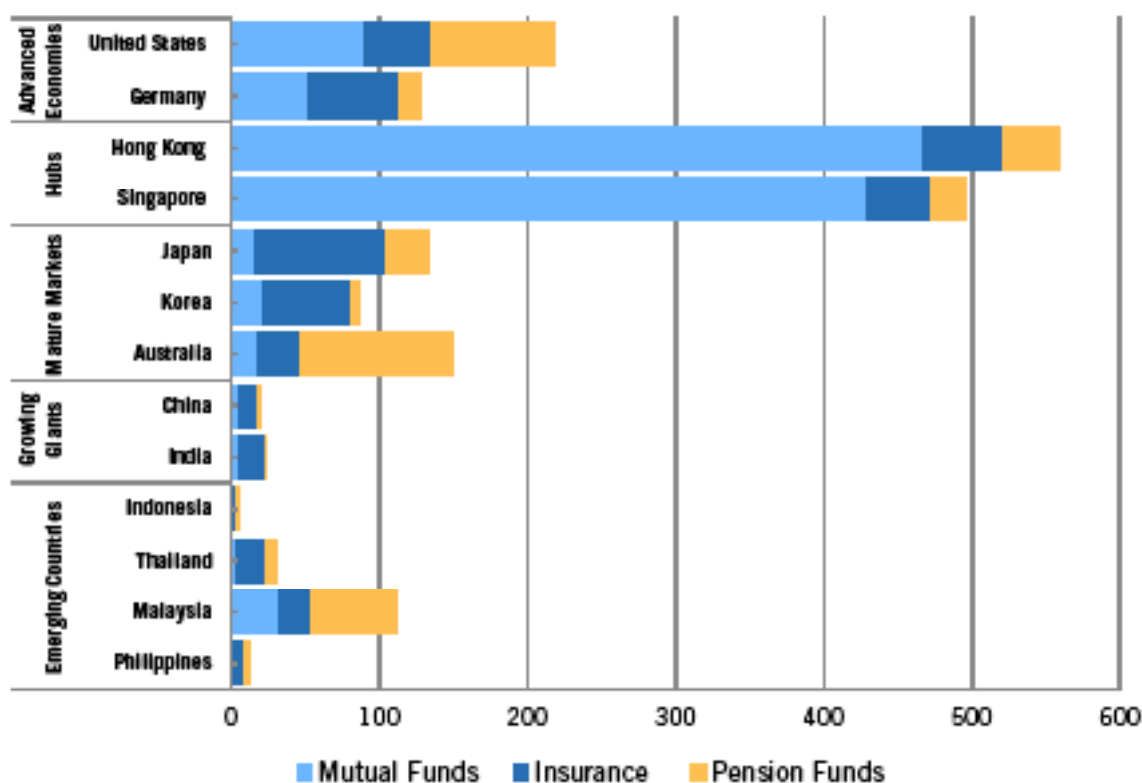
This is nevertheless possible as the long-term nature of infrastructure projects matches the long-term liabilities of institutional investors, such as pension funds, insurance companies and sovereign wealth funds. Infrastructure is thus an interesting asset class for them, which offers opportunities in terms of return, portfolio diversification (due to their low correlations to other asset classes) and inflation protection.

2.1. Status

A study from the World Economic Forum estimated around 24 per cent of the world's total asset under management is from the Asia-Pacific region with the following distribution: insurance (54%), pensions (25%) and sovereign wealth funds and other fund (21%).⁷

The size of institutional investors among countries differs yet widely. Hong Kong SAR and Singapore have the largest asset size given their position as regional financial centers (more than 50 per cent of their assets derived from foreign capital inflows). Meanwhile, the asset size of institutional investors to GDP in countries such as Indonesia and Philippines is only about 6% and 13% respectively.⁸ Obviously, countries with strong local institutional investors have more potential to tap these investors for infrastructure development.

Figure 3: Institutional Investors Structure (GDP% - 2014)⁹



Source: World Bank, 2016, Global Financial Database, BIS, IMF database and <http://www.sifma.org/research/statistics.aspx>

2.2 Prudential regulation

Institutional investors have regulatory limits on the level of risk they are allowed to take in order to protect the savings they manage and ensure their solvency. They need to consider the security, quality, liquidity of their portfolio and avoid concentration. For instance they have investment limits such as no more than 5% of assets invested with a single counterpart. The limits are also based on the asset class characteristic (e.g. unlisted securities), the currency denomination (e.g. a certain percentage of assets must be denominated in the same currency as the liabilities) as well as the investment credit rating.¹⁰ For instance, non-investment grade securities are usually prohibited or limited more strictly. In the context of infrastructure, rule-based investment regulations may prescribe investment in unlisted infrastructure companies (as in Japan and Republic of Korea), direct investment in projects (as in Thailand), and infrastructure funds (as in China).¹¹

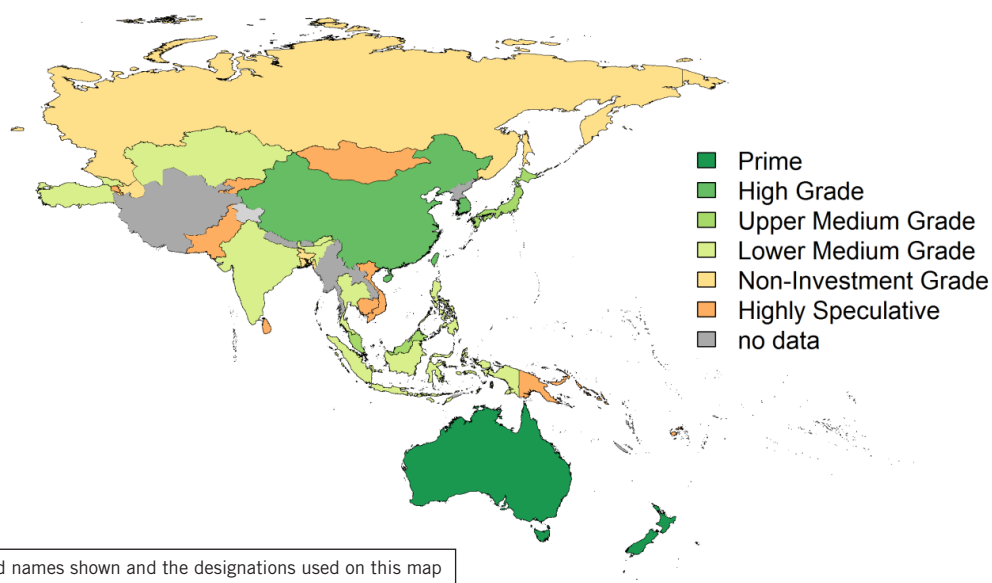
As mentioned above, such regulation typically exclude non-investment grade (i.e. rating lower than BBB) often found in emerging countries thereby limiting significantly the potential to attract foreign institutional investors. In the region, there are about 30 countries with sovereign ratings assigned by major global rating agencies (i.e. Moody's, Standard & Poor's and Fitch Ratings) with only 15 countries with "investment grade" (Figure 4).¹²

Since global rating agencies consider the country rating as a cap for any individual company rating, infrastructure project cannot be rated higher than the country.¹³ Unfortunately (and quite logically), it is the countries with the lower rating that have the highest demand for infrastructure development.

The ongoing shift in developed countries from rule-based regulation to risk-based capital regulation might offer slightly more flexibility in the future. In contrast to strict investment limits, risk-based requirements tend not to put restrictions on investments, but instead impose a higher risk charge for higher risk investment, creating a disincentive for these kinds of investments but still potentially authorizing them.¹⁴

While foreign institutional investors have to rely on international rating agencies, domestic investors can follow credit ratings provided by local agencies, which have a different approach regarding the country risk. In addition domestic investors have their liabilities in local currency thereby providing them with a natural hedge. Therefore it is important to improve institutional investors' capability in assessing infrastructure projects rather than imposing prescribed limitations and narrow investment mandates.

