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Infrastructure finance in developing countries— the potential of sub-sovereign bonds

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Abstract

This paper sets out to explore the potential of sub-sovereign bonds in financing infrastructure in developing countries. Taking into account the historical experience of the US, it develops a supply and demand side framework for analysis of the market for sub-sovereign bonded debt in developing countries and applies this framework to Mexico, India and South Africa. Finally, it draws lessons for countries seeking to promote markets for sub-sovereign bonds. Evidence suggests that the regulatory environment, a diversified financial sector and increased capacity for debt support and management matter most for the development of the sub-sovereign bond market.

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Infrastructure finance in developing countries— the potential of sub-sovereign bonds

*Daniel Platz*¹

Introduction

The current global financial and economic crisis has generated renewed interest in mechanisms that help limit country exposure to volatile international financial flows and currency movements. The possibility to tap the domestic capital market for investments through debt issuances, particularly those that are sold in local currency, has thus received renewed interest. This paper explores the potential of public bonds issued at the sub-sovereign level in raising capital for infrastructure investments in developing countries. The document is structured around five sections. The first part seeks to build the case for more research into these instruments and their role in funding infrastructure investment in developing countries. The second section attempts to provide an international assessment of the extent of sub-sovereign bond issuances since, to the knowledge of the author, there is currently no global systematic data available on sub-sovereign bond issuances. The third section draws on the historical experience in the US to identify supply-side (issuer) factors that promote the market for sub-sovereign bonded debt in developing countries and applies this framework to Mexico, India and South Africa - the three developing countries with the largest markets for sub-sovereign bonds. The fourth section follows the same methodology to introduce demand-side (investor) factors and discuss their relevance for the three selected countries. The conclusion draws lessons for countries seeking to promote markets for sub-sovereign bonds.

The case for sub-sovereign bonds

The role of the public sector in infrastructure investment has been recognized for centuries. Public service provision is among the ‘three duties’ Adam Smith attributed to the government. Smith called on the state to protect society from ‘the violence and invasion of other independent societies’, to establish an ‘exact administration of justice’ and to provide for ‘certain public works and certain public institutions, which it can never be for the interest of any individual, or small number of individuals, to erect and maintain; because the profit could never repay the expense to any individual or small number of individuals, though it may frequently do much more than repay it to a great society’ (Smith, 1776, p.651).

How can public providers raise funds for these capital investments? Theoretically, they have five options. First, those fortunate enough where current receipts exceed their costs for consecutive periods, may save in advance for investments. Second, providers may only use current receipts (“pay as you go”). In that scenario, they would not borrow or save, but just limit capital investment to what they collect in a given period. Third, providers could take out a loan and pay later with current receipts, (hereafter referred to as ‘financing mechanisms’). Fourth, they may rely on grants or intergovernmental transfers. Finally, public providers may choose to privatize part of their operations.

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However, current receipts, savings, and central government transfers have proven to be insufficient to fund large-scale projects in most developing countries. Infrastructure funding gaps in developing economies are staggering. Africa faces an infrastructure financing gap of US\$35 billion per year (World Bank, 2008). For Asia, it is estimated that the total infrastructure financing gap averaged around USD420 billion per year over the period of 2006-2015².

At the same time, the private sector's investment in infrastructure projects in developing countries has been volatile over the last 10 years. Investment dipped to \$50 billion in 2003 after reaching its peak at \$131 billion in 1997 and rising again to \$158 billion in 2007. However, with telecoms excluded, investment declined in the two poorest regions (East Asia and Pacific and Sub-Saharan Africa) over the period from 1990 to 2007 (World Bank, 2008). Most forecasters expect a downward trend due to the current financial and economic crisis. Moreover, the private sector's focus on profitability has come with social and political costs since it has often led to tariff increases in sensitive sectors like water with adverse effect on the poorest segments of the population.

Where self-finance and privatization are not suitable sources of funds for large-scale capital investments, the public provider is left with the financing option. Finance mechanisms for cities, states, provinces and counties can range from commercial or non-commercial bank lending, to bonds or pooled financing arrangements.

The focus of this paper is on the potential of bonds in mobilizing long-term finance for service providers. Three reasons make this emphasis a timely one. First and foremost, there is very little data, information and research available on the role of these instruments outside the US. The paper hopes to help fill this gap with this attempt to assess the international extent of sub-sovereign bond issuances in the first decade of the 21st century. Moreover, the analysis will move beyond a factual assessment and try to identify the major challenges countries face in issuing sub-sovereign bonds.

Likewise, while international experience with these instruments is generally limited, municipal bonds have been an extraordinarily successful vehicle for cities, towns and counties in the US to raise capital for infrastructure investments. Recent research has shown that the emergence of the municipal bond market in the US has also contributed to a shift in the ownership structure of waterworks from private to public providers (Cutler and Miller 2005, Platz 2008). Lastly, bonds at the sub-sovereign level generally target domestic capital market investors who are more familiar with local governments (particularly with new issuers) than international creditors. Consequently, these instruments are mostly issued in the local currency and thus have the potential advantage to raise finance without exposure to volatile international capital and currency movements.

One of the questions this paper asks is therefore whether the US history offers lessons for developing countries in terms of institutional, financial and regulatory parameters that can promote the successful issuance of municipal bonds? Could these instruments help empower municipalities and other local government providers in developing countries to improve their services and decrease privatization pressures? If so, why then, are there so few countries in the developing world that make use of these instruments?

Given the sensitivities of certain infrastructure sectors, this discussion cannot ignore a basic ethical question: Do municipal bonds expose essential services like water, a basic necessity for human survival, to for-

2 Estimate of the ASEAN Infrastructure Financing Mechanism Task Force, 2008.

profit interests? Financing mechanisms, whether market-based or state-subsidized, are loans and loans need to be repaid, usually with interest. For municipal bonds, the exposure to for-profit interests would be indirect. Municipal bonds do not change the ownership structure. They are simply fungible (i.e., they have the same conditions and are indistinguishable from another) loan contracts between the municipality and investors. Payments for these loan contracts can only be made when revenues exceed operating costs. Where bonds are constrained to the revenue of a specific project (e.g., revenue bonds) or issued by the utility or some special district, their repayment may indeed induce impracticable profit making pressures on the service provider in a developing country. Where they are issued in the form of general obligation bonds or similar mechanisms (bonds that are backed by the whole taxing power of the municipality) the issuer can subsidize the targeted sector and draw on her entire tax revenue. Therefore, one may offer the ethical caveat for sensitive sectors like water that in order to minimize risks and costs to the public municipal and state bonds should only be considered for large-scale funding needs that cannot be covered through user fees, tax revenues or transfers from the central government. Moreover, general obligation type bonds seem preferable over revenue bonds.

