



Chapter 5

Financial Challenges

Financial management is failing Asia's cities in several ways:

- Local governments do not collect the taxes they should.
- National governments do not match local government resource transfers to their responsibilities.
- Local capital markets often have private capital in abundance but funds are not invested in infrastructure.

Infrastructure funding: Investing in sustainable cities

The previous chapters have examined the state of Asia's cities from the governance, economic, environmental, and social perspectives. Improving economic, environmental, and social outcomes will depend on the sustainable provision of infrastructure that also fosters sustainability of outcomes. Indeed, many would argue that improving governance outcomes requires investment in "soft" infrastructure, such as e-governance systems to enhance transparency and accountability as well as encourage changes in mind-set. Financing this kind of infrastructure within the context of rapid urban growth, decentralization, and developing capital markets¹¹³ is a challenge. This chapter will examine this challenge and point to some opportunities that are now available or beginning to emerge in the region.

Who finances city infrastructure—and who should?

Taxpayers and consumers ultimately finance infrastructure through user charges. Private sector communities and government, sometimes through official development funding as loans or grants, provide development finance. Its provision is often mandated to specific levels of

¹¹³ Financial markets supplying investment funding with maturities for financial instruments being longer than 1 year. Instruments of less than 1 year comprise the money markets.



government by law. For a long time after the Second World War, most governments delivered public utilities through state-owned enterprises. But the results were often disappointing because inefficient public sector monopolies failed to provide the quality and quantity of service needed. In general, these publicly owned utilities neither expanded services sufficiently to meet a growing demand nor provided adequate coverage to poor and rural areas. Fiscal pressure resulting from an inability or unwillingness, both at the local and national levels, to raise taxes and charges to cover investment needs, together with the option of privatization, led governments toward a new paradigm in the 1980s.

The World Bank has shown that most investment in infrastructure has traditionally been funded by the public sector, which accounts for about 70%. The share of private finance has been 20–25% and official development assistance (ODA), 5–10%.

Changing attitudes to infrastructure investment

During the latter part of the 1980s, encouraged by governments and funding agencies, private sector investment in infrastructure increased in developing countries. Such

investment in South and East Asia and in the Pacific peaked in 1997 at about \$42.4 billion. The total fell dramatically the following year to \$12.4 billion because of the Asian financial crisis and has only started to climb again since 2002. In 2005, it stood at \$27.2 billion.¹¹⁴ Today, providing infrastructure is the sole responsibility of neither the public nor the private sector. Increasingly, infrastructure is about public–private partnerships, especially in the energy and telecommunications sectors. Commercial banks were the major source of private finance for infrastructure in the 1990s, either directly or through syndicated loans. Since the 1997 crisis, lending costs have increased, mainly because of host-country risk rather than global infrastructure-industry risk.¹¹⁵ The paucity of private infrastructure investment was in part because of a failure to recognize the basic requirements for sustainable private capital flows.

A new focus

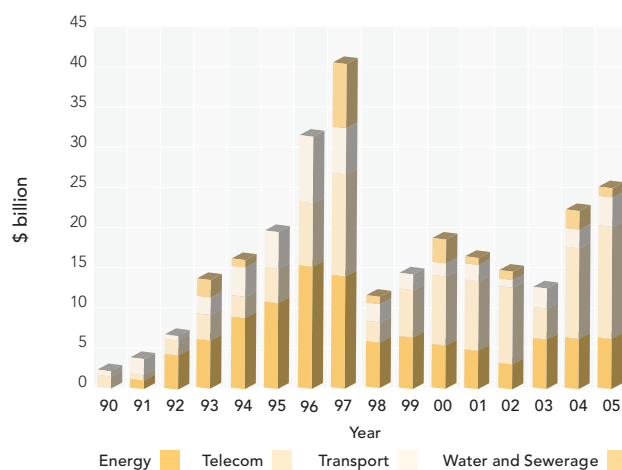
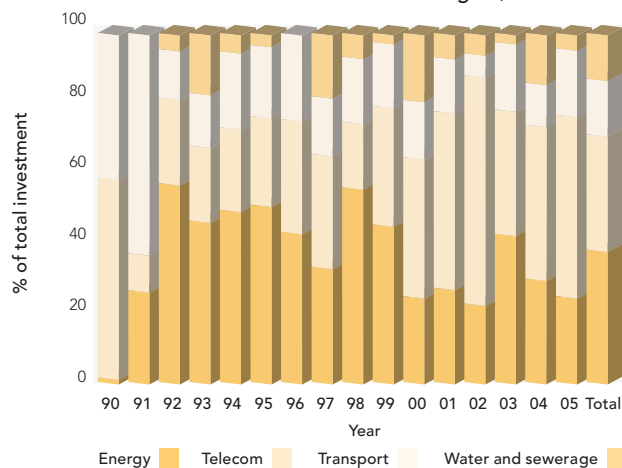
The graphs show that the largest private sector investments have been in the energy and telecoms sectors, which from 1990 have accounted for 73.3% of total investment. Transport accounted for 18.7% and water and sanitation some 8.0% of the total. Figures for 2005 show that water and sanitation accounted for only 3.1% of total private investment in infrastructure, while transport represented some 18.4%. Telecommunications was the largest at 51.9%, followed by energy at 26.6%.

Principles of sustainable finance

The principles of structuring finance for providing infrastructure are clear. First, at the project level, the object of such finance should be to minimize the cost (interest, dividends, fees, etc.) while providing incentives for all

stakeholders to perform their roles—financing, operation and revenue collection, or regulation, for instance—in an efficient manner for the sustainability of the project. Second,

Private Participation in Infrastructure, South and East Asia and the Pacific Region, 1990–2005



Source: World Bank. 2001. Private Participation in Infrastructure Database. World Bank Group website.

Infrastructure Financing Raised by Developing Countries by Type of Borrower and Instrument, 1995–2003 (\$ million)

	1995	1996	1997	1998	1999	2000	2001	2002	2003
Private	25,369.0	38,996.0	47,009.0	15,822.0	16,350.0	28,466.0	18,390.0	18,416.0	17,252.0
Public	38,762.7	40,121.2	41,975.3	37,130.8	40,948.1	35,841.5	24,036.5	29,076.7	20,103.3
Of which:									
World Bank	4,118.1	3,741.5	2,866.5	2,866.5	2,095.1	2,947.0	3,410.2	2,320.3	2,623.6
ADB	–	2,683.2	1,652.0	1,936.7	1,652.0	2,485.8	2,088.4	2,630.5	3,334.4
JBIC	–	–	–	7,278.0	1,906.0	1,890.0	1,938.0	1,533.0	2,524.0
Subtotal	4,118.1	6,424.7	4,952.4	12,081.2	5,653.1	7,322.8	7,436.6	6,483.8	8,482.0
Total	64,131.7	79,117.2	88,984.3	52,952.8	57,298.1	64,307.5	42,426.5	47,492.7	37,355.3

– = not applicable, ADB = Asian Development Bank, JBIC = Japan Bank for International Cooperation.
Source: United Nations Economic and Social Commission for Asia and the Pacific. 2006. Bangkok.