Figure 4: Sovereign Rating of Selected Countries

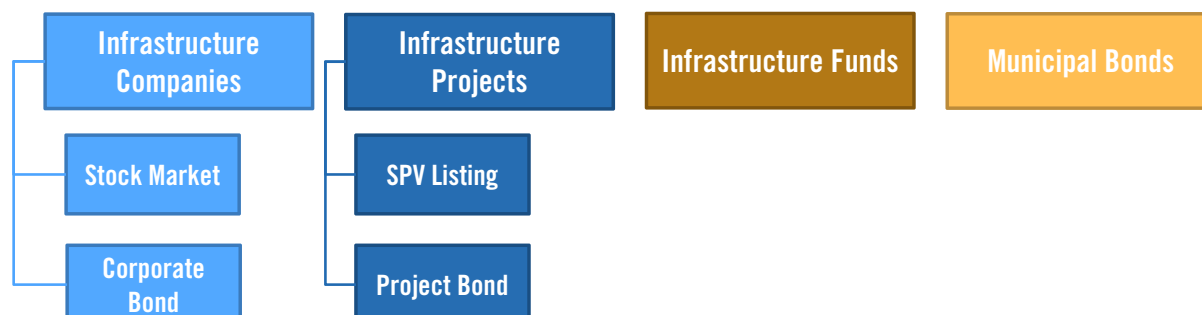


The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations

Source: Based on Moody's ratings accessed from <http://www.tradingeconomics.com/country-list/rating>

3 INVESTMENT MODALITIES

Figure 5: Type of Capital Market Investments in Infrastructure



Investors have roughly four options to channel funds to infrastructure development via capital markets. The first one is to invest in infrastructure companies as a proxy to infrastructure projects. The second option is to finance infrastructure projects directly, the third one is to go through listed infrastructure funds and the fourth one is to purchase municipal bonds having a large infrastructure component. Institutional investors could also finance projects directly via unlisted instruments, such as private equity funds, but this is outside the scope of the paper. The different modalities are illustrated in Figure 5.

3.1. Infrastructure Companies

Infrastructure companies could raise both equity and debt on capital markets to finance their activities.

i) Equity

By issuing equity on capital markets, infrastructure companies mobilize financial resources and may use these resources to participate in infrastructure projects. However, this is only possible if these companies have access to a developed stock market. Of the 53 countries in the Asia-Pacific region, 35 have a stock exchange though at different level of development.¹⁵ In addition, with the exceptions of a few countries, market capitalization is relatively limited in the region (see Figure 6). Furthermore the liquidity in the Asian equity markets tends to be low (see Table 1), which reduces their attractiveness for investors seeking the possibility of rapid exits at a stable price.

Where stock markets are developed, infrastructure companies have typically been large issuers. For instance, it is estimated that listed infrastructure and utility companies represent around 5-6 per cent of the equity market universe globally.¹⁹ In the region, 30 of the largest publicly listed

Figure 6: Stock market capitalization to GDP (% - 2015)¹⁶

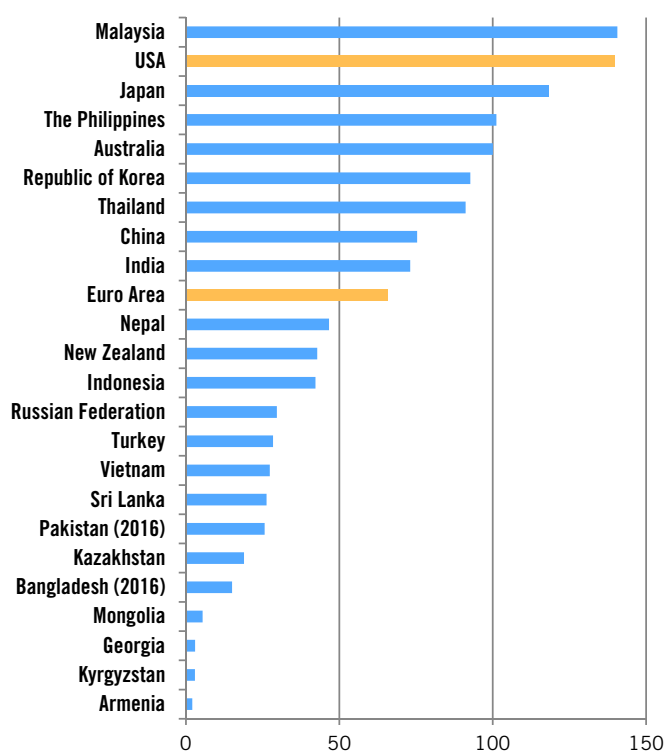


Table 1: Stock Market Turnover Ratio (2015)^{17, 18}

Countries	Stock Market Turnover Ratio (2015)
Kazakhstan	7.6
Sri Lanka	8.6
Philippines	16.1
Indonesia	21.2
Malaysia	29.1
Vietnam	36
India	50.9
Korea	149.8
Japan	113.8
World	162.9

infrastructure companies - that constitute the S&P Asia Infrastructure Index - have a total market capitalization of around \$260 billion. These companies are mainly in the utilities sector (39.5%) followed by the industrials and energy sectors respectively with 38.7% and 21.8%.

ii) Corporate Bonds

Regarding corporate bonds, Asia is behind other regions. The US and European markets have respectively \$22 and \$18 trillion outstanding corporate bond issues compared to \$3 trillion in Asia (as of 2014).²⁰ In the region, only a limited number of countries have a developed local currency bond market such as the Republic of Korea and Malaysia (see Figure 7). Significant progress has nevertheless been achieved in recent years in other markets such as China, Thailand and to a lesser extent The Philippines.

Again, when there is a developed corporate bond market, the issuances have been dominated by infrastructure related companies (see Figure 8). For example, in China, Infrastructure-related entities, such as SOEs, are among the largest corporate bond issuers. Likewise, Indonesia's corporate bond landscape is dominated by mining and utilities firms which issued more than half of all bonds in 2009-13.²²

3.2. Infrastructure Projects

Investors have also the possibility to invest directly in infrastructure projects by acquiring equity in the Special Purpose Vehicle (SPV) created for these projects as well as through project bonds.

i) SPV listing

Project sponsors wishing to realize an infrastructure project often establish a dedicated project company known as a "Special Purpose Vehicle"—or SPV—to acquire financing and implement project activities. This legally isolates the parent organization from direct exposure to the financial risks associated with a project. If the SPV is listed on the stock exchange, investors can invest directly in the project. To facilitate SPV listing, the Philippine Stock Exchange changed its listing rules in 2016. Under the revised rules, a company without the required 3-year track record may still apply for listing on the stock exchange if they comply "with the rest of the general listing requirements set forth in the Philippine Stock Exchange Main Board." The project needs though to have completed the construction phase.²⁴ The same types of criteria apply on the Thai stock exchange.²⁵

Figure 7: The size of local currency bond market in selected countries (% GDP)²¹

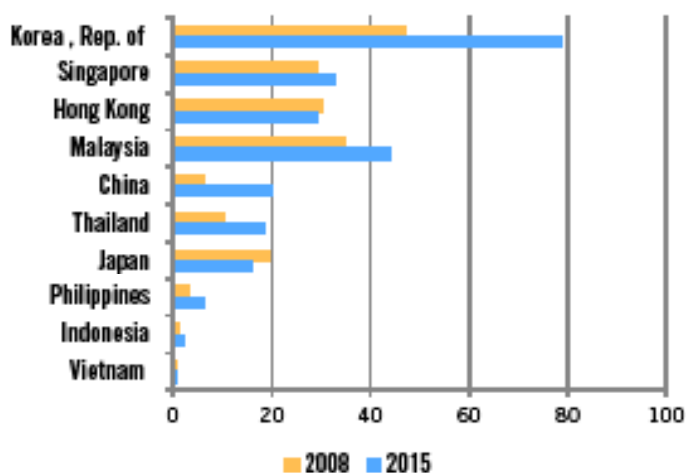
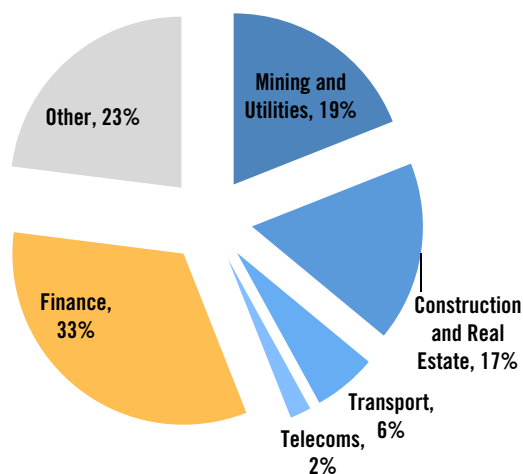