Global perspective on the current market for sub-sovereign bonds

Data for sub-sovereign bonds outside the US are limited and their availability and reliability decreases even further for smaller issues in developing countries that are not traded internationally. It is therefore important to note that the subsequent information is not exhaustive and almost certainly does not list every bond issuance at the sub-sovereign level. Table 3 shows three major tendencies for sub-sovereign bond issuances outside the US for the periods 1990-1999 and 2000-2007. First, the total size of issuances has increased by roughly 47% from \$270 billion to \$396 billion, second the average maturity for issuances has increased from 7.14 to 9.45 years and third the average issuance size has grown. These trends illustrate that the market for sub-sovereign bonded debt has deepened significantly over the last 7 years. Fewer but larger issuances with longer maturities point to an increased confidence and familiarity on the side of investors to direct their funds into these bonds. However, the market continues to be small compared to the US, where for the period of 2000-2007, the volume of outstanding debt at the sub sovereign level was roughly 40 times larger than that of the rest of the world combined. The ensuing section will elaborate on regional trends in the market for sub-sovereign bonded debt.

US and Canada

The sub-sovereign bonds market in the US remains the largest in the world. No other country has a market of comparable size and complexity. The market has grown to roughly 2.6 trillion US Dollars in 2007, which represents about 19 per cent of its GDP. More than 50,000 states, cities, hospitals, special districts and other entities offer municipal securities. In 2007, these entities issued a record \$427 billion in bonds. The largest owners of municipal bonds in the US are individuals, mutual and money market funds, insurance companies, and commercial banks. In 2007, retail investors directly held 35 percent and mutual funds held an additional 36 percent (table 1).

Municipal securities in the US have a wholly different customer base than other securities. Since they are exempt from federal, and sometimes state, income tax they offer lower yields than corporate bonds. Yet, there are several investors that for legal reasons cannot realize these tax advantages, such as pension funds, college endowments, mutual funds offered in 401(k) plans and foreign investors. Similarly, banks can only get the tax break on certain ("bank qualified") municipal securities and therefore do not invest in the rest of the market.

Up until now, municipal bonds have been safe investments in the US with microscopic default rates compared to corporate securities (table 2). The impact of the current financial and economic crisis has had some negative effects on the market. However, the industry has taken a hit because of the mortgage backed security crisis, not because of the underlying quality of municipal issues. Long-term borrowing costs have increased by 6% for top-rated municipalities and more than \$100bn in postponed bond sales was carried over into 2009. For some municipalities, damage has been done through ineffective hedging mechanisms that have encouraged them to go into variable instead of fixed-term lending. Jefferson County, Alabama, is a prominent example. The county rejected fixed-rate debt and borrowed instead \$3.2bn at variable rates with interest rate hedges upon advice from a prominent investment bank. When the hedges failed to generate the expected revenues, the county had trouble to meet higher debt costs.

The future effect of the crisis on the US municipal bond market is hard to predict. The default rate may rise during the ongoing recession due to falling tax revenues and increased fiscal spending. Yet, some of

Table 1: Holders of U.S. Municipal Securities

Year	Percentage					Total (in billion USD)
	Individuals	Mutual funds ^a	Banking institutions ^b	Insurance companies ^c	Other ^d	
2000	35.88	36.51	8.69	13.73	5.19	1 480.5
2001	36.24	37.69	8.96	12.00	5.11	1 603.6
2002	38.50	36.40	8.41	11.51	5.18	1 763.0
2003	37.04	35.33	8.62	13.17	5.83	1 900.7
2004	36.57	34.33	8.86	14.67	5.57	2 030.9
2005	36.90	33.15	9.40	15.53	5.02	2 226.0
2006	36.51	33.46	10.06	15.47	4.50	2 403.2
2007	34.82	35.76	9.66	15.52	4.24	2 621.0
2008 (first quarter)	33.52	36.24	10.43	15.42	3.72	2 675.0

Source: Securities Industry and Financial Market Association.

a Includes mutual funds, money market funds and close-end funds.

b Includes commercial banks, savings institutions and brokers and dealers

c Includes property-casualty and life insurance companies.

d Includes nonfinancial corporate business, nonfarm noncorporate business, state and local governments and retirement funds and government-sponsored enterprises.

Table 2: Cumulative Historic Default Rates of municipal and corporate bonds in US (in percent)

	Moody's		S&P	
	Municipal	Corporate	Municipal	Corporate
Aaa/AAA	0.00	0.52	0.00	0.60
Aa/AA	0.06	0.52	0.00	1.50
A/A	0.03	1.29	0.23	2.91
Baa/BBB	0.13	4.64	0.32	10.29
Ba/BB	2.65	19.12	1.74	29.93
B/B	11.86	43.34	8.48	53.72
Caa-C/CCC-C	16.58	69.18	44.81	69.19
Investment Grade	0.07	2.09	0.20	4.14
Non-Invest Grade	4.29	31.37	7.37	42.35
All	0.10	9.70	0.29	12.98

Source: Municipal Bond Fairness Act (HR 6308).

it may be offset through increased fiscal support from the federal government through stimulus packages. Issuance cost will most likely increase in regions that have witnessed severe housing busts, fiscal deterioration and problems with monoline insurers. On the positive side, low treasury yields, a turbulent stock market and little or no inflation have highlighted the virtues of municipal bonds with their high yields and low default rates compared to other investments. These qualities may explain the recent larger inflows into the market after several dismal months in 2008.

Local governments in Canada continue to be the largest issuer of municipal debt in the Western Hemisphere next to their US equivalents (table 3). Canadian provinces such as Quebec and Ontario have sold their bonds in international bond markets for more than eighty years³. Although municipal bonds in Canada are not tax exempt, they are popular financing vehicles for sub-sovereign governments. Canadian provinces have greater tax raising and policy making powers in comparison to several European local governments, where these powers are characteristically curtailed by the central governments. This makes Canadian issues easier to market and financially more attractive to investors. The well-developed capital market in Canada can take advantage from the proximity of the municipal bond market in the US. Since US investors are familiar with municipal bonds, they can help market issues to US and other international investors. Moreover, Canadian municipalities offer extra safeguards to investors. The senior Canadian government, with the exception of British Columbia, directly guarantees municipal bonds through Municipal Finance Corporations (MFCs). This allows less creditworthy municipalities to put their securities on the markets.