¹¹⁴ World Bank. 2006. Private Participation in Infrastructure (PPI) Database. October. Available: <http://ppi.worldbank.org/in dex.aspx>

¹¹⁵ Kuroda, Haruhiko. 2006. Private Finance for Infrastructure Development: Experiences and Prospects in Asia. Emerging Market Forum. Jakarta.

at the level of the national government, the objective should be to provide the incentives and an environment to enable such financing to communities, local governments, private sectors operators and suppliers, through retail financial institutions (banks), wholesale financial institutions, and the capital markets, and the community.

Such finance should be provided on a sustainable basis—meaning that financiers at minimum must cover their cost of funds, inflation, and administration, and be subject to competition. These principles counter both the use of unsustainable forced subsidies and the exploitation of monopoly positions. The mix of public and/or private, local and/or foreign funds will largely depend on the stage of development of a country's capital market, but a key objective of using foreign funds should be to support the development of required financing capacity in the local capital markets.

Experience in funding city infrastructure

Traditional financing: Cash, loans, municipal funds, and national grants

Decentralization means that local governments are expected to take on increased responsibilities for financing infrastructure services. The cash raised by local governments from their own revenue sources is insufficient, and much of the investment has been provided through grant or loan financing from central governments, some with help from international financial institutions. Such funding has often been passed through specialized municipal-fund arrangements, many of which have not performed as envisaged.¹¹⁶ Furthermore, managing foreign exchange risks associated with international borrowing often has been inadequate, either leaving national or, in some cases, local governments or their enterprises exposed. Exacerbating these difficulties, demand for new and improved infrastructure has continued at an unprecedented rate with rapid urban growth. Unmet financing needs are a major problem. However, many services or unbundled¹¹⁷ components thereof can and should be fully cost recoverable and have potential for direct private sector involvement in financing, construction, and operation. Such potentials open up new possibilities for infrastructure financing and for greater responsiveness to city needs.¹¹⁸

¹¹⁶ Kehew, Robert, Matsukawa Tomoko, and John Petersen. 2005. *Local Financing for Sub-Sovereign Infrastructure in Developing Countries*. Washington, DC: World Bank.

¹¹⁷ Unbundling means separating parts of an infrastructure network so

City responsibility for structuring finance

Much can be done through more efficient revenue collection and consolidation of systems to fully exploit all potentials. Collecting what is due can often lead to significant increases in revenues and should be supported even on equity grounds. But even these improvements often do not close the funding gap for infrastructure funding, since the revenue increases are small relative to the capital cost required. There can be improvements in the way central transfers are disbursed, but the reality is that funds at national level are also insufficient to provide for all needs of megacities. For cities to raise more funds themselves, additional sources of taxation and/or borrowing are required. The former is seen to be limited unless central governments allow local governments to retain much of what is collected locally. For instance, in countries where value-added tax (VAT) or sales taxes are levied, these funds could be allocated for local governments. Local government borrowing too is limited and often restricted to medium-term loans for projects that have a guaranteed revenue source, such as transport terminals, slaughterhouses, and markets. Many local governments are reluctant to take on long-term debt and the examples of municipal bond flotation are few.

Where local government revenue comes from

If local governments are to take on more responsibility for financing infrastructure, they must have both the mandate and capacity to generate local revenue. Both are lacking. Local governments have five basic sources of revenue: (i) those from publicly owned assets, including land, or shares of central government taxes on minerals and other natural resources; (ii) taxing private wealth, including property; (iii) taxing income and/or its use, including earnings, consumption, and business turnover taxes; (iv) user charges or licenses on services provided and utilities consumed; and (v) intergovernmental transfers, comprising grants and other assistance from central or regional/provincial levels.

The first source is generally small in most Asian countries, although local governments often have significant land and property holdings. Most central governments either prohibit or limit the authority of local governments to tax wealth and income, although sales taxes in some developed countries can be an important local government source. User charges

different investment strategies can be applied—for example, separating power generation from transmission, water treatment from distribution, and trains from tracks.

¹¹⁸ Ibid.

are becoming more prominent in both the developing and developed world.¹¹⁹ Fiscal transfers generally make up more than 50% of local government revenues, and in some countries such as Pakistan, they can reach as high as 95%.

There are considerable constraints on local governments in raising local revenue. Many in Asia are notoriously inefficient at mobilizing and utilizing resources. In addition, most local revenues are used for the operations of city governments with very little allocated for capital investment.¹²⁰ Although a proportion of own-source revenues can be set aside for capital development expenditures, in practice most is funded through central grant transfers. Such funding, however, is dependent upon the central government's commitment, which can be made based on simplistic formulas, agency priorities, or political expediency rather than legislative provisions, demand, or need. In some cases, where utilities are run by city administrations, additional resources can be raised from user charges.

The many alternatives for borrowing

A number of cities in Asia have borrowed from local banks, mainly those that are government-owned. Borrowing often is for short-term, cash-flow support and/or overdraft credit or for a medium term, perhaps up to 5 years. Very little long-term lending (15–20 years) has occurred, apart from that associated with foreign-assisted projects often on-lent by municipal development funds. In a few cases, municipal bonds have been floated.

Municipal bonds are basically loans to local and state governments. Debt obligations are issued by states or provinces, cities, districts, and other government entities to raise money to build schools, highways, hospitals, and sewer systems, as well as other projects for the public good. They are the most important way that the United States' (US) state and local governments borrow money to finance their capital investment and cash-flow needs. Investors lend money by purchasing a municipal bond and this supplements operating budgets and pays for public projects. The municipality pays interest on the loan that is then distributed to the investor as federal, and sometimes regional and local, tax-free income. When the loan term ends, the principal

balance is returned to the investor. The tax exemption or subsidy provided by government allows municipal issuers to compete effectively for capital in the domestic securities market. There are two main types, general obligation bonds secured by a pledge of the local government's taxing power; and revenue bonds that are secured by the pledge of project revenue streams of a particular service or utility entity, generally user fees and service charges. There are also hybrids of these two categories.

Tax-backed bonds are used where direct cost recovery is difficult, such as in urban renewal or for social facilities. Some forms of tax-backed debt are tax exempt, usually where the purpose or the agency concerned are considered to be providing a public service. Revenue bonds are issued where cost recovery is more direct in financing water supply, sewerage, electricity, and large-scale transport infrastructure. These have been successful in the US because its municipal governments can form a special purpose vehicle (SPV)—for example, a utility company that can issue bonds in its own right and, under certain circumstances, benefit from tax concessions.

In Australia, infrastructure bonds for specific purpose have been issued by private sector entities, upon approval by the Federal Treasury, for specific projects.¹²¹ They have been popular and have been a key factor in mobilizing significant long-term finance for infrastructure projects. The rationale is that investors in infrastructure are at a taxation disadvantage

Early Municipal Bonds

The first real general obligation bond was issued in 1812 by New York City, but today there is more than \$1.8 trillion in outstanding municipal debt, comprising obligations of approximately 50,000 issuers. General obligation bonds were the main type issued during the early years, but now have been outpaced by revenue bonds and those issued by quasi-public bodies (special districts). England also provided the early revenue-bond model through its sale of bonds for toll roads in the 1770s. In addition to long-term bonds, many issuers also use short-term municipal note borrowing, and this option has grown substantially since the 1960s.