Figure 8: Percentage of total corporate bond issuance in Asia (2009-2013)²³



Infrastructure companies might also create "Yieldcos" for project producing a predictable cash flow, for instance through long term contracts such as those found in the energy sector. A "Yieldco" is a company formed to own operating assets. These assets are placed in a new subsidiary to separate them from other more volatile activities of the parent company (e.g. project development and R&D). Part of the subsidiary shares are then listed on a stock exchange through an initial public offering (IPO). Although this kind of structure is well developed in North America, it has yet to take off in Asia.²⁶

ii) Project Bonds

Project bonds are a kind of debt instrument used for financing stand-alone infrastructure projects, for which a special purpose vehicle (SPV) is formed. The SPV issues a project bond, the creditworthiness of which depends on the cash flow performance of the underlying infrastructure project. This is quite different from corporate bonds, which rely on the balance sheet of the issuing entity.²⁷

Globally, project bonds accounted for about 10% of global project debt in the long term from 1994 to 2012 and are historically more commonly found in North America (e.g. Canada). Project bond financing dropped back with the financial crisis but markets have revived since although the overall volumes remain small (\$36 billion in 2013, which is less than 0.1% of global GDP). In Asia, the volume of project bonds ranged between \$1 billion and \$3 billion in recent years.²⁸ Maturity seems also to be shorter in Asia than in other markets. While in advanced economies the average maturity of issued infrastructure-related bonds is around 15 years, in emerging Asia it is only around 8 years (see Figure 9).

However, some countries have managed to use project bonds quite extensively such as Malaysia, which has been successful in financing its infrastructure development through the issuance of sukuk (Islamic bonds structured to generate returns for investors without contravening Islamic law).²⁹ For example, the largest national highway concessionaire, PLUS Berhad, issued sukuk worth several billion dollars in 2012, notably for acquiring the rights for five toll concessions.³⁰ Project bonds are also used to refinance infrastructure projects. They have, for instance, been used to refinance the Mersin International Port project in Turkey, for which a seven-year bond was issued for \$450 million in 2013.³¹

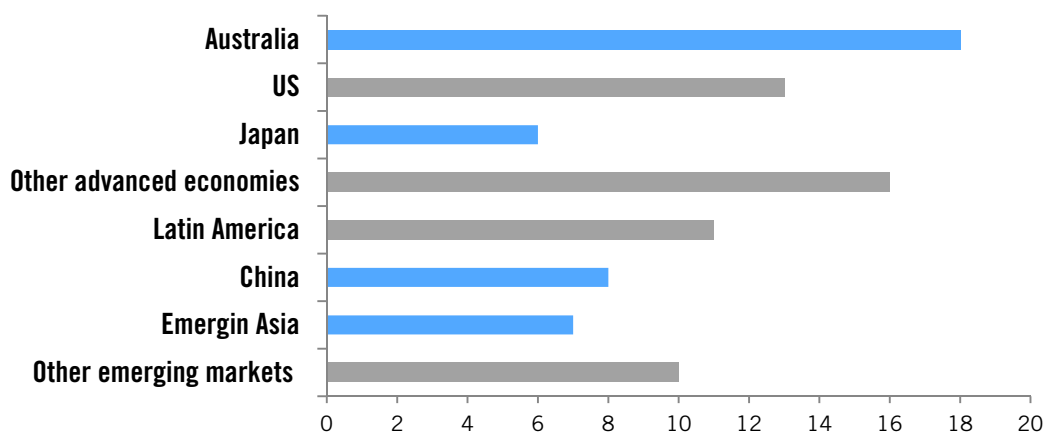
3.3. Infrastructure Fund

Infrastructure funds are another intermediary mechanism between investors and infrastructure projects. They serve as a vehicle to pool resources, skills and experiences from different investors while achieving economies of scale. Specialized skills are required for structuring and assessing infrastructure investments and it might not be efficient for every investor to develop such expertise internally. In 2015, seven Asian-focused infrastructure funds reached financial close securing a combined \$5.3 billion (nearly double the capital raised in 2014).³²

Although a large chunk of infrastructure funds are not listed on capital market, listed instruments have also been utilized. For example, the listed Macquarie Korea Infrastructure Fund, which was set up in 2002, has contributed to one port and eleven road projects through equity, subordinated debt and senior debts.³³ Listed infrastructure funds have also been active in Australia and Singapore for many years.

In Thailand, infrastructure funds have also been established to raise capital from both individual and institutional investors to finance infrastructure projects across the country. The largest one so far is the BTS Rail Mass Transit Growth Infrastructure Fund (BTSGIF), which raised through an IPO about \$2 billion in April 2013. Proceeds from the IPO were used to buy the rights to future net farebox revenues of the Bangkok mass rapid transport system, the Bangkok Skytrain, for the remaining concession years (i.e. until 2039 / net farebox revenues = farebox revenues - operating costs and capital expenditure).³⁴ Such type of structure also allows state-owned enterprises to recycle their operating assets in order to generate cash flow for new projects.

Figure 9: Average Maturities of Infrastructure-Related Debt Securities Bonds



India has also been active on this front with Infrastructure Debt Funds (IDF) launched in 2013 as an intermediary vehicle capable of refinancing PPP project loans once they are operational through the issuance of bonds. After 3-year of operation, the level of refinancing has been limited but it is expected to increase in the coming years.³⁵ Likewise, Infrastructure Investment Trusts have been established to refinance PPP project equity investment, which can be an interested concept for other countries to consider (see Box 1).

On a regional level, the ASEAN Infrastructure Fund was launched in 2012 to address the region's infrastructure needs. While the fund initially provides loans from its own resources, it is expected that it will issue debt in the coming years to increase the resources available for infrastructure financing. These debts could be purchased by central banks thereby offering a new avenue to invest foreign exchange reserves.

3.4. Municipal Bonds

With the growing level of urbanization, municipalities are under strong pressure to deliver infrastructure services such as public transport systems. To finance such development, local government can issue bonds. For example, municipal bonds have been particularly popular in the United States where tax exemption made them attractive to investors. Also in Asia and the Pacific, this type of instrument has been flourishing in countries such as China where local governments PRC were scheduled to issue about CNY6.2 trillion (around \$1 trillion) of securities in 2016, compared with CNY3.8 trillion in 2015.³⁶

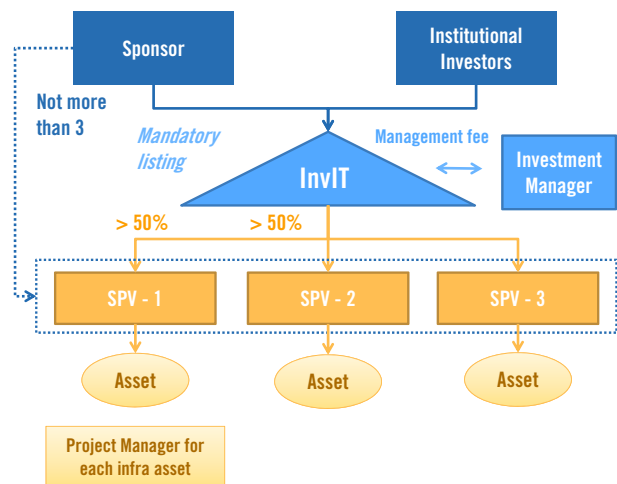
Municipal bonds can usually attract funding at a low cost given the implicit guarantee they enjoy from central government (although assessing their credit worthiness is difficult). They are also generally subject to a less stringent level of oversight than the corporate bond market. The corollary risk is that municipalities might pile up debt thereby creating fiscal risks in the long run.