Europe

Europe features the largest number of issuers, issuances, and Dollar volume outside the US⁴. From 1990 to 2007 the number of issuers increased from 19 to 24. For the same timespan, the average size of issuances increased significantly from \$101 million to \$176 million. Moreover, the total dollar volume of issuances nearly increased twofold from \$118 billion to \$333 billion, even though the second number corresponds to a shorter time period. The major European issuers in the last 8 years include Germany, Spain, Italy, Finland, United Kingdom, France, and Sweden. Germany issued the large majority of sub-sovereign debt. With 770 issues over the last eight years, German sub-sovereign governments were responsible for 82% of the total municipal debt issued in Europe from 2000-2007. Long-standing traditions of debt financing for various local and industrial development purposes as well as well-developed capital markets promote municipal bond issuances in these countries. The introduction of the Euro is likely to have invigorated the market for municipal bonds. Similar tendencies have been seen for the corporate bond market, which saw outstanding amounts of euro-denominated corporate debt securities almost double between 1999 and 2003 (IMF, 2008). Moreover, the large accumulation of reserves in many Asian countries has increased interest in the European bond market. Governments have shifted their interest from US Treasury bonds to European bonds with higher yields. Germany, for example, has targeted China for the sale of its "Pfandbriefe", which comprise municipal bonds and private mortgage covered securities.

Several Eastern European countries such as the Russian Federation, the Slovak Republic, Slovenia, and Romania have entered the municipal bond market to finance large infrastructure projects. Yet, other Eastern nations, such as Moldova and Estonia have not issued any new securities since the 1990s. This is a

³ See, for example, New York Times, "Bonds on Ontario on market today; Canadian Provincial Issue of \$24,000,000 Awarded to International Syndicate", October 27, 1927, and New York Times, "\$4,000,000 Bonds of Quebec awarded; Syndicate Gets Issue at 99.031, Highest for Province's Bonds Since the War", April 8, 1927.

⁴ Unless referenced otherwise, data in this section is taken from Thomson Financial Securities Data company database of International Municipal New Issues, 2008.

Table 3: International issuances of sub-sovereign bonds for 1990-1999 and 2000-2007

Country	Average size 1990-1997	Number of issues 1990-1999	Total issuance 1990-1999 (\$million)	Average Maturity 1990-1999 (years)	Average size 2000-2007	Number of issues 2000-2007	Total issuance 2000-2007 (\$million)	Average Maturity 2000-2007 (years)
Argentina	123.87	24	2972.88	6.15	146.76	23	3375.48	4.47
Australia	49.47	818	40466.46	3.17	37.93	117	4437.81	16.13
Austria	110.35	40	4414	6.50	272.09	2	544.18	3.37
Belgium	302.17	2	604.34	5.69	109.59	1	109.59	7
Canada	211.27	479	101198.33	9.38	92.85	500	46425.00	12.47
Chile	91.33	1	91.33	6.96	0.00	0	0.00	0
China	105.25	3	315.75	6.37	0.00	0	0.00	0
Colombia	0.00	0	0.00	0.00	200.43	2	400.86	13.01
Czech Republic	0.00	0	0.00	7.50	110.70	4	442.82	9.25
Czechoslovakia (until 1993)	129.00	2	258.00	0.00	0.00	0	0.00	0
Denmark	64.00	28	1792.00	6.17	77.38	3	232.14	8.34
Estonia	25.27	3	75.81	4.00	0.00	0	0.00	0
Finland	16.19	127	2056.13	6.73	60.76	39	2369.64	15.95
France	87.06	62	5397.72	10.50	103.93	27	2806.11	11.25
Germany	193.69	253	49003.57	9.08	356.51	770	274512.70	5.39
Italy	159.25	18	2866.50	10.80	359.92	62	22315.04	21.46
Japan	196.92	29	5710.68	9.32	271.46	5	1357.30	24.8
Luxembourg	27.88	1	27.88	10.00	0.00	0	0.00	0
Malaysia	0.00	0	0.00	0.00	675	2	1350.00	15
Moldova	150.00	1	150.00	5.00	0.00	0	0.00	0
Neth Antilles	0.00	0	0.00	0.00	28.00	2	56.00	8.5
Netherlands	138.16	3	414.48	9.37	8.66	6	51.96	8.11
Norway	28.32	147	4163.04	14.39	0.00	0	0.00	0
Poland	1.00	1	1.00	2.00	28.90	1	28.90	7
Portugal	21.00	21	441.00	10.32	80.47	1	80.47	7
Romania	0.00	0	0.00	0.00	605.77	1	605.77	10
Russian Fed	0.00	0	0.00	0.00	289.92	6	1739.52	5.45
Singapore	153.65	3	460.95	8.09	0.00	0	0.00	0
Slovak Rep	64.39	1	64.39	5.00	80.90	4	323.60	2.25
Slovenia	0.00	0	0.00	0.00	548.63	4	2194.52	10.04
South Korea	151.34	5	756.70	8.10	83.32	6	499.92	4.66
Spain	163.37	70	11435.90	6.00	203.61	101	20564.61	9.97
Sweden	54.17	82	4441.94	11.00	51.15	23	1176.45	5.45
Switzerland	55.38	531	29406.78	8.60	169.12	6	1014.72	10
Ukraine	0.00	0	0.00	0.00	233.33	3	699.99	5.99
Turkey	190.31	3	570.93	0.00	0.00	0	0.00	0
United Kingdom	131.89	7	923.23	0.00	117.09	12	1405.08	5.26
Venezuela	0.00	0	0.00	1.00	189.54	28	5307.12	6.37
Total	110.21	2765	270481.72	7.14	186.46	1761	396427.30	9.45
Asia	132.91	43	7815.01	4.55	257.45	13	3207.22	8.89
South America	53.80	25	3064.21	4.70	194.99	53	9083.46	5.96
Europe^a	101.13	1399	117937.71	7.77	175.84	1075	333217.81	8.03

Source: Thomson Financial Securities Data company database of International Municipal New Issues.

a includes economies in transition.

positive development given the long-term capital needs of major public improvements projects such a water supply systems. Yet, despite the fact that the European municipal bond market has grown, European municipalities have maintained bank lending as the primary source of municipal finance.

Asia and South America

In comparison to Europe and North America, issuance volume in other areas of the world is much smaller. With the exception of Latin America, where sub-sovereign governments sold \$9.1 billion worth of debt compared to \$3.1 billion in the 1990s, these regions have issued fewer municipal bonds in the 21st century than in the 1990s. Colombia continued to sell bonds and Venezuela has entered the municipal bond market with a number of large issuances. Issuances decreased in Asia from \$7.8 billion to \$3.2 billion (table 3).

Issuers in Asia include Japan, Malaysia, and South Korea. The decrease in and generally low number of issuers in Asia is somewhat unexpected given the huge amount of infrastructure financing needs. For some emerging economies reasons are of a regulatory nature. For instance, the current legal environment in China prevents sub-sovereign government from raising finance through municipal bonds. Tight budgetary laws, introduced by the government to prevent the recurrence of municipal bond defaults that had taken place in the 1990s, effectively prohibit the issuance of municipal bonds. However, Chinese authorities have expressed increased interest to modify regulations and promote municipal debt issues to finance local services (Peterson, 2007).