Source: ADB. 2007. Financing Background Paper, *Managing Asian Cities Study*. Manila.

¹¹⁹ Johnson, Ronald W. 1997. *Emerging Markets Experience in Infrastructure Financing: Lessons for South African Local Government*. North Carolina: Research Triangle Institute.

¹²⁰ Local revenue sources are not really designed to finance the construction of major city-wide infrastructure, such as mass transit systems, major highways, water source development, and trunk transmission lines, whose costs can only be recovered over the longer term.

¹²¹ Department of Housing and Regional Development (DHARD). 1995. *Annual Report*. Canberra.

Municipal development funds

Municipal development funds are parastatal institutions that lend to local governments for infrastructure investments. They can evolve to become financial intermediaries focusing on municipal credit. They are essentially financial intermediaries that provide credit to local governments and to other institutions investing in local infrastructure and are normally viewed as transitional instruments toward self-sustaining municipal credit systems that can access domestic and international capital markets for financing.

Source: ADB. 2007. Financing Background Paper, *Managing Asian Cities Sector Study*. Manila.



Tamil Nadu Urban Development Fund

The World Bank-funded Tamil Nadu Urban Development Project set up a loan and grant program as the Municipal Urban Development Fund (MUDF). By October 1996, the government-owned MUDF had financed over 500 subprojects in 90 out of 110 municipalities in Tamil Nadu. In 1996, MUDF was converted into a new financially and legally autonomous financial intermediary with participation of private capital and management, the Tamil Nadu Urban Development Fund (TNUDF). An asset management company—a joint venture between the Tamil Nadu government and private investment companies—now manage the fund. This has brought private-sector management expertise to the selection and financing of subprojects sponsored by either public or private agencies and to facilitate access to creditworthy municipalities to the private capital market. The government's share is to be reduced eventually through sale to interested investors and on-lending interest rates will gradually be made to conform to market rates. A separate grant window for poverty-oriented investments, such as slum upgrading and cost of resettlement, is also being handled by the asset management company and provides technical assistance to municipalities in preparing such investments and improving their own financial management.

Source: ADB. 2007. India Country Paper, *Managing Asian Cities Study*. Manila.



with respect to investors in other assets. Investors in assets that can be purchased “off the shelf” or manufactured quickly can claim interest expense on borrowings as a tax deduction from the time of purchase. Investors in infrastructure must wait for these tax deductions to become effective, sometimes for several years, from the time borrowings are undertaken until the completion of the asset and the commencement of earnings. The infrastructure bonds allowed deducting interest expense from issue, and thus, these have overcome this perceived disadvantage. Their use, however, was discontinued and private sector infrastructure investment has suffered.

Municipal development funds

During the early 1980s, independent or quasi-independent municipal credit institutions were established to channel borrowed and grant funds to local governments for local infrastructure development such as the Cities and Villages Development Bank of Jordan. In some Asian countries, these institutions were government-run municipal development funds, such as the municipal development fund (MDF) in the Philippines, and the regional development account (RDA) in Indonesia. Their objectives were to reduce political interference in project selection and financing, to provide a more responsive administration, to finance economically and financially viable projects, and to lend at market rates. The longer-term objective was usually for these institutions to access private sector savings and become intermediaries between private capital markets and local governments.

Government-run funds were designed to revolve, providing further loans to local governments, but it has not always worked that way. Experience of government-run funds from the Indonesia and Philippines shows that when loans are repaid, funds generally are not relent effectively. This is because of institutional restrictions or the apparent inability to identify and appraise sufficient feasible projects for investment. There

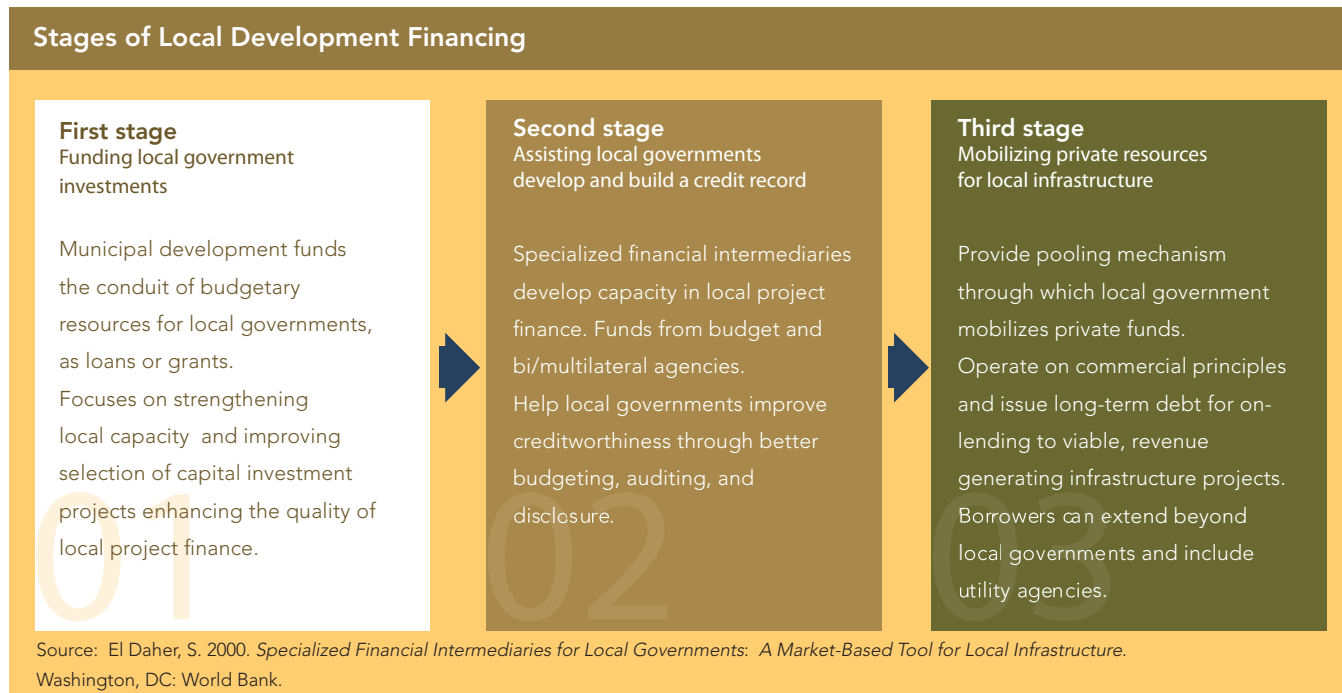
are a number of other problems with MDFs, including the distorting impact of low- and fixed-interest rate lending on financial markets, weakening emerging instruments for raising domestic resources, and problems with adopting efficient and transparent appraisal systems. Hence, overall experience of MDFs has been mixed. Success—in terms of expanding the role of such organizations—has ranged from rejecting outright additional funding, and more stringent financing terms in the case of the Thai MDF, through the rather lukewarm reception of the RDA in Indonesia, to implementing and establishing a successful self-sustaining financial institution in the case of the Tamil Nadu Urban Development Fund (TNUDF) in India. This latter institution has actually graduated to a more sophisticated level of financing institutions, as shown in the box on the previous page. However, the approach enabled infrastructure projects to be implemented without fundamental change in the institutional context of investment. There was no question of private sector participation since the transaction costs in each market remained prohibitively high for any actor except the government. Moreover, there was no institutional basis for that participation. Individual projects included institutional-strengthening components, but most focused almost exclusively on project implementation.¹²² A good example of a fund focusing its activity in this area is the Local Government Infrastructure Development Fund in the Philippines. This fund was an outgrowth of the

Capital Investments Folio¹²³ project in which considerable resources were expended in assisting local authorities to plan for and prioritize infrastructure investments. But the wider institutional issue of generating sustainable capital market finance was, in general, not addressed.