Box 1 : Infrastructure Investment Trust (InvIT) in India

The Securities and Exchange Board of India (Sebi) issued InvIT regulations in 2014. For sponsors, InvIT is a way to unlock tied up capital in infrastructure projects by transferring operating and revenue generating infrastructure assets to a Trust. They have though to keep a minimum percentage and the capital raised has to be used for repaying at least 50% of the debt. For institutional investors, InvITs creates investment opportunities in infrastructure projects.

While the success of InvIT has been limited so far, several Indian companies have initiated an approval process for this type of instrument such as IRB Infrastructure Developers Ltd, IL&FS Transportation Networks Ltd, Sterlite Power Transmission Ltd and Reliance Infrastructure Ltd and MEP Infrastructure Developers Ltd.

Source: [http://www.ey.com/Publication/vwLUAssets/EY-Infrastructure-Investment-Trusts/\\$FILE/EY-Infrastructure-Investment-Trusts.pdf](http://www.ey.com/Publication/vwLUAssets/EY-Infrastructure-Investment-Trusts/$FILE/EY-Infrastructure-Investment-Trusts.pdf)



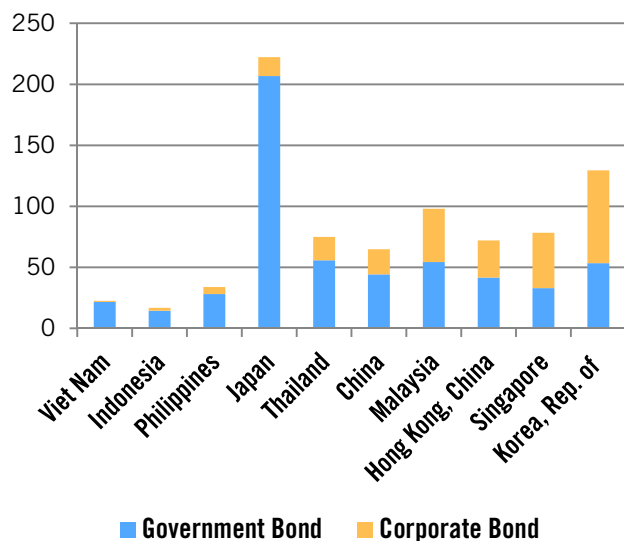
4 POLICY RECOMMENDATIONS

While the previous section provides a comprehensive overview of the different investment modalities to finance infrastructure through capital markets, the following one focuses on the actions needed to extend such financing source and make it available in more countries.

1. Developing domestic market

Financial markets in many developing countries are relatively underdeveloped in terms of size, liquidity and maturity, which impede the channeling of long-term savings to long term investments. In particular few countries have a developed corporate bond market as illustrate in Figure 10. Liquidity and maturity are also restraining the possibility of using bonds for long-term infrastructure projects (Viet Nam maturities are for instance relatively short). Therefore deepening local capital markets is needed if these markets have a greater role to play for infrastructure financing.

Figure 10: Size of Government and Local Corporate Bonds in of % GDP-June 2016 ³⁷



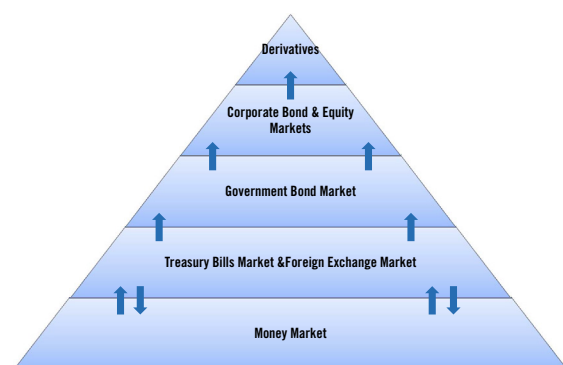
i) Incremental Process

To develop local capital markets, countries need to follow an incremental process such as the one described in Box 2. Such process has been observed in the region where countries such as Viet Nam, Indonesia and the Philippines have first established a government bond market before the corporate one. Similarly, project bonds only emerge when

there is a developed corporate bond market. This incremental process means that each country should follow a strategy based on its current market development stage. Also it seems important to first develop a relatively strong local financial market before open it to foreign investments.

Box 2 : Sequencing approach to financial market development

Typically, the *money market* (i.e. very short term debt securities usually issued by governments and financial institutions) precedes the other segments because of its central role in price discovery and interest setting.³⁸ Money markets are the medium through which central banks intervene and where financial institutions manage their liquidity by lending and borrowing to and from each other. The *foreign exchange market* shares a lot of similarities with the money market except that each transaction involves the exchange of local and foreign currency. The different market segments are however interrelated. For instance, a liquid money market relies on adequate depth in *government bonds* as bonds are typically used as collateral in interbank lending (repurchasing agreements). A well-developed government bond market also works as a catalyst for establishing appropriate bond market infrastructure (with expected positive spillovers for other fixed income markets) and government bond yield curve serves as a price reference for *corporate bonds*. Finally, the development of derivative markets requires well-developed bond and equity markets as they constitute the underlying assets of *derivative* instruments.³⁹



Source: Managing risk in financial market development: The role of sequencing, Cem Karacadag and others, 2003

ii) Bond market determinants

The previous sections highlighted that bond markets, in particular corporate bond markets, are relatively underdeveloped in the region. Researchers have tried to determine the key factors for such market development. Studies identified that high inflation volatility, for instance, can be a constraint to such development as it creates uncertainty regarding real returns for investors.⁴⁰ In this respect, a greater number of inflation indexed bonds could signal government commitment to inflation control. For example, the Reserve Bank of India allowed inflation indexed bonds in 2013 and 2014. Such financial products provide hedging opportunities for investors.⁴¹

The importance of credit right protection was also stressed in different studies.⁴² For example, debt holders need to trust that governments will adhere to the rule of law and contracts be enforced. In the region, trust seems to be lacking in several of the region's countries as illustrated by the 2016 rule of law index where four Asia-Pacific countries ranked in the last ten out of 113 countries surveyed.⁴³ In particular, treatment of bankruptcy is of importance for investors. For instance, corporate-debt default in China in 2014 shows that defaults have to be resolved in a predictable way via bankruptcy proceedings rather than treated as idiosyncratic events managed through a sharing of losses among stakeholders largely independent of their position in the capital structure of the borrower.⁴⁴

For the successful development of bond markets, there is also the need to address the low liquidity level which has been a persistent issue in many markets throughout the region. It is also worth noting that a government bond market does not lead automatically to the development of a corporate bond market. For instance, a reason for an underdeveloped corporate bond market can be the higher cost of issuing corporate bonds due to the higher volume of documentation required in comparison to bank lending. Regulators should investigate ways to lessen transaction costs without compromising the need of investors for transparency and security.

iii) International support

To further develop bond markets in the region, countries have the possibility to work with multilateral development banks, which could issue bonds in local markets for this purpose. For instance, ADB was also the first foreign issuer in the domestic capital markets of China (co-issuer with IFC), India, Republic of Korea, Malaysia, Philippines and Thailand. These issuances serve as benchmark for lower-rated issuers while also attracting investors unfamiliar with a specific currency. To be successful, such issuances should contribute to increase market liquidity, create lon-

ger tenors and result in subsequent issuers. Once markets are developed, infrastructure companies and projects may raise more easily long-term financing and access a wider pool of financiers.