Other sub-sovereign issuances in developing countries

The information provided in table 3 does not include some of the less prominent issuers in developing countries that are largely sold to domestic investors and not traded much internationally. To the knowledge of the author, the only attempt to compile a publicly available and comprehensive overview of sub-sovereign bonds in developing countries (including amounts, types, yields and maturities) in developing countries was made by the World Bank. However, the data, which have been laboriously compiled with the help of World Bank country offices, have not been updated since 1999. This seems surprising, given the importance the Bank attached to the development of sub-national bond markets in the late 1990s. Filling that information gap would require a large effort involving an international data collection agency that has an efficient information exchange arrangement with governments at the sub-sovereign level.

However, other middle and low-income countries, including Mexico, Brazil, South Africa, India, and the Philippines, have made experiences with municipal bonds (Peterson, 2007, Martell and Guess, 2006).

The city of Aguascalientes was the first Mexican sub-sovereign entity to issue a municipal bond in December 2001. The bonds were issued for the sum of MXN\$90 million and received a superior rating from Standard & Poor's (Standard & Poor's, 2005). Currently, twelve states and three municipalities have outstanding bond issuances that total US \$1.855 billion (Fitchratings, 2009).

Rio de Janeiro was the first city in Latin America to successfully issue a bond in the international capital markets. The city issued a bond in July 1996 to refinance its existing debt (with an interest rate of 10.3/8% for U.S. \$125 million over three years). The bond was unsecured despite the fact that this was the municipality's first public international debt issue. Currently, tight fiscal regulations described in more detail in the next section effectively prevent municipal bond issuances in Brazil (Platz and Schroeder, 2007).

The city of Johannesburg is the only city in South Africa that has issued municipal bonds in recent years. Johannesburg has launched four institutional bonds totaling R3.9 billion or \$506.2 million USD. Currently, South Africa seems to be the only African country that successfully raises finance through municipal bonds for infrastructure finance. However, other countries might follow suit. Kigali City, Rwanda, for example, plans to raise Frw5 billion through municipal bonds to finance infrastructures investments, although the issue has been delayed due to the current high rates of inflation in Ruanda (Palmer Development Group, 2006).

Municipalities in India have raised 12.037 billion INR or around \$285.5 million USD through taxable bonds, tax-free bonds, and pooled financing arrangements (table 4). Most of these securities were issued to finance water supply and sewerage systems.

Table 4: Municipal bonds in India

Type of Bond	Amount (INR)
Taxable bonds	4,450
Tax-free bonds	6,283
Pooled finance	1,304
TOTAL	12,037

Source: Data received from Chetan Vaidya, Director National Institute of Urban Affairs and Hitesh Vaidya, Sr. Municipal Development Specialist, Indo-USAID FIRE project.

There are only a few issues in the Philippine bond market and most of them are small. Since 1991, at least 13 local government units (LGU) have issued bonds, totaling P1.56 billion or \$34.5 million (Oriol, 2003)⁵. Most of the bonds were tax-exempt. They ranged from \$148,000 to \$482,000, with maturities of two to three years.

Supply-side factors in sub-sovereign bond issuances in developing countries

The ensuing sections propose supply and demand side frameworks for the discussion of sub-sovereign bond issuances in developing countries and apply them to the selected cases of Mexico, India and South Africa. Within all of these countries, the current market for municipal bonds has only emerged recently. For the purpose of the analysis one should note that the origins of the markets have been at least partially the result of external pressures. The World Bank and USAID have played a particularly important role in promoting municipal bond issuances through the provision of technical advice, loan guarantees and sometimes loan conditionalities. External influence was lower in Mexico and South Africa than in India, where the promotion of the municipal bond market was part of USAID's larger Financial Institutions Reform and Expansion (FIRE) project. Hence, in the case of India one has to exercise particular caution in terms of causal relationships. For instance, a deep financial sector in India may not in itself have caused the emergence of the municipal bond market. Rather financial sector indicators may have played a role for development agencies and international financial institutions to identify India as a suitable candidate for municipal bond market development. For Mexico and South Africa, the evolution of the recent markets was somewhat less driven by external pressures. The section relies heavily on data provided through the World Bank Financial Structure dataset. The data rarely goes beyond the year 2004. However, in terms of the analysis in this paper the data is highly relevant as it was during the first five years of this decade that the markets for sub-sovereign bonds in the these three countries emerged and experienced their strongest growth.

Literature identifies a range of supply-side factors that may contribute to the development of the sub-sovereign bonds markets (Leigland 1997; Martell and Guess 2006). They may be grouped into the following (often interrelated) categories: (1) increases in sub-sovereign financing needs; (2) improved capacity

5 Exchange rate of August 2008.

of municipalities to manage and support debt; (3) low borrowing costs; (4) regulatory and legal environments conducive to municipal borrowing and (5) credit enhancements.

Increases in sub-sovereign financing needs

Public sector financing needs are increasing around the globe for a range of reasons. First, rapid urbanization has led to greater demand for municipal investment in infrastructure. The world's urban population increased from about 270 million to 3.3 billion between 1920 and 2007. In the same period, 1.5 billion urban dwellers were added to Asia, 750 million to the more developed regions, just under 450 million to Latin America and the Caribbean, and just over 350 million to Africa. This trend will accelerate in the next few decades. 3.1 billion additional urban dwellers are expected by 2050, including 1.8 billion in Asia and 0.9 billion in Africa (UN, 2008). Second, fiscal decentralization strategies have become more popular since the 1990s which has shifted much of the responsibility for infrastructure and utility investment to local governments (Shah 2004; Smoke, 2001). This trend has posed new challenges for local governments. While needs for sub-sovereign investments have increased, fiscal subsidies from central governments to municipalities have declined. Moreover, for most sub-sovereign governments the taxing authority of states, cities, and towns has remained restricted to immobile tax bases such as property taxes. Third, disappointing experiences with privatization of essential services in the 1990s have increased popular demand to keep the responsibility for local service provision, in particular water, with public providers (Hall and Lobina, 2006). Private financing in water supply and sanitation has accounted for less than 10 percent of total investments in developing countries⁶. Consequently, the large majority of water supply systems remains in the hands of the public sector in developing countries. The historical experience of the US has highlighted that the investment into public water supply systems and the deepening of the sub-sovereign bonds market were mutually reinforcing phenomena (Platz, 2008). The desire to retain municipal ownership of essential services in developing countries may therefore further increase municipal infrastructure financing needs. This tendency may provide an important reason for these countries to promote the development of sub-sovereign bond markets.