Overall, such funds were effective disbursement agencies for international funding agencies and they may have increased the quality of project assessments and fund allocation. But the broader objectives of accessing private capital markets, extending operations beyond specific project financing, and becoming financially sustainable entities without infusions of new capital from the government and funding agencies, have not generally been achieved.¹²⁴ A few have, however, become part of a transition process toward developing more specialized local government financial intermediaries.

Local government's obligation to rationalize revenue raising

Decentralization means that local governments have to become more financially responsible in raising revenues. They need to manage available resources more efficiently and responsively and press for reforms in intergovernmental fiscal relationships to ensure that functional responsibilities are clearly defined and revenue sources are adequate to meet them. Public financial management must



¹²² Lindfield, Michael. 1996. *Institutions, Incentives and Risks: Structuring Markets for Private Financing of Urban Infrastructure*. Australian Housing and Urban Research Institute. Melbourne.

¹²³ De Villa, V.A. 1995. Metro Manila Capital Investments Folio. Seminar on Integrated Urban Infrastructure Development, New Delhi.

¹²⁴ Dillinger, William. 1991. *Urban Property Tenure Reform. Guidelines and Recommendations*. Urban Management Program. Discussion Paper Number 11. Washington, DC: World Bank.

adequately control the level of revenue and expenditure, and appropriately allocate public resources among sectors and programs. A key step is to improve intergovernmental fiscal relations through streamlined and predictable rules on tax sharing and grants, improve the local taxation system, and introduce sound budgetary and financial procedures through budgets that establish the basis for financial control and provide timely financial information. This highlights and strengthens the links between budget and performance of local government agencies in meeting key operational and strategic objectives.

Intergovernmental transfers are the cornerstone of local government financing in most countries, especially as a source control over public finances while providing the mechanism to channel funds to local and provincial governments. There are many different forms of transfers designed to address specific issues, including grants, shared taxes, subsidies, and subventions. The most appropriate form of transfers for one country depends on the objectives to be achieved.¹²⁵ In general, such transfers are required to:

- Improve vertical fiscal balance¹²⁶ within levels of government on their expenditure responsibilities and revenue, raising powers—i.e., transfers to make up for limited sources of local government revenue.
- Improve horizontal fiscal balance or equalization of fiscal disparities among regions—transfers which favor poor regions.
- Compensate for “spillovers” or offsetting “externalities” between jurisdictions in providing regional or local services—transfers to local governments for locating a solid waste–landfill site, for example.
- Fund national priorities or “merit” goods—a good or service that may be underprovided if the consumption decision is left to consumers or local governments since they may not recognize its true value or benefit—transfer for sewerage treatment, for example.
- Reflect the administrative reality that it is easier for central governments to assess and collect national taxes than it is for local governments.

Tracking the transfers and their achievements

Transfers can be general purpose or special purpose (selective), matching (requiring local government

¹²⁵ Bahl, Roy. 1999. *Intergovernmental Transfers in Developing and Transition Countries: Principles and Practice*. Washington, DC: World Bank.

¹²⁶ Reflecting the imbalance between the expenditure responsibilities of local governments and their revenue-raising powers.



counterpart financing) or not. Special-purpose transfers pay a significant role in financing local capital investment. Central government justification for such funding is that infrastructure projects often have externalities, while others may be key elements of national development programs.¹²⁷ In a decentralized system of governance, local governments prioritize investments and execute projects. As discussed above, financing large infrastructure projects from local resources is not always possible, given the levels of current revenues of most local governments. Access to bank finance and capital markets has been limited, thus leaving local governments tied to transfers either in the form of grants or perhaps public and, often, subsidized loans.

Bahl, Boex, and Martinez-Vasquez¹²⁸ see good practice where the transfer system provides adequate resources to local governments to achieve policy objectives, preserves budget autonomy at the local level, supports a fair allocation of resources especially to the poorer local governments, ensures stability and predictability in releases, uses formulas that are simple and transparent, is neither a disincentive for mobilizing local revenue nor encourages inefficient expenditures, and avoids major changes in the levels of resources to local governments during periods of change.

Bird and Smart¹²⁹ show that the key lessons from international experience for transfer design are that both general-purpose

¹²⁷ Water supply and sewerage treatment investments are examples of projects that qualify for both reasons; local roads can improve economic productivity of poor rural areas.

¹²⁸ Bahl, Roy, Jamie Boex, and Jorge Martinez-Vasquez. 2004. *The Design and Implementation of Intergovernmental Fiscal Transfers*. Fiscal Workshop. Nepal.

¹²⁹ Bird, Richard, and Michael Smart. 2002. Intergovernmental Fiscal Transfers: Some Lessons from International Experience. International Symposium on Intergovernmental Transfers in Asian Countries: Issues.

transfers and special-purpose matching grants, such as those for infrastructure, are required. General-purpose grants should consider both need and capacity but be distributed in the most straightforward, reliable, transparent manner possible—often based on simple formulas—or according to the source of collections. The total amount of resources to be distributed should be set in a stable but flexible way, such as a percentage of central taxes that can be adjusted every few years. Where local governments have some discretion in tax policy, there is no need to include specific-incentive features to encourage additional tax effort. No conditions should generally be imposed on how general-purpose grants are to be spent. Special-purpose grants should generally have a matching component that would vary both with the type of expenditure and the fiscal capacity of the recipient. Where grants are to finance capital investment in infrastructure, recipients should satisfy technical conditions and prepare feasibility studies of a standard sufficient to ensure that the money is properly spent. Matching grants are probably the best approach for local infrastructure when the local government funds part of the cost of the capital work.

Encouraging private participation in financing

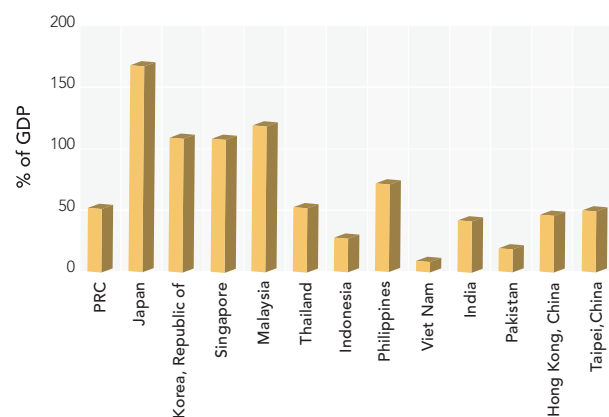
Despite the diverse modes of government support, and even with those mechanisms operating at full efficiency, a dearth of long-term debt financing available for infrastructure development remains. But there is a growing recognition that mobilizing private resources, particularly from local sources, is required on a large scale to augment current efforts of government and international funding agencies in financing sustainable infrastructure at the local and regional level.¹³⁰ Access to local financial markets through loans or bond flotation has not been used on a significant scale by most countries. Private sector financiers have assessed the risks of financing local government infrastructure, both actual and perceived, to be high.¹³¹ Nevertheless, a number of countries have adopted innovative measures to help mobilize domestic resources for infrastructure development and reduce these perceived risks. These include credit enhancement through various guarantee mechanisms, including the Local Government Units Guarantee Corporation in the Philippines and the creation of municipal development financing institutions, such as the TNUDF of India. However, these bodies have, at best, had limited impact and, at worst, have crowded out private finance. The following sections will explore the potential of mobilizing private capital and the structural issues that must be addressed to do so.