2. Facilitating foreign investment

Countries also have to address issues such capital controls and the lack of foreign exchange hedging instruments in order to attract foreign investors into infrastructure investments.

i) Capital Controls

Progressive capital account liberalization has eased market access to foreign investors although there are still limits on nonresident to hold and trade domestic securities in several countries. For example, India has put restrictions on foreign investment in rupee denominated bonds.⁴⁵ In the same vein, Thailand only grants approval to foreign entities to issue baht bonds on the condition that they keep the proceeds in baht and use them in the country.⁴⁶ Further, most of the countries in the region have foreign exchange restrictions to mitigate vulnerabilities stemming from capital outflows. However, these restrictions also entail costs such as a low level amount of investments by nonresident institutional investors, which adversely affects market development in these countries. Countries in the region have thus to balance the negative and positive effects of capital control policies.

ii) Hedging instruments

To enable larger international allocations from institutional investors, hedging instruments, such as interest and currency swaps, are needed. However, derivatives markets are relatively underdeveloped in Asia compared to other regions. While the derivative market value represents 15 per cent of its underlying market in Asia, it accounts for 35 per cent in the US and 50 per cent in Europe (as of 2012).⁴⁷

Initiatives have been launched to overcome this issue. For example, the Reserve Bank of India (RBI) has been working with the Securities and Exchange Board of India (SEBI) to allow nonresident institutional investors to hedge currency risk with exchange-traded currency futures.⁴⁸ At the international level, the Currency Exchange Fund (TCX) was created to provide hedging against currency and interest rate mismatches in frontier and less liquid emerging markets. Its services cover around 70 currencies including 17 in Asia.⁴⁹ However, the price of these hedging instruments might be prohibitive especially for illiquid and underdeveloped markets. Given the importance of hedging instruments, efforts should be pursued to further develop these instruments in the region.

3. Promoting financial integration

For small scale economies, the viability of a domestic liquid capital market that provide large amount of resources looks uncertain. In such circumstances, countries might need to leverage offshore markets although this creates currency risks.

In view of the amount needed for infrastructure projects and the desirability of long maturities, going to US and Eurobond offshore markets may offer alternative sources for infrastructure investments. For example, during 2009–2013, 551 infrastructure bond deals were signed with value of \$167.5 billion in Emerging Asia⁵⁰ with \$2.3 billion of that total value issued in US market and \$0.2 billion issued in Eurobond market.⁵¹ Offshore markets open to infrastructure companies a greater pool of savings to tap although these companies need to consider how to manage the currency mismatch resulting from issuing securities in foreign currency.⁵²

By strengthening ties between the region's financial markets, countries could also diversify their sources of financing and attract foreign investments. This requires reducing cross-border transaction costs among other things. For example, the cost of cross-border transactions in the ASEAN+3 region was found three times higher than the one of the United States and the EU.⁵³

To facilitate cross-border investments, countries need to harmonize regulation, corporate governance and financial products with the objective of achieving mutual recognition of trading transactions. For instance, different standards and requirements may prevent investors to credibly assess investment opportunities across multiple countries. Harmonizing these standards and requirements with the international ones go a long way in addressing this issue. Although impetus has grown in Asia since 2013 when Japan and China started working on IFRS standards, there are still important discrepancies across the region.

Key market infrastructure for securities, including payment systems, cross-border clearing and settlement systems, central securities depositories and custodians are also needed for strengthening financial integration. For example, most of the local central securities do not have links with international central securities with the exception of countries such as Malaysia and Singapore.

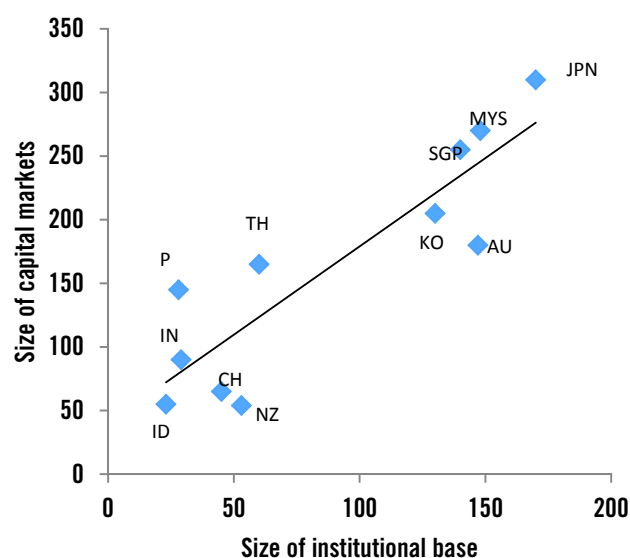
Against this backdrop, it is important to further support regional initiatives that promote financial integration, such as the ASEAN+3 Bond Market Forum and the ASEAN Trading Link launched in 2012. These initiatives should facilitate mobilizing financing beyond domestic resources for infrastructure projects. For regional initiatives to succeed, it is also essential to further educate investors so they are com-

fortable in investing in financial instruments abroad while making regional market development more demand-driven.

4. Supporting domestic investors

There is a high correlation between the size of the institutional investor base and the size of capital markets (see Figure 11). This confirms the importance of developing a critical mass of long-term institutional investors to support financial deepening as these investors play a catalytic role in capital market development. In addition, local institutional investors have liabilities in local currency and are willing to invest in local currency.

Figure 11: Asian Institutional investor base and capital market development (per cent of GDP)⁵⁴



Unfortunately, the size of domestic institutional investors is relatively limited in the region despite the presence of sizeable social security and public pension schemes in some countries.⁵⁵ The OECD estimated that the largest Asian funded pensions systems are well below the OECD average of 84 per cent of GDP, with developing Asia at less than 5 per cent.⁵⁶ Additional efforts should thus be made to support the emergence of a larger base of domestic investors. This could be done, for instance, by encouraging funded pension schemes.

The presence of domestic institutional investors might however not be sufficient to channel more funds to infrastructure projects as many domestic institutional investors lack the required skills and expertise to evaluate and manage infrastructure project risks. To address this issue, local investors could use of external fund manager or partner with experienced international investors.

5. Enhancing risk profile

Achieving the necessary rating to make infrastructure project bonds attractive to institutional investors requires reducing the risk of the debt component of an infrastructure project. This can be done through various mechanisms such as increasing the equity share in a project, introducing subordinated debts and providing guarantees. For instance, by providing a corporate or rolling guarantee, the sponsors (i.e. the parent company) can enhance the credit rating of a project bond. Likewise external guarantee can be used for the same purpose. For example, in Malaysia, the West Coast road project was granted a AAA rating because it was guaranteed by a solid bank.

Providing credit guarantee was the business of “monoline” insurance companies before the global financial crisis. This market has yet to recover and therefore alternatives have to be found. Multilaterals have tried to fill the gap. For instance, the Credit Guarantee and Investment Facility (CGIF) was established in 2010 to improve the risk profile of local currency bond issuance in the ASEAN+3 region.⁵⁷

In addition to its credit guarantee, CGIF added in 2016 a new instrument in its portfolio to offer a Construction Period Guarantee (CPG) thereby significantly improving the risk profile of greenfield projects. Similarly, ADB and the India Infrastructure Finance Company Ltd. (IIFCL) set up in 2012 a project bond guarantee facility to attract more institutional investors though with limited success so far.⁵⁸

Subordinated debts have also been used to improve the rating of senior tranches, an example of which is the EU 2020 Project Bond Initiative implemented by the European Investment Bank (see Box 3). A similar mechanism exists with commercial banks, which is the Pan European Bank to Bond Loan Equitisation (PEBBLE) developed by ING bank and Allen & Overy in 2012.⁵⁹