Local government entities in the countries under scrutiny in this paper face challenges in meeting their infrastructure needs, although the level of fiscal decentralization varies. Mexico consists of the Federal District, thirty-one states and 2,444 municipalities. While federal agencies cover a wide range of public services, states and municipalities own about 500 water and sewer utilities. Many municipalities face severe challenges in raising finance and revenue from its citizens. In 2194 municipalities, per capita income is less than or equal to the national average of US \$8,900 (Fitch, 2007). The major sources of revenue are payroll taxes for states and property taxes for municipalities. Almost all municipalities rely on tax-sharing grants as a source of local government revenue. Bank loans remain the dominant source of finance for rated states and municipalities and the only source of finance for the large majority of unrated municipalities (Fitchratings, 2008). Most rated state issuers make use of commercial bank lending. Due to their lower creditworthiness rated municipalities have less access to commercial credit and continue to draw on credit from the development bank Banobras. For non-rated municipalities, development bank loans remain critical sources of finance. Frequently, these towns join together to raise money through pooled loan arrangements.

The municipal fiscal sector in India is very small compared to that in other developing and developed countries. The total municipal revenue in India accounts for about 0.75 per cent of the country's GDP compared to 6 per cent for South Africa or 4.5 per cent in Poland. Urban local bodies (ULBs) represent less than 2 per cent in terms of both revenue and expenditure of the combined revenue and expenditure of the

⁶ Estimate from World Bank, Energy, Transport and Water Division.

central government, state governments and ULBs, in contrast to developed countries, where local bodies normally represent 20-35 per cent of the total government expenditure. Moreover, recent data reveal that the total revenue of ULBs grows more slowly than central and state government revenues (Mohanty, 2007).

Similar to India, local governments in South Africa have the responsibility for the provision of basic utilities and basic services. These tasks call for large investments in order to upgrade outdated and insufficient municipal infrastructure necessary to support these services. Needs are particularly prevalent in the formerly disadvantage locations. During the apartheid regime municipalities focused on white communities, while black townships and homelands were served by national public entities, such as Eskom. The amalgamation process of the post apartheid regime combined the previous Black Local Authorities (BLA) with White Local Authorities (WLA). This process led to major financial problems and challenges because it increased the population municipalities served without a significant raise in the tax base. Decentralization initiatives by the government and greater urbanization are likely to increase this trend. In 2000, when the South African government published its “Policy Framework for Municipal Borrowing and Financial Emergencies”, the Department of Finance estimated the number of municipalities that require external assistance to obtain commercial loans or access to the bond market at 700 -750 (of a total of about 850).

Improved capacity of municipalities to manage and support debt

The capacity to support sub-sovereign debt depends on the ability of the municipality or the central government (where it provides intergovernmental transfers to the state or municipality) to raise revenue. When it comes to revenue generating projects like water supply or electricity, municipalities have increased their efforts to recover their costs in the long term. Cost recovery remains difficult where payment capacities of customers are severely limited.

Similarly to cost recovery, the mobilization of tax revenues faces severe challenges in developing countries at the national and sub-sovereign level. First, the potential for tax revenue is generally low given the prevailing low average income in developing countries. This severely limits the revenue potential of income and consumption taxes, which are usually collected at the federal level. Second, many developing economies are characterized by large informal-sector activities and occupations without transaction records. The problem of data collection is exacerbated by the fact that most transactions even in the formal sector transpire in cash. Third, tax administration capacities are weak due to inadequate funding of the states’ revenue collecting agencies, as well as workforce problems, including a dearth of qualified labor, lack of training, and often more favorable remuneration available in the private sector. Fourth, tax awareness is low. Taxpayers are often not aware of their rights and obligations. Moreover, the incentive to pay taxes is low where the rates are too high and where public services do not reach the population or simply where there is a discrepancy between those paying, not knowing what they get in return. Finally, there is a significant loss of revenue, finally, due to liberal tax incentives and exemption schemes, from liberal capital allowances (the “race to the bottom” to attract foreign investors) to sectoral exemption schemes (in such areas as mining and agriculture), location incentives, and the establishment of export processing and manufacturing zones.

The collection of taxes is even more challenging at the municipal level where tax bases are usually confined to property taxes. While municipalities may gain from the rise in property values that may come with increased urbanization, they should heed the warning of US experiences. Many municipal defaults in the late 1920s were caused by exaggerated assessments of property values on municipal lending, fueled by relocation from rural to urban areas and pent-up housing demand during the mid 1920s (Hillhouse,1937).

It is also critical that local governments have the technical capacity to manage their debt. The US history has highlighted the importance of progress in the methods of taxation, auditing and accounting in the development of the sub-sovereign bonds market. In the context of developing countries, contemporary literature mentions accounting systems that support local liability management, regular financial reports and professional capital programming and budgeting systems (cost/benefit and net present value techniques) as critical features for the capacity to manage municipal debt (Martell and Guess, 2006).

Legislative reforms in Mexico from 2001 have increased the capacity for states and municipalities to support their debt. The new legislation demands that each state or municipality makes payback provisions through the establishment of its own trust in line with its specific legal environment⁷. The trusts are funded through federal tax revenues, so-called “tax participations”, collected by the Mexican federal government and redirected through the federal General Participation Sharing Fund (GPSF). Since instructions to fund these trusts are irrevocable, the trusts isolate debt payments from the states and municipalities expenditure accounts. Debt securities can be issued by the state or municipality directly or through the trust itself. These new mechanisms allowed some municipalities to issue municipal bonds or raise bank loans with relatively low interest rates. Moreover, securities issued through the trusts frequently managed to surpass the municipalities in their ratings.

In India, the revenue of ULBs consists of tax and non-tax revenues, grants, including grants and loans from the higher level of governments, as well as market borrowings⁸. There exist wide differences between local governments in their tax jurisdiction, the degree of control exercised by the state government in terms of the fixation of tax base, as well as tax rates and tax exemptions. However, in most of India property tax and user charges revenues in the urban local municipal bodies (ULBs) are notoriously low. Insufficient metering of water connections, and low collection efficiency due to inadequate systems and organizational capacity have resulted in low revenues from user fees. Consequently, ULBs continue to rely heavily on fiscal transfers. The experience of Ahmadabad’s first bond issuance highlights the potential of improvements in tax collection and administration for local revenue collection (USAID, 2001).

In sharp contrast to many other developing economies, whose municipalities have very little taxing power, municipalities in South Africa generate up to 90% of their operating revenues from own taxes and fees. South African municipalities are entitled to raise property taxes and payroll or regional levies on businesses, as well as fees and surcharges on the provision of electricity and water. Utilities, however, present a liability for many, as collection rates can be as low as 60% (typically around 85%). Furthermore, municipalities providing water face high loss rates. In addition, many municipalities suffer from poor socio-economic conditions due to high prevalence of poverty and HIV/AIDS. These factors lower the revenue potential and result in spending pressures for municipalities, as they require additional funds to provide acceptable quantity and quality of service.

Moreover, the capacity for South African municipalities to support their debts has been negatively affected by inadequate revenues streams due to the difficulty in the extension of effective property taxation to the former township areas. Other problems, including large amounts of outstanding debt, upward pressure on salaries and loss of experienced finance personnel, further decreased the capacity of municipalities to

7 See constitution of the United Mexican States (article 117 for states, article 115 for municipalities) and article 9 of the Fiscal Coordination Law.