The capital markets and infrastructure finance

State of Asia's capital markets

In theory, the availability of private funds is not a problem. But using such resources to finance urban infrastructure is. As Asian economies continue to grow at an impressive pace, their capital markets exhibit comparable expansion. Prior to the Asian financial crisis of the late 1990s, very few dollar-denominated bonds were issued in Asia. Governments and companies usually accessed banks for funding. Now, bond markets in both local and hard currencies are growing fast.¹³² Today, Asian capital markets are generally flush with savings and are linked to international capital markets. But finding safe investment opportunities is a problem. Pension funds and life insurance companies are unable to find the major long-term investment opportunities they need to avoid potential maturity mismatches. Bond markets are dominated by national government debt. The lack of alternative long-term debt not only impairs the development of capital markets but also constrains the financing of city infrastructure. Setting aside Hong Kong, China and Singapore, which are well-developed offshore bond and equity platforms for other countries in the region, the two best-developed markets in the region are those in Japan and the Republic of Korea. They also have the two largest domestic bond markets and the first- and fourth-ranking stock markets, respectively, in absolute size. The chart shows the bond markets measured as a percentage of gross domestic product (GDP).

Asian Bond Markets as a Percentage of GDP, December 2005



GDP = gross domestic product, PRC = People's Republic of China, % = percent. Source: Bloomberg Data; national statistical officers.

¹³⁰ Mody, Ashoka. 1997. *Infrastructure Strategies in East Asia: The Untold Story*. Washington, DC: World Bank.

¹³¹ Footnote 116.

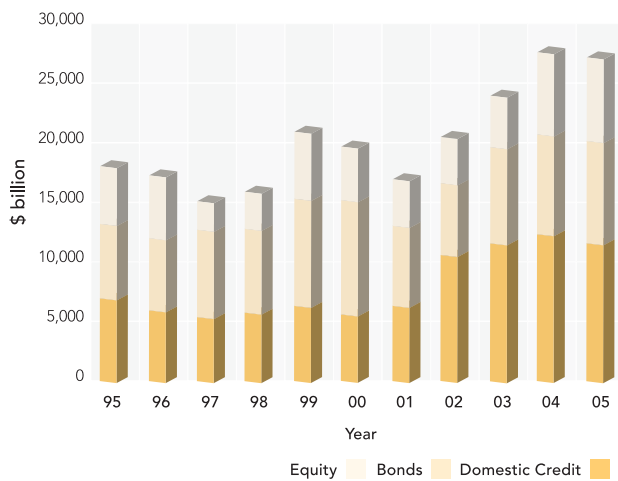
¹³² Jansen, Roel, and Parisa Veldman-Koops. 2005. *Asian Capital Markets: Growing Up Fast*. *ING Investment Weekly*. New York.

The total domestic financing, comprising domestic credit of the banking sector, outstanding local currency bonds, and total equity outstanding in the major markets of East Asia is estimated to be some \$29.4 trillion¹³³ as of end of 2005. The local currency bond market comprises \$7.4 trillion or 36% of this total.

The accompanying figures, using Asian Bonds Online website data, show the amount of and changes in domestic financing available from 1995 to 2005 for major markets of East Asia, together with the structure of the bond markets in

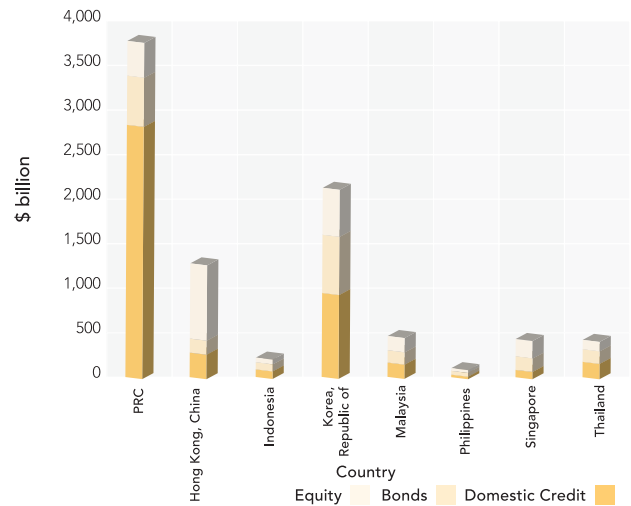
the same countries. The trend of increase in bond financing is clear, but it is overwhelmingly government-issued bonds. Financial markets mobilize resources and allocate risks and, in many parts of the developing world, the focus is now on the process of risk allocation. As the economies of Asia become more integrated, stability becomes an important factor for investment. The region probably is less vulnerable now to sudden changes in investor sentiment as the structure of financing has moved towards foreign direct investment (FDI) the maturities of liabilities have become longer, and financing sources more diversified.

Domestic Financing Profile, 1995–2005



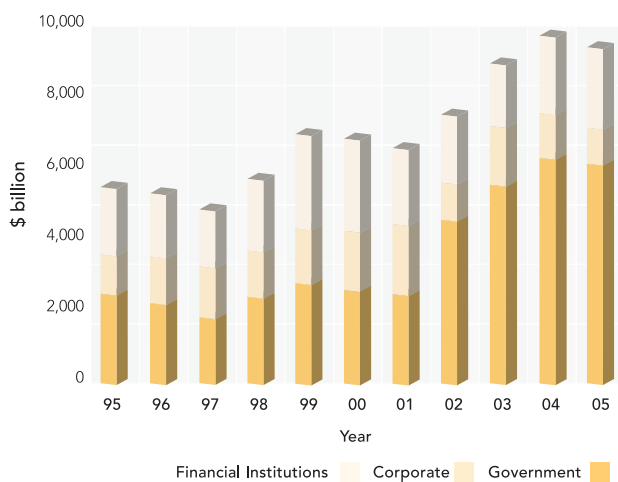
Source: Asian Bonds online website.

Domestic Financing, September 2005



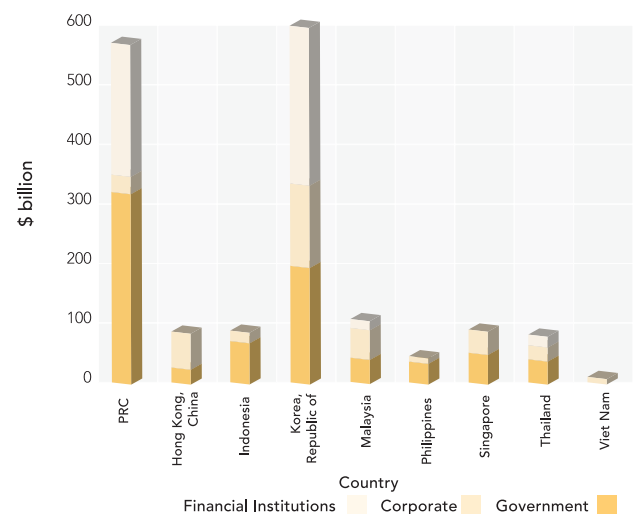
PRC = People's Republic of China.
Source: Asian Bonds online website

East and Southeast Asian Bond Markets, 1995–2005



Source: Asian Bonds online website.