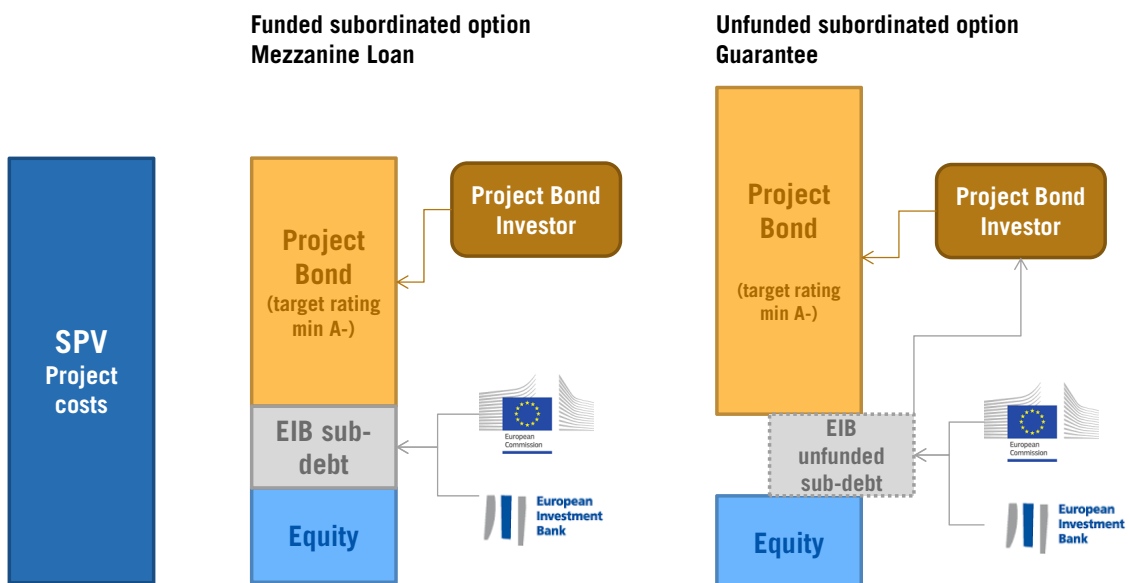
These kinds of credit enhancement mechanisms are critical to support infrastructure financing through capital markets and lessons from international experiences should help government in designing appropriate mechanisms for their respective country.

Box 3: EU 2020 Project Bond Initiative (PBI)⁶⁰

The pilot phase of the Europe 2020 Project Bond Initiative (PBI) was launched in 2012 and implemented by the European Investment Bank (EIB). The objective is to provide additional source of financing for transport, energy and information technology infrastructure projects through debt capital markets. By enhancing the credit quality of project bonds issued, the initiative aims at attracting institutional investors. The Project Bond Credit Enhancement (PBCE) works either as a funded subordinated debt or guarantee, which principles are described in the figure above.

As of 31 July 2015, 7 transactions have been supported with a total PBCE amount of EUR 612 million, which enabled the issuance of over EUR 3.7 billion in bonds. Based on this track record, an independent evaluation published in March 2016 concluded that the Project Bond Credit Enhancement solution should continue to be deployed by in the future, because it has demonstrated to be able to provide long term competitive solutions to finance crucial infrastructure projects.

Source: adapted from a presentation delivered by Nicholas Jennett, Director, New Products and Special Transactions, EIB at an information session on Project Bonds, Brussels, 19 February 2013



6. Strengthening credit rating assessment

Credit ratings are important for the functioning of credit markets as they provide investors with reliable assessment and support them in making informed decisions. This is especially important in emerging markets where information asymmetries are significant.

While institutional investors traditionally rely on international rating agencies for their foreign investments, local rating agencies may provide useful support to local investors. Compared to international agencies, the local ones offer deeper understanding of the country's operating environment and can be used as reference for investment regulation.

Overall, the Asia Pacific region accounts for the largest number of credit rating institutions. Out of the 45 credit rating agencies, approximately 40 per cent are subsidiaries and affiliates of the three Global Credit Rating Agencies (Moody's, Fitch and Standard and Poors). Unlike the European Union economies where many credit rating agencies are relatively new in the business, most of the agencies operating in East Asia have been established before or during the 1990s.⁶¹ The number of credit rating agencies in South Asia and Central Asia is though slightly smaller than East Asia, with only 20 credit rating agencies operating.

The drawback with local rating agencies is that their independency may easily be questioned because they depend on the business provided by local issuers and have commercial incentives to give favorable ratings. They might also have to work in an environment of relatively poor disclosure impeding their capacity to properly do their work.⁶² In this respect, countries should create appropriate regulations to counterbalance these adverse incentives that can negatively impact the level of trust required. For example, countries in the region could consider regulatory frameworks similar to Hong Kong, Singapore and Japan where activities of credit rating agencies have legally binding supervisory and regulatory frameworks. With the right conditions in place, local agencies can provide the much needed information often missing in many emerging markets in the region.⁶³

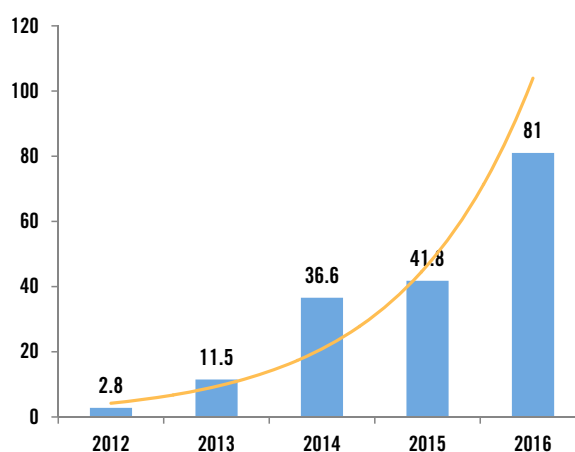
Credit agencies should also develop methodologies that take into account the specificities of infrastructure projects such as their lower default and good recovery rates.⁶⁴ In India, rating agencies have recently launched a specific credit rating for infrastructure assets. By introducing credit rating systems that reflects the unique nature of the infrastructure sector, countries may open up more long-term funding.

7. Fostering sustainable instruments

Infrastructure developers should leverage the growing sensitivity to sustainable development of international investors, which increasingly integrate Environment, Social and Governance (ESG) factors into their investment process. For example, the Principles for Responsible Investment (PRI) launched in 2006 now have over 1,500 corporate signatories with more than \$60 trillion in assets under management.

By structuring infrastructure projects in line with these principles, countries could seize this growing appetite and mobilize more funding for their investment. For this to materialize, investors need to be able to identify investments that meet sustainability criteria. In this regard, supporting "sustainable" labels for infrastructure related financial products can have a significant impact as illustrated by the rapid growth of the green labeled market (see Figure 12).⁶⁵ Such growth demonstrates investors' appetite for these products.

Figure 12: Green bonds issuance (\$billion)



8. Creating infra assets through securitization

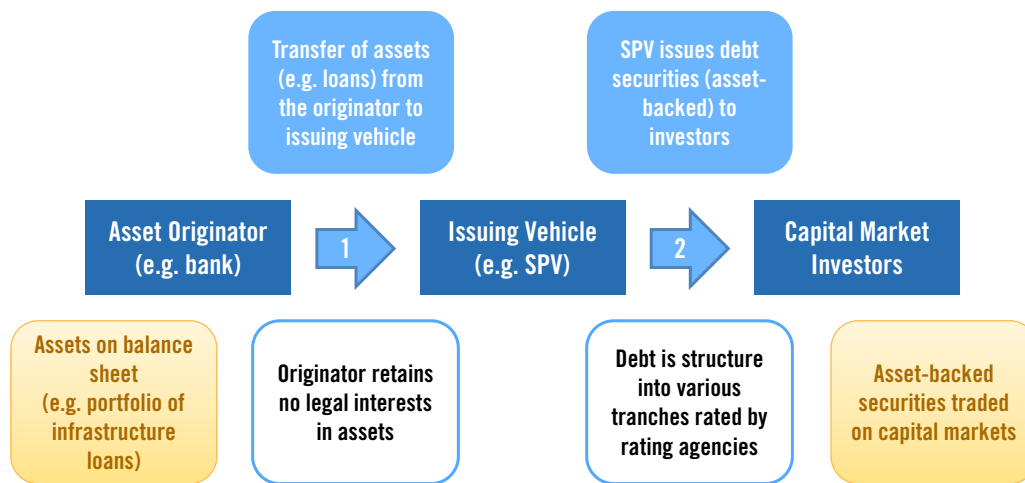
The lack of infrastructure investment opportunities can be an obstacle for channeling institutional investors to this asset class. To create more opportunities, securitization can be a useful mechanism, notably through the securitization of infrastructure project finance loans (see Box 4).