8 ULBs are a part of the third level of government in India after states (28) and union territories (7). The third level, local bodies, includes 3,682 ULBs, and around 247,033 rural bodies (panchayats) (Kehew, Matsukawa, Petersen, 2005).

support and manage debt. Weak budgeting, accounting, credit control and financial reporting systems have lowered the credibility of municipalities among investors.

Low borrowing costs

The borrowing costs comprise the principal and interest rate payments associated with the bond, as well as the issuance cost, which include fees paid for financial advisory services, credit rating services, paying agent costs and other types of legal expenses.

Long maturities reduce the size of the average annual debt service for the issuer. The longer the time span of the bond the smaller will be the provision that has to be made on an annual basis to repay the principal. Maturities in the US, where bonds are frequently issued for thirty years or more, tend to be much larger than maturities in other countries. In developed countries outside the US, the average maturity for frequent issuers range from a low of 2.25 years for issues in the Slovak Republic to 24.8 years in Japan. In developing countries, where investor confidence in long-term issues is low, credit enhancements have played an important role in increasing the longevity of a bond (see section III).

The interest rate investors are prepared to pay depends on the market environment. Where corporate or government bond yields are high issuers may not be able to compete with equally high yields for municipal bonds. A mechanism that can reduce interest rates is tax exemptions. Tax exemptions per se increase investor interest. However, this paper considers exemptions supply-side factors since they effectively reduce borrowing costs. Two otherwise identical securities, one of which is tax exempt will not have the same yield curve. The tax exempt security will trade at a premium and the higher price will correspond to a lower yield and thus reduce the borrowing costs for the issuer. However, while they will lower interest rates and reduce the debt burden of the issuer, exemptions will also reduce income tax revenues of the central government and therefore lower the resources of the government to provide intergovernmental transfers to sub-sovereign entities. The level of decentralization could therefore be an important consideration in introducing tax exemptions. In countries where central governments provide very little support to sub-sovereign entities exemptions may have a positive effect on the demand for municipal debt. Where municipalities are relatively independent, they may lead to significant savings in interest rate costs that would outweigh a potential reduction of financial support of the central government.

The introduction of tax exemptions must be judged against their potential impact on the investor base. Exemptions on income taxes cannot be realized by every investor. For example, foreign investors will not be able to take advantage. Since tax exemptions reduce the yield of municipal bonds, these investor groups are likely to divert their funds into other comparable securities with higher yields. Similarly, certain investor groups may face legal restrictions to realize the tax exemption (see US example in section I). They will attract some new investors and divert others. The composition of the financial sector, as well as tax regulations will therefore be critical to evaluate their revenue effect.

Further research, based on concrete country experiences should explore how issuance costs could be reduced. Possible approaches could be to not require the underwriters to commit their own capital to the full purchase of the issued bonds or to directly place bonds with investors instead of offering them to the public competitively (Leigland, 1997). In the early 20th century, US cities introduced the possibility of private placements to increase the chances of success of their bond sales. This strategy is mostly employed with smaller issues. The reason could be that transactions costs are higher for public issues. Developing countries,

where issuances are smaller and financial sectors shallower than in developed countries, may therefore be better off with privately placed issues than public ones.

Issuance costs vary in the selected countries. Tax exemptions are applied differently and issuance costs depend on the local financial infrastructure and issuer and investor preferences in terms of type, size and maturity of the bonds.

For example, issuance costs in Mexico seem higher than in India or South Africa. First and foremost, there are no income tax exemptions for municipal or state bonds in Mexico. Second, while interest costs have been relatively low, higher levels of bonds sophistication have raised issuance costs, which reach up to 10% of the average loan size (Leigland, 2008). Bonds that are secured by future tax flows from the federal government, so-called “future flow bond” require more technical expertise to issue since they are more complex than other securities like ordinary general obligation bonds. This has implied higher transaction costs. Moreover, the issuances have been made more expensive through overcollateralization for extra security. Consequently, municipalities have turned to other investors. Particularly, commercial banks and pension funds have competed for the extra benefits of the trusts.

The larger involvement of these intermediaries may have slowed down the development of the municipal bond market somewhat in recent years. However, this may have contributed to a deeper overall financial market. The experience in Mexico shows that whether municipal finance comes from bonds, banks or pension funds is ultimately not important. The critical question is whether municipalities and states can draw on low cost long-term finance. For Mexico, the banking sector seems to have surpassed the bond market in this regard. Within the last few years, maturities for bank loans have increased drastically. States have access to bank loans that average 20 years whereas maturities for bonds range from 5 to 11 years.

Tax exemptions have helped Indian ULBs to lower their issuance costs. India’s Income Tax Act ruled that the income earned through bonds issued by municipalities, municipal corporations and statutory corporations after 2001-2002 are exempted from tax. Tax exemptions also apply to income from investments into infrastructure companies that are solely engaged in developing, maintaining and operating infrastructure facilities. The projects include urban infrastructure projects such as toll road projects, water supply projects, water treatment system and irrigation projects, sanitation and sewerage system or solid waste management. The tax exemption applies to interest, dividends received and long-term capital gains, as well as fees or commission received for giving any guarantee to enhance credit that received approval by the central government. Maturities for municipal bonds range up to 10 years and have thus also contributed to lower issuance costs compared to their Mexican counterparts. These relatively long maturities were made possible through external credit enhancements discussed later in this section..

There are no legal provisions for tax exemptions for municipal bonds in South Africa. The government has viewed tax exemptions critically. The 2000 framework for municipal borrowing highlights tax incentives that were provided by a number of the larger banks to municipalities through complicated lease structures. These incentives had deleterious effects on the central fiscus (and, possibly, unintended consequences at the local level). Maturities range from 20 to 50 years during the Apartheid regime. Johannesburg’s outstanding municipal bonds have a shorter maturity of up to 10 years.

Regulatory and legal environments conducive to municipal borrowing

The legal and regulatory borrowing framework shapes the development of the municipal bond market. The US experience, as well as more recent experiences from countries with markets for municipal bonds, suggest that there are certain components that are particularly important for a regulatory and legal environment that supports the development of the municipal bond market. These factors include mandatory provisions for municipal revenue cushions for payback (so-called “Sinking Funds” in the US or “Master Trusts” in Mexico), the empowerment of the municipality to determine the debt issuance including the interest rate and maturity, transparent and reasonable debt limits and some type of supervision of municipal finances.

Throughout the US history, flexibility in terms of the interest rate as well as the maturity of city securities has helped spark investor interest during difficult times. The trend of more decentralized government structures in developing countries could therefore facilitate further legislation that empowers municipalities to independently set the terms of their debt issuances.