East and Southeast Asian Bond Markets, September 2005



PRC = People's Republic of China, \$ = US dollar.
Source: Asian Bonds online website.

¹³³ Asian Bonds Online website with date covering the PRC; Hong Kong, China; Indonesia; Japan; Republic of Korea; Malaysia; Philippines; Singapore; and Thailand.

Summary of Market Potential in Focus Countries

- **The PRC** could finance regular issues by 2007 or 2008. Equity market could list infrastructure funds by 2008. Pilot bonds have funded cities, regular issues of secured bonds could appear in 2008. Structured fund pilot-issued bonds in late 2005.
- **India** could finance regular issues now. Bond market has issued both municipal and special-fund bonds since 2004. Structured funds have issued ABS bonds since 2002, MBS bonds since 2003, and CDO bonds since 2005.
- **Pakistan** could make special issues within a year. Equity market could list infrastructure funds by 2008. Bond market could fund the city or the fund if the bond were secured by infrastructure assets. Structured funds would need another few years.
- **Philippines** could finance regular issues by 2008. Equity market can list infrastructure funds now. Private placement bonds have been issued since 2002. Structured funds would need another few years.
- **Thailand** could finance regular issues within 2008. Equity market can list infrastructure funds now. Bond market could issue municipal bonds in 2008. Structured funds have issued ABS bonds since 1997.

ABS = asset-backed security, CDO = collateralized debt obligation, MBS = mortgage-backed security, PRC = People's Republic of China.

Source: ADB. 2007. Financing Background Paper, *Managing Asian Cities Study*. Manila.

The International Monetary Fund (IMF) notes:

- Regional economies are now more resilient to a sudden reversal of inflows than a decade ago, because their economic fundamentals have improved, and because exchange rates in the majority of economies are more flexible. Furthermore, risks to the banking systems in the region have diminished because only a small portion of the inflows, this time, have been intermediated through banks, leaving their balance sheets largely unaffected. However, not all economies have moved at the same pace in reducing domestic and external vulnerabilities.
- Some economies still possess underlying weaknesses, which leave them vulnerable to a sudden reversal of capital inflows that can be brought by changes in sentiment and international financial conditions.¹³⁴

It is now thought that credit risk remains a major problem in the region. Banks have cleaned their balance sheets by reducing exposure to the corporate sector, especially small firms. However, capital markets have not developed rapidly enough to offer a viable alternative source of funding and a lack of capital is detrimental to investment and innovation. The priority for the region is to develop equity and bond markets to permit better risk sharing.¹³⁵

Expanding the base of investors is a key element in this. Contractual savings, covering pensions and life insurance,

Domestic Financing Profile, 2005

Domestic financing	% of total domestic financing				In \$ billion			
	Market	Domestic credit	Bonds	Equity	Total	Domestic credit	Bonds	Equity
China, People's Republic of	74.1	15.6	10.3	100.0	2,889	607	402	3,898
Hong Kong, China	17.8	8.1	74.0	100.0	254	116	1,055	1,425
India	38.9	23.5	37.5	100.0	534	323	515	1,372
Indonesia	49.0	19.7	31.4	100.0	127	51	81	259
Japan	32.8	44.3	22.9	100.0	6,554	8,855	4,573	19,982
Korea, Republic of	42.3	27.6	30.2	100.0	1,007	656	718	2,381
Malaysia	36.5	25.8	37.6	100.0	175	124	181	480
Philippines	39.4	31.4	30.3	100.0	52	41	40	132
Singapore	19.5	20.0	60.5	100.0	83	85	257	425
Thailand	49.4	20.0	30.6	100.0	200	81	124	405
Total	39.9	23.5	36.5	100.0	11,875	10,939	7,946	30,760

\$ = US dollar.

Source: Asian Bonds Online website.

¹³⁴ International Monetary Fund. 2006. *Regional Economic Outlook: Asia and Pacific*. May. Washington, DC.

¹³⁵ Footnote 106.

Assets of Institutional Investors in Selected Asian Countries, 2004

Economy	Pension funds		Life insurance		Mutual funds		Total	
	\$ billion	% of GDP	\$ billion	% of GDP	\$ billion	% of GDP	\$ billion	% of GDP
China, People's Republic of	28.0	1.6	136.0	7.9	27.0	1.6	191.0	11.1
Hong Kong, China	38.0	22.9	9.0	5.4	465.6	280.3	512.6	308.6
India	60.0	8.0	22.0	3.0	64.0	8.0	146.0	19.0
Indonesia	5.4	2.1	10.5	4.2	11.1	4.5	27.0	10.9
Korea, Republic of	161.0	21.4	133.0	17.7	186.0	24.7	480.0	63.8
Malaysia	70.0	59.2	21.0	17.8	23.0	19.4	114.0	96.4
Philippines	7.9	9.2	2.7	3.1	1.4	1.6	12.0	14.0
Singapore	68.0	61.2	33.0	29.7	28.0	25.2	129.0	116.0
Thailand	20.0	12.0	17.0	10.2	19.0	11.4	56.0	33.6
Total	458.3	11.0	384.2	9.4	825.1	19.9	1,667.6	40.3

GDP = gross domestic product, \$ = US dollar, % = percent.

Note: Figure for mutual funds in Singapore only includes Singapore dollar funds domiciled in Singapore.

Sources: HongKong and Shanghai Banking Corporation, 2005; Dalla 2005, Bank Negara Malaysia (BNM), Bank of Thailand (BOT).

are important since they provide a base for long-term capital accumulation and have a longer time horizon than other investors. Many such funds are active traders of securities and contribute to the liquidity of capital markets. Also important is the mutual fund business, which can cater to retail investors with different needs and risk profiles. The assets of institutional investors in East Asia are increasing and, at the end of 2004, they were some \$1.5 trillion, or about 45% of GDP in the region (see table above). But the size of these assets vary considerably from country to country, and in those countries that require massive investments

in infrastructure—such as Indonesia, People's Republic of China (PRC), and Philippines—the institutional investor base is small relative to GDP.¹³⁶

The pension systems in Asia have considerable assets but they differ in their institutional design, coverage, maturity, benefit provision, and value of assets. Many have been operational for many years. For instance, the Philippine's Social Security System (SSS) started in 1948, while the Employees Provident Fund (EPF) of Malaysia was established in 1951. Others are more recent, such

Pension Assets and Major Schemes in Selected Asian Countries

Economy	Pension assets (\$ billion)		Pension assets (% of GDP)		Most important scheme		
	Total	Most important scheme	Total	Most important scheme	Year established	Type	Benefits
Hong Kong, China	38.0	MPF 15.5	23.3	9.5	1995	DC	LS
India	60.0	EPFO 33.0	8.0	4.0	1952	DC	LS
Indonesia	11.5	Jamsostek 3.8	4.6	1.5	1986	DC	LS
Korea, Republic of	161.0	NPS 128.6	21.4	17.1	1951	DB	Annuities
Malaysia	70.0	EPF 63.3	59.4	53.7	1948	DC	LS or PW
Philippines	10.0	SSS 3.5	10.2	3.6	1990	DB	LS or PW
Singapore	68.0	CPF 68.0	63.7	63.7	1955	DC	LS
Thailand	20.0	SSF 6.7	12.2	4.1	2000	DB	Annuities

CPF = Central Provident Fund, DB = defined benefits, DC = defined contributions, EPF = Employees' Provident Fund, EPFO = Employees Provident Fund Organization, GDP = gross domestic product, LS = lump sum, MPF = Mandatory Provident Funds, NPS = National Pension Scheme, PW = programmed withdrawal, SSF = Social Security Fund, SSS = Social Security System, \$ = US dollar.