For banks, securitization allows to move long-term assets off their balance sheets and relieve pressure resulting from tighter capital requirement regulations. For example, banks might have the opportunity to sell their infrastructure loans when projects are in their operational phase and risk is much reduced thereby creating relative safe long-term products sought by institutional investors. However, developing securitization market would require to ensure that lenders keep some "skin in the game" to avoid the issues with the "subprime" market that triggered the 2008 Global Financial Crisis.

Box 4: How does securitization work?

Securitization is the process in which certain types of assets are pooled so that they can be repackaged into interest-bearing securities. The interest and principal payments from the assets are passed through to the purchasers of the securities. Basically, the process consists of two steps (see chart below). In step one, a company with loans or other income-producing assets—the originator—identifies the assets it wants to remove from its balance sheet (such as a portfolio of loans) and pools them into what is called the reference portfolio. It then sells this asset pool to an issuer, such as a special pur-

pose vehicle (SPV), which is an entity set up, usually by a financial institution, specifically to purchase the assets. In the second step, the issuer finances the acquisition of the pooled assets by issuing tradable, interest-bearing securities that are sold to capital market investors. The investors receive fixed or floating rate payments from a trustee account funded by the cash flows generated by the reference portfolio. In most cases, the originator services the loans in the portfolio, collects payments from the original borrowers, and passes them on - less a servicing fee - directly to the SPV or the trustee.



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>

Examples of this kind of structure are already found in the region. For instance, the Japanese bank SMBC issued in 2016 its first project finance loan securitization note to be sold to institutional investors (the loan portfolio was related to large scale solar power plants).⁶⁶ Likewise, in Australia and China, banks are issuing green bonds based on their green loan portfolio and around 50 per cent of the labeled green bond market is issued by development and commercial banks.⁶⁷ For securitization to work, banks need to have an incentive to sell these loans either for reasons linked to capital adequacy ratio or because they are reaching their single borrower limits. Otherwise they might be reluctant to cede performing assets.

9. Reviewing tax policy

Tax treatment can go a long way in promoting or deterring the use of capital markets for infrastructure financing and favoring loans over bonds. For example, stamp duty might create distortionary effect. Where enforced, this tax is placed on the transfer of securities. In particular, stamp duty significantly hinders the development of securitization as the transfer of receivables from the originator to the SPV

is subject to such payment, which can make the structure commercially unviable. To address this issue, stamp duty exemptions have been granted in Thailand if the SPV arranges to transfer the infrastructure asset back to its originator or to any other public sector.⁶⁸ Similarly, transfer tax, lease and mortgage register fees have been reduced to the minimum in order to make infrastructure funds viable.

Government can also attract investors by granting favorable tax treatment to infrastructure-linked investment. For example, to steer investment towards infrastructure development, the SEC of Thailand adopted rules on infrastructure finance in February 2012. With these rules, investors are exempt from personal income tax on dividends for 10 years. Likewise, Malaysia and Singapore do not raise withholding tax on interest earned from local bonds by foreign investors.⁶⁹ Meanwhile, municipal bonds in the US would not have had the same development if they had not benefited from tax exemptions. These examples show how tax policies can impact capital market development. They need however to be balanced against the revenue forgone they create.

CONCLUSION

With rapidly growing assets under management, Asia's institutional investors have the potential to play a greater role in infrastructure financing provided that governments develop viable pipelines of infrastructure projects. The extent of this role will though vary considerably depending on each country circumstances. While some countries have a well-developed institutional investor base and functioning capital markets, other are still at a more preliminary stage. For instance, the high risk country ratings of many countries prevent a deeper involvement from institutional

investors. Therefore there is no "one size fits all" strategy for the region but it is still possible to recommend different strategies for different group of countries. This is what the concluding table below suggests although the segregation among the different groups will be blurrier in reality.

		Phase III	Phase II	Phase I
Country Characteristics	Rating	High-rating (investment grade)	Medium-rating (Lower medium grade or just below investment grade)	Highly speculative grade or no rating
	Stock market	Developed and liquid	Emerging	No / Limited market
	Bond market	Developed and liquid government and corporate bond markets	Relatively developed government and emerging LCY corporate bond markets	No / Limited government bond market
	Project bond	Emerging	Infancy	N/A
Possible strategies		<p>Consider securitization to increase the size of infrastructure assets</p> <p>Examine the possibility to develop infrastructure funds / SPV listing and use capital markets for asset recycling</p> <p>Support the development of project bonds through credit enhancement mechanisms where appropriate</p> <p>Review the prudential framework of institutional investors related to investment limits</p>	<p>Strengthen capital market development in particular corporate bond market (notably by improving credit information services and finding ways to increase liquidity)</p> <p>Study collaboration opportunities with development banks regarding local currency issuances.</p> <p>Expand investor base and reinforce legal environment</p>	<p>Strengthen government bond market (as a price reference) and investment environment by reinforcing regulatory frameworks and ensuring stable macroeconomic environment.</p> <p>Focus on developing an investor base and seek optimal ways to access already developed market in the region</p> <p>Tap institutional investors through direct lending to infrastructure projects</p>