Debt ceilings introduced in the earlier stages of the US municipal bond markets after major crises in 1873 and 1893 have served municipalities in the US well. Towards the late 19th century, they prevented episodes of excessive local borrowing. Moreover, the positive track record of the municipalities increased investor confidence and demand and led to the deepening of the market. However, important exceptions of debt limits were made for essential revenue generating public improvements, in particular water supply systems. Consequently, securities could be issued to finance water supply, whereas overall municipal debt was kept in check.

Similar exceptions for public improvements seem reasonable for developing countries. There are instances, where overly stringent credit ceilings impede the development of the municipal bond market for productive investments with dismal effects for local services. For instance, Brazil has introduced tight debt limits to preclude the recurrence of the sub-sovereign debt crisis in the 1990s. Since almost all of the approximately 5,560 Brazilian municipalities have approached or exceeded this limit, the federal government has imposed a moratorium on new municipal debt issuance. Consequently, no sub-sovereign bond issuance for infrastructure financing takes place⁹. Some relaxation of these restrictions seems reasonable given the fact that the country continues to face large infrastructure needs. Similar laws exist in other developing countries.

The experience of the US highlights the important role of supervision of municipal finance. Towards the late 19th and in the first three decades of the 20th century, several states established more extensive oversight over municipal accounts. North Carolina, for instance, has introduced frequent and thorough reviews of local units of government finances that have helped financial units to avoid financial distress. However, despite its long history and important reform measures, even the US municipal bond market has lacked transparency when it comes to financial disclosure of the issuer. In contrast to the corporate bond market,

9 The Fiscal Responsibility Law (Supplementary Law 101) of May 2000 governs the expenditures of municipalities. The Law contains explicit numerical hard budget and intra-budget constraints. For instance, it determines that the ratio of net debt to current revenue should reach a target of 1.0 over 15 years, and credit operations should be consistent with this target. No debt can be issued to finance current expenditures. At the same time, total personnel expenditures incurred in each determination period must not exceed 60 percent of net current revenue. If a municipality does not respect the spending limits, it is not allowed to make contracts for both internal and external credit operations, including revenue anticipations, except for the refinancing of the updated principal of securities debt.

where financial filings are public, investors must pay to view the financial filings of municipal issuers¹⁰.

Effective judicial frameworks, including a government bankruptcy framework (chapter 9 in the US), helped sustain the municipal bond market in the US. They protect the rights and obligations of creditors and debtors at the sub-national level. Yet, judicial frameworks are often weak or absent at the municipal level in developing countries. Moreover, in many cases these institutions are already weak at the national level and as a result, investors and financial intermediaries might be even more reluctant to enter the sub-national market.

Other less free-market oriented type regulations may have a positive impact on the development of the municipal bond market. In the US, certain state-owned banks have long been obliged to invest a certain share of their securities into government-owned securities, including at the state and municipal level. In South Africa, a prescribed investment regime sustained an active municipal bond market until the end of the Apartheid regime in 1994.

Mexico provides an illuminating case for the power of the regulatory environment in the promotion of the sub-sovereign debt market. First, there is no federal limit for debt issued by Mexican states or municipalities. Second, the introduction of Master Trusts and the mandatory participation of municipalities in the tax participation scheme described earlier has provided effective guarantees to municipal debt issuances. Finally, regulatory reforms have led to the emergence of a local rating industry (described in more detail in the section concerned with demand-side factors under “investor familiarity and confidence”).

The Local Authorities Loans Act provides a clear framework for the borrowing powers of Indian municipalities. The law determines that state governments are responsible for establishing the framework within which their local governments borrow money. It allows the local authority to borrow on the security of its funds or any portion thereof for public welfare activities. The corresponding state government can, inter alia, impose restrictions on the nature of the funds that back the security, the works for which money may be borrowed and the accounts to be kept in respect of loans. Several municipal bonds in India have received partial external or state guarantees. However, there are no specific statutes in India that offer legal default protection for investors or govern the procedures for local government insolvencies. Investors could seek an injunction at the High Court. However, local bodies are protected by the principle of sovereign immunity. In the case of water supply, legal action would be complicated by the fact that these projects often pass through several states and local bodies.

The legal and regulatory environment that governs municipal finance in South Africa was unclear during the period between the end of the apartheid regime and the year 2000. The Policy Framework for Municipal Borrowing and Financial Emergencies highlighted municipal bond issuance as a necessary component to finance infrastructure development in South Africa. The framework specifies the entities that may issue debt, their powers to do so and any restrictions on these, the type of debt that may be issued and the use to which debt finance may be put. The introduction of legal default protection for the investor has been recognized as a non-suitable mechanism for investment into municipal finance. Creditors may approach the courts in the event of default. However, the only real redress available to creditors in this instance is the attachment of municipal assets to settle outstanding liabilities. This limitation disqualifies most assets such as roads or water systems.

10 In July 2008, the Securities and Exchange Commission proposed a change to the rule that would open these filings to the public through the creation of a central repository of municipal issuer filings. The new entity would replace the seven public and private nationally recognized municipal securities information repositories that collect and control the information today.

Credit enhancements

Credit enhancements can help issuers market their debt to investors. Enhancements in the form of government guarantees were important for the capacity of states in America to enter the domestic and international capital markets. The first famous federal bailout of state debt originated from Alexander Hamilton's motion that called on the Federal government to assume the Revolutionary debt of states. However, government bailouts were not common in the municipal bond market (in contrast to the state debt market), even though several states in the US offer financial guaranties on municipal bonds of various kinds. Despite the lack of guarantees, initially, municipal bonds turned into popular securities since the low default rate of municipal bonds enhanced investor confidence in these instruments over time.

However, new forms of credit enhancements entered the US municipal market in the later 20th century. Only in the 1970s, monoline bond insurance companies such as AMBACD Financial Group and MBIA emerged to serve as guarantors for issuers that want to improve their prospects on the capital market. Roughly half of municipal bonds that were issued over the last decade were guaranteed by bond or monoline insurers¹¹. Somewhat ironically, monoline insurers have been the major source of systemic instability in the municipal bond market in the current financial crisis. The losses monoline insurers suffered from insurance of defaulted structured products backed by residential mortgages resulted in the recent downgrade of a major monoline insurer. The loss of creditworthiness triggered a simultaneous downgrade of bonds from over 100,000 municipalities and institutions totalling more than \$500 billion (Financial News Online, 2008).