Source: ADB. 2007. Financing Background Paper, *Managing Asian Cities Study*. Manila.

¹³⁶ Ghosh, Swati R. 2006. *East Asian Finance: The Road to Robust Markets*. Washington, DC: World Bank.

as Thailand's Social Security Fund (SSF) established in 1990 and Indonesia's Jamsostek in 1995. But each country has pension assets of over \$10 billion, with the Philippines at the lower end and the Republic of Korea, with \$161 billion, at the top.

The assets of the life insurance industry are still relatively small in most Asian countries relative to those of developed countries but in the aggregate they approximate the size of pension funds. The future size of these assets will depend on the further development of insurance coverage and products. Mutual funds have grown quickly in most Asian countries, although they started from a relatively small base. By the end of 2004, East Asia accounted for about 10% of \$16,152 billion global net asset value of mutual funds, according to the Investment Company Institute. At \$465 billion, or 28% of GDP, assets under management were the largest in Hong Kong, China, where much of the funding is from overseas. In contrast, most money invested in other countries is of local origin.¹³⁷

Clearly, money is plentiful in pension, insurance, and mutual funds in Asia, and as the population and coverage of the various schemes increase, there is considerable scope for further growth of institutional assets. Institutional investors will play an expanding role in capital market development. Opportunities to invest such funds in urban infrastructure and city development are plentiful but instruments, institutions, and projects that will provide sufficiently attractive terms and security will need to be developed.

A study by Clark and Evans¹³⁸ attempted an empirical assessment of risk in a balanced portfolio, based on the performance of Australian infrastructure projects over the last 70 years. The study reconstructed cost-benefit calculations and financial statements of each infrastructure investment chosen. These were reconstructed on a "commercial basis"—that is, as if the asset was owned by a private entity. The performance of infrastructure assets and the correlation of yield were compared with other assets. Average yield was high (over 25%), volatility was comparable to equity, and yields were strongly negatively correlated with equities.

The implications, for an ideal super-annuation fund portfolio, are striking. Including infrastructure in a portfolio, given its

gross yield and yield correlation characteristics, reduced the volatility and increased the return on the portfolio until infrastructure investment comprised 30% of the portfolio. Considering that such investment now comprises less than 5% of portfolios, the ability to fund infrastructure is very large. Such results argue strongly that national governments should encourage substantial supplies of infrastructure funding from wholesale institutions.

Motivating capital market institutions: An overview

Private finance for infrastructure can be raised from either the international or domestic capital markets. Both operate within the constraints of fiscal, monetary, and competition policies of national governments.

Participants in the capital markets include:

- **Banks**, which are really self-contained credit systems, where internal credit analysts determine the pricing of a borrower's credit based on a combination of market and proprietary information. A loan contract gives both sides almost equal power. However, bank loans are not very liquid, even in the interbank market, where the bank has to monitor the borrower.
- **Insurance companies** that sell life and casualty insurance policies and need to reinvest the proceeds into a general reserve in case any customer files claims. For life insurance, the holding period is long and the average portfolio maturity should be 12–15 years. In a number of countries, life insurance companies also sell types of unit trusts, sometimes linked with the insurance policy. These also tend to be long-term funds needing securities with long maturities. Life insurance companies have difficulty in finding local-currency securities with long maturities.
- **Pension funds** have similar long-term requirements and face the same problem of insufficient supply of suitable paper. Current rules in most countries restrict most funds to sovereign or similar (credit) quality bonds, but as more local currency alternatives become available—including infrastructure backed notes—they should be natural buyers.
- **Mutual funds**, which outside Japan and the Republic of Korea, are equity funds, investing in listed stocks, although a growing number are fixed income funds. Since investors can buy and sell shares in these funds with fairly short notice, the managers are constrained to deal in liquid securities. Private equity funds are a new

¹³⁷ Ibid.

¹³⁸ Clark, Gordon, and John Evans. 1997. *The Private Provision of Urban Infrastructure: Financial Intermediation through Long Term Contract*. Available at Social Science Research Network: <http://ssrn.com/abstract=15153>

variation, investing in illiquid—usually unlisted—equity and debt of relatively new companies. Typically, they restrict access to their funds and do not allow investors to sell out for 5 or even 10 years. The early infrastructure funds of the 1990s in Asia were of this type.

- **Securities and derivative dealers** hold licenses with the local exchanges and trade actively in inter-dealer

Private Sector Funds

There are over a dozen private sector funds focused on infrastructure in Asia. Most are organized in the format of private-equity funds and have committed funds in excess of \$6 billion. While this is a considerable amount of equity, some of these funds were launched over 15 years ago and most have spanned a period of relatively slow infrastructure growth in Asia. As the pace of this growth speeds up, a much larger amount of funding will be required to provide the partial exit that private sector developers will require if they are to fund the equity for projects demanded. In the mid-1990s, private participation in infrastructure (PPI) accounted for up to 22% of the cost of new infrastructure, according to figures from the World Bank. This fell below 6% in 1998. Even in lower-risk markets such as the Republic of Korea, the PPI participation level has only come back to 15% now.

Source: ADB. 2007. Financing Background Paper, *Managing Asian Cities Study*. Manila.

markets. The chief function of dealers is to facilitate trading for end investors. As such, they are short-term oriented and not concerned with the long-term value of any given security.

- **Speculators** take risks that others have shunned, but their focus is very short term, often based on same-day purchases and sales. This makes them very active traders and they provide needed liquidity to the market as a whole.
- **Private bankers** serve as investment advisors, introducing wealthy individuals to both funds and specialized structured investments. In particular, their clients have become a major source of demand for the higher-risk portions of real estate equity investment trusts and collateralized debt obligations. This fairly reliable demand can be very important as a new investor channel for buying infrastructure-related securities and funding the growth of Asia's cities.

Specialist funds in infrastructure cater mainly to institutional investors such as pension funds and mutual funds. They may be highly specialized—providing equity only for solid waste projects in the PRC, for example.

Other participants are highly opportunistic in their activities in the sector. Hedge funds will be opportunistic in their purchase of liquid instruments and private equity firms can provide finance for leveraged buyouts of utilities from which some financial gain can be extracted—for example, by selling property assets.