ENDNOTES

- ¹ While the domestic savings rate of the emerging and developing Asia is 42.8%, this rate is only 18.5% and 18% for emerging and developing Europe and Latin America and Caribbean respectively in 2015.
- ² Introducing a New Broad-based Index of Financial Development, Katsiaryna Svirydenka IMF Working Paper, 2016.
- ³ Banks rarely grant loans for the kind of 20-year spans required for an infrastructure project as loans typically reach maturity after 5-10 years depending on the market condition. The refinancing risk is the possibility that the project sponsor won't be able to repay its existing debt by borrowing (or borrowing at less favourable conditions) at the time its loan reaches maturity.
- ⁴ Maturity mismatch occurs when a bank funds long-term assets (such as fixed rate mortgages) through its short-term liabilities (such as deposits).
- ⁵ For example, Tier-1 ratio will increase to 9.5 per cent in 2019 compared to 6 per cent in 2013 (source: <http://www.unescap.org/sites/default/files/3a%20-%20ADB%20-%20Enabling%20Monetization%20of%20Infra%20Assets.pdf>).
- ⁶ A negative carry would occur if an investor borrowed from bank to purchase a bond and its cost borrowing would be higher than its yielding.
- ⁷ Source: Oliver Wyman – Global Asset Model from Direct Investing by Institutional Investors (WEF 2014).
- ⁸ Global Financial Development Dataset 2014.
- ⁹ <https://www.oecd.org/g20/topics/financing-for-investment/Regulation-of-Insurance-Company-and-Pension-Fund-Investment.pdf>.
- ¹⁰ ADBI Working Paper 555 – Georg Inderst.
- ¹¹ Iran is the 30th country in the region with sovereign rating from Fitch. Its grade is B+ which is non-investment grade.
- ¹² This makes sense as governments significantly impact infrastructure projects through regulation in terms of quality and pricing of outputs and therefore are an important source of risk. Source: Infrastructure and Corporate Bond Markets in Asia Torsten Ehlers, Frank Packer and Eli Remolona.
- ¹³ <https://www.oecd.org/g20/topics/financing-for-investment/Regulation-of-Insurance-Company-and-Pension-Fund-Investment.pdf>
- ¹⁴ As of March 2016: Countries without a stock exchange include: Afghanistan, Brunei Darussalam, French Polynesia, Kiribati, Republic Democratic People's Republic of Korea, Macao SAR, China, Marshall Islands, Micronesia (Federal States of), New Caledonia, Palau, Samoa, Solomon Islands, Tajikistan, Timor-Leste, Tonga, Turkmenistan, Tuvalu and Vanuatu
- ¹⁵ <http://data.worldbank.org/indicator> and <https://www.ceicdata.com/>
- ¹⁶ Ibid.
- ¹⁷ Total value of shares traded during the period divided by the average market capitalization for the period
- ¹⁸ ADBI Working Paper 555 - Georg Inderst (2016)
- ¹⁹ Decisions at the crossroads Capital market trends and their implications on Asia, Deloitte, 2015
- ²⁰ <https://asianbondsonline.adb.org>
- ²¹ What's behind recent trends in Asian corporate bond markets?, Deutsche Bank, 2014
- ²² What's behind recent trends in Asian corporate bond markets?, Deutsche Bank, 2014
- ²³ See https://ppp.gov.ph/?in_the_news=sec-approves-ppp-listing-rules.
- ²⁴ See www.set.or.th/en/products/listing2/set_infra_p1.html.
- ²⁵ See www.eco-business.com/news/the-emerging-renewable-financing-landscape/.
- ²⁶ "Infrastructure Financing Instruments and Incentives, 2015 OECD".
- ²⁷ See [http://lexicon.ft.com/Term?term=sukuk-\(Islamic-bonds\)](http://lexicon.ft.com/Term?term=sukuk-(Islamic-bonds)).
- ²⁸ Raghu and Kaiser (2012).
- ²⁹ <http://ifcext.ifc.org/IFCExt/Pressroom/IFCPressRoom>.
- ³⁰ See 2016 Preqin Global Infrastructure Report. Available from www.preqin.com/docs/samples/2016-Preqin-Global-Infrastructure-Report-Sample-Pages.pdf.
- ³¹ See www.macquarie.com/mgl/mkif/en/about-mkif.
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- ³² See infrappworld.com (2014): Bangkok's skytrain operator raises \$2.13 billion in IPO. Available from <http://infrappworld.com/>.
- ³³ See <http://economictimes.indiatimes.com/markets/stocks/news/three-years-on-infra-debt-funds-have-very-few-takers/articleshow/53939327.cms>.
- ³⁴ Local governments in the PRC were scheduled to issue about CNY6.2 trillion (\$1 trillion) of securities in 2016, compared with CNY3.8 trillion in 2015. Bloomberg News. 2016. China's Muni Bond Boom Sees Turnover Swell to Record \$34 Billion. July 27. See www.bloomberg.com/news/articles/2016-07-26/china-s-muni-bond-boom-sees-turnover-swell-to-record-34-billion.
- ³⁵ See <https://asianbondsonline.adb.org/>, Asia-Pacific group consists of Hong Kong China, Japan, Republic of Korea, and Singapore for advanced Asia; and China, Indonesia, Malaysia, Philippines, Vietnam and Thailand for emerging Asia.
- ³⁶ Money market plays central role in price discovery because long-term nominal interest rates should be an average of current and expected nominal short-term rates.
- ³⁷ Managing risk in financial market development: The role of sequencing, Cem Karacadag and others, 2003
- ³⁸ Bond market development in developing Asia (ADB Working Papers 448 – Burner, Warnock and Warnock (2012)
- ³⁹ See <http://capitalmind.in/2013/05/inflation-indexed-bonds-in-india/>.
- ⁴⁰ Bond market development in developing Asia (ADB Working Papers 448 – Burner, Warnock and Warnock (2012).
- ⁴¹ World Justice Project, Rule of Law, 2016.
- ⁴² *Ibid.*
- ⁴³ Foreign investment in the Indian Government bond market, Ila Patnaik Sarat Malik Radhika Pandey Prateek
- ⁴⁴ See www.reuters.com/article/thailand-bonds-idUSL3N15U1Y3.
- ⁴⁵ Decisions at the crossroads Capital market trends and their implications on Asia, Deloitte, 2015.
- ⁴⁶ Currency futures specifies the price at which a currency can be bought or sold at a future date.
- ⁴⁷ See www.tcxfund.com/about-tcx.
- ⁴⁸ Infrastructure and Corporate Bond Markets in Asia Torsten Ehlers, Frank Packer and Eli Remolona.
- ⁴⁹ *Ibid.*
- ⁵⁰ Currency mismatch: Having assets that are denominated in a different currency than liabilities, so that a change in exchange rate between those currencies can have a large positive or negative effect on balance sheet.
- ⁵¹ Background document on ASEAN+3 Bond Market Forum and the Way Forward.
- ⁵² A Bird's-Eye View of Finance in Asia, Heedon Kang, Phakawa, and Cheng Hoon Lim, 2014.
- ⁵³ The Japan's Government Pension Investment Fund (about \$1.2 trillion), the Republic of Korea's National Pension Service (\$400 billion), the PRC's National Social Security Fund (\$200 billion), Singapore's Central Provident Fund (\$190 billion), Malaysia's Employees Provident Fund (\$180 billion), and India's Employee Provident Fund (\$116 billion) - OECD (2014) - Annual Survey of Large Pension Funds and Public Pension Reserve Funds 2014.
- ⁵⁴ OECD (2014) – Pension Markets in Focus.
- ⁵⁵ See www.cgif-abmi.org/about/overview.
- ⁵⁶ Two projects have benefited from this guarantee facility since its establishment for respectively \$68 million (2015) and \$19.6 million (2016). See <https://blogs.adb.org/blog/yes-we-need-dedicated-bond-guarantee-fund-indian-infrastructure>.
- ⁵⁷ This mechanism was first used in the N33 widening road project in the Netherlands, with a capital value of €120m (approximately \$169m) and a 20-year concession period. See www.allenoverly.com/publications/en-gb/Pages/Allen-and-Overly-along-with-ING-has-developed-PEBBLE-an-open-source-funding-format-for-greenfield-project-financings.aspx.
- ⁵⁸ See http://ec.europa.eu/dgs/economy_finance/evaluation/pdf/eval_pbi_pilot_phase_executive_en.pdf.
- ⁵⁹ The International Discussions on the Credit Rating Agencies and Enhancing Infrastructure to Strengthen the Regional Credit Rating Capacity in the ASEAN+3 Region, Marvin Raymond F. Castell Lawrence B. Dacuycuy Santiago F. Dumlaio Jr. Angelo B. Taningco Tereso S. Tullao, Jr., 2013.
- ⁶⁰ Accelerating Emerging Capital Markets Development Corporate Bond Markets, World Economic Forum, 2015.
- ⁶¹ Capital market instruments to mobilize institutional investors to infrastructure and SME financing in Emerging Market Economies, World bank, IMF and OECD.
- ⁶² See www.moodys.com/research/Moodys-Default-rates-rise-for-infrastructure-projects-but-remain-better--PR_294378 accessed on 4 January 2017.
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⁶³ “Green bonds were created to fund projects that have positive environmental and/or climate benefits. The majority of the green bonds issued are green “use of proceeds” or asset-linked bonds. Proceeds from these bonds are earmarked for green projects but are backed by the issuer’s entire balance sheet.” Available from www.climatebonds.net/market/explaining-green-bonds) and <https://www.climatebonds.net/files/files/CBI%20State%20of%20the%20Market%202016%20A4.pdf>.

⁶⁴ See <http://asia.nikkei.com/Markets/Tokyo-Market/SMBC-to-debut-project-finance-debt-securities>.

⁶⁵ Bonds and Climate Change – The State of the Market in 2016.

⁶⁶ See www.set.or.th/en/products/listing2/set_iff_p3.html.

⁶⁷ The Future of Asian Finance, Ratna Sahay, Jerald Schiff, Cheng Hoon Lim, Chikahisa Sumi, and James P. Walsh, 2014.



Tapping Capital Markets & Institutional Investors for Infrastructure Development