Private Sector Financing Channels

Funds type	Funds source	Funds mobilized from
Equity	Equity from foreign companies for direct investment (FDI)	Foreign savers (banks, pension funds)
Debt	Foreign stock exchange (equity)	Foreign equity holders
	Local stock exchange (equity)	Local equity holders
	Foreign banks	Local savers
	Local banks	Local investors banks, pension funds
	Foreign stock exchange (bonds)	Foreign company investors (FDI) (profit)
	Local stock exchange (bonds)	Local investors (profit)

Note: Funds refers to mutual funds, unit trusts, equity funds, and venture capital funds.

Source: ADB. 2007. Financing Background Paper, *Managing Asian Cities Study*. Manila.



Financial institutions seek choice, liquidity, and incentives

For domestic financial institutions to mobilize sufficient funds to meet their cities' needs, they will need discretion on how they allocate their funds. This will allow them to impose some discipline on infrastructure sponsors who do not understand the need for commercial returns—and thereby improve governance on these projects in allocating funds. In addition to greater freedom, investors need a choice through which to exercise that discretion. The domestic range of investment alternatives and the discretion with which to choose have been lacking in most regional markets, although significant change is underway. Other factors in providing support to infrastructure finance are liquidity across the market and especially for the sovereign benchmark that defines the yield curve, capacity of the domestic securities dealers and corporate-data (including ratings) agencies, development of the domestic securitization market, and risk management tools available to investors.

Many countries in Asia have made substantial progress since the late 1990s in building up their local currency bond markets. Regulatory reform in a number of countries has allowed new bond issuers to come to the market and overall issue volumes have grown.

Incentive structures designed to mobilize long-term finance are pivotal to the funding of infrastructure. Life insurance companies and pension funds are important for infrastructure finance since they attract long-term savings and are willing to hold instruments for their long-term return. They are interested in relatively safe, lower-return investments. This need matches the type of funding required for infrastructure projects, which can be structured to provide a relatively safe, relatively long-term return.

Instruments appropriate to the needs of these institutions should be designed and established. Mutual funds, or unit trusts, and special-purpose funds can mobilize savings and through the purchase of equities and bonds direct these to infrastructure investments both in developed and in emerging markets, but very few such investments are yet available. While mutual funds are relatively short-term savings instruments for investors—in that they are usually relatively liquid—most exist for long periods and some take the long-term view on their investments.

Typical Financing Structures

Five groups were involved in the 2005 tender for the financing and construction of Manila's 22-km Metro Rail Transit line 7 in the Philippines. Each group was led by an engineering company: Germany's Siemens, Japan's Sumitomo, France's Alstom, China National Technical Import & Export Corporation (CNTIC) of the People's Republic of China, and the Philippines' EEI Corp. Universal Light Rail Transit (LRT) Corporation president Roberto de Ocampo said that 75% of the \$1.2–2.0 billion project would be financed by loans and the rest by equity. The International Finance Corporation (IFC) offered to lead the financing process.

In the spring of 2005, the Ho Chi Minh City government approved an early feasibility study by Siemens of Germany on a planned 20.5-km metroline network. Its estimated cost of \$795.0 million was to be financed by funds from the city government (\$238.5 million), the German government (\$20.0 million), and the Austrian government (\$20.0 million), German banks (\$126.5 million), and \$290.0 million from multilateral donor banks. 52% of cost comes from funding agencies, 16% from commercial banks, and the remaining 32% from some combination of the builder and political sponsor.

In mid-2006, Indonesia's Transportation Minister Hatta Radjasa said that discussions with agencies of the Japanese government on the financing and construction of a 15.4-km subway line were in progress. At that point, 68% of the estimated \$768.0 million cost was to be covered by foreign loans and the rest by local finance. Japanese agencies were reported to be offering up to \$870.0 million worth of financing for 40 years at a rate of 0.4% per annum.

Source: ADB. 2007. Financing Background Paper, *Managing Asian Cities Study*. Manila.

Project Finance and Risks

Choosing investors: The process

Whether infrastructure is financed under state-owned and -operated arrangements or through private participation in infrastructure (PPI), the financing options are similar—a combination of equity and debt with or without guarantees by other parties. Traditionally, the operator of the infrastructure and possibly a funding agency (providing a grant for capital cost) provide the equity, while the debt is usually a mixture of bank loans. A project's guarantees are usually provided by the sponsoring sovereign government, its agency bank, or funding agencies. Normally a combination of investors, most efficiently through a competitive tender, bid for a wholly state-owned project or franchise. This involves competing consortiums of potential infrastructure operators and builders, with their own supporting lenders and guarantors, or with groups (syndicates) of lenders. In both cases, the financial terms are set and adjusted over time among the winning consortium or syndicate, its associated funding agencies, and the sponsoring government.

Competitive capital markets' pricing of such financing is limited, except where banks hedge some of their currency or interest rate commitments in the capital markets. The additional time required to set up a coordination process that meets capital markets' needs is one reason that project participants often favor bank financing.

Infrastructure often implies investments with regulated low returns and long payback and depreciation periods. Key prerequisites for attracting private financing are efficient financial markets, which can provide funding at suitable terms and tenors; reliable and transparent investment and regulatory frameworks; and predictable project revenues that ensure debt servicing and a positive rate of return.

Risks in infrastructure finance

Public infrastructure has a long life, high start-up costs, and significant operations and maintenance costs. Its revenues often start in the third to fifth year after design and they often exceed operations costs only after the fifth or seventh year. The full repayment in installments of initial debt takes 15–20 years. Financing for infrastructure needs to be long term. All market participants—including issuers raising funds—expect a balance between risk, whether from foreign exchange, political choices, central bank decisions, inflation, labor productivity or issuer credit, and return. Capital markets establish a price for the risk as embodied in traded financial



instruments relating to particular assets and this pricing is updated frequently and regularly.

Common pitfalls

Credit risk derives from uncertainty about creditworthiness of a borrower. The key is the probability of the borrower defaulting—i.e., delayed payment of interest or principal, incomplete payment, or outright failure to pay. In infrastructure projects, a common cause of operating failure in the early stages is inadequate or inaccurate documentation as a result of poor planning. Next is an inadequate financial or operating reserve to cover mistakes or the unexpected. In addition, there are political risks, including lack of political continuity, demographic shifts, regulatory change, and poor court and enforcement systems for disputes. Local politicians can be both a cause of and a solution to certain political risks that discourage investment in

Korean and Japanese Municipal Bonds

The Republic of Korea's regional development agencies have been issuing 5-year, fixed-rate bonds since 2000. Thirteen regional development agencies had more than 2,653 billion won (KRW) (\$2.84 billion) worth of notes outstanding as of 30 September 2005, just over 1% of the Korean onshore market. There is a similar and growing number of municipally sponsored infrastructure bonds in the Republic of Korea, some of which use an asset-backed structure. By contrast, 16 of Japan's prefectures and nine of its cities and towns had 16,938 billion yen (¥) (\$144.8 billion) bonds outstanding at 15 May 2005, just over 1.9% of the Japanese onshore market. Considerably more is issued by national and regional infrastructure agencies.

Source: ADB. 2007. Financing Background Paper, *Managing Asian Cities Study*. Manila.