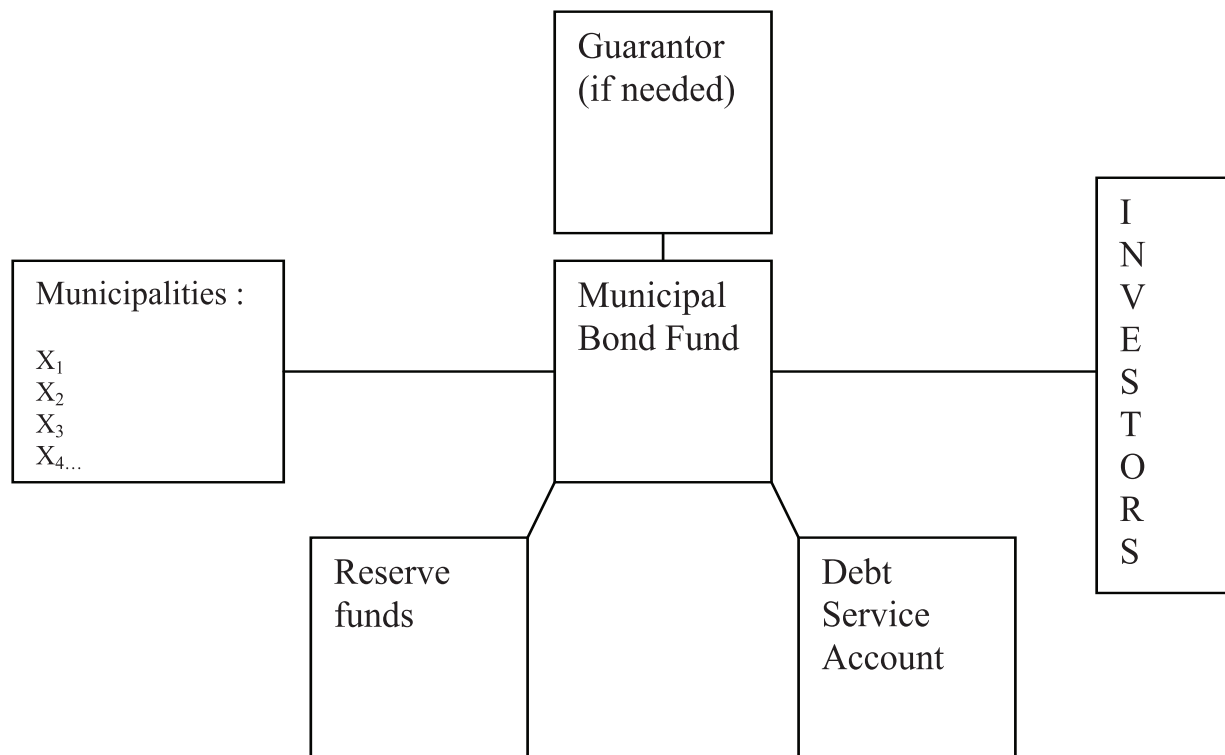
Guarantees are especially critical in low-income countries where issuers may show low creditworthiness and financial transparency. For example, in the Philippines, debt of local government units is considered risky and highly politicized by investors (Martell and Guess, 2006). Moreover, the lack of accessible, timely, and uniform financial information from a single source impedes investor interest. In order to overcome these limitations, the Government with the help from donor agencies, has established the Local Government Unit Guarantee Corporation (LGUGC). The facility provides credit guarantees for municipalities that seek to finance infrastructure projects through debt issuances.

Another form of credit enhancement is the collective issuance of bonds. Bond banks have been successful in the US since the early 1970s. According to this concept, a credible intermediary, such as the national government can establish a Bond Bank that collects all the borrowing needs of municipalities and issues a single class of bond backed up by a diversified pool of loans to municipal utilities. This technique offers investors access to a diversified, geographically dispersed portfolio of borrowers, thus limiting exposure to narrowly focused credit problems. Since the Bond Bank relies on its member municipalities to repay their individual loans, such an institution works better where the degree of diversification is higher, i.e. the defaults of some municipality could be offset by timely and reliable payments by others. State bond banks are created to extend management expertise, subsidies, and economies of scale to local government issuers. However, one should note that bond banks incur issuance and program costs. State Revolving Funds are a variation of the bond bank model that has worked especially well in the US. Following the "Federal Clean Water Act" in 1984, the US Federal Government established state revolving funds (SRFs) for wastewater and water projects in the US. Through this mechanism pooled bond flotations are collateralized by reserve funds made up from capital grants from the federal government and matching contributions from the state.

¹¹ Monoline insurance companies provide service to only one industry. The Ambac Financial Group Inc was formed in 1971 as an insurer of municipal bonds. MBIA Inc was formed in 1973.

Municipal development funds (MDFs) are similar to pooled financing arrangements that have been used in the developed world, in particular outside the U.S., for local government debt financing. These funds access national bond markets for capital and then lend it on to local governments. Figure 1 depicts a possible structure of a simple municipal development fund. As of today, more than 60 countries have established municipal development funds or specialized financial intermediaries for raising capital to on-lend to sub-sovereign governments. Prominent examples of MDFs include FINDETER in Colombia and Tamil Nadu Urban Development Project in India.

Figure 1
Possible structure of a Municipal Development Fund



Literature has pointed out that successful MDFs exhibit some common characteristics. For example, they transfer credit risk to the private sector, “unbundle” functions like payment collections and credit analysis to specialized private sector firms, separate subsidies from lending and provide technical assistance and capacity building for project preparation (Kehew, Matsukawa and Peterson, 2005).

Pooled finance arrangements are currently discussed in other emerging markets with large needs for infrastructure finance. Indonesia, for example, has particularly large financing needs for the water sector. Safe water reaches only 8 percent of the population in rural and 39 percent in urban areas. According to figures from the Public Works Ministry, of 318 water utilities, 110 are close to bankruptcy, while only 44 cover their operating costs. To fill this gap the water sector requires close to US\$500 million in investment each year, 10 times the current annual funding of \$50 million. Efforts are underway to promote the issuance of municipal bonds and pooled debt issuances. Through a directive in January 2007, the government is promoting the

issuance of local currency municipal bonds on the domestic capital market¹². International aid agencies have encouraged the pooled issuances for government-owned water utilities. USAID recommended that smaller water utilities join forces to issue bonds worth up to \$50 million. (The Jakarta Post, “Local water firms, governments should resort to bonds, USAID says,” June 22, 2007).

The major credit enhancements in Mexico are the provisions of tax participations through the central government in the case of the state and through the state government in case of the municipality. While these mechanisms have provided effective guarantees to investors they have also raised moral hazard concerns. Investors have little incentives to concern themselves with the creditworthiness of the issuer.

Credit enhancements such as state guarantees, escrow accounts, or grants from higher levels of governments have helped municipalities to successfully access capital markets in India. However, Indian credit rating agencies have voiced concerns against guarantees, as well, since these may lead to moral hazard and adverse selection for the financial system. Moreover, they have an implicit macroeconomic dimension since they may increase public sector debt at the state level. In response to these concerns, some states in India have established statutory and administrative ceilings on guarantees.

The experience of the state of Tamil Nadu, India, highlights the potential of pooled financing in enabling a wide range of municipalities to enter the bond market. Tamil Nadu has authorized municipalities to issue bonds to finance deficits and infrastructure investments through its Tamil Nadu District Municipalities Act. The issuances are contingent on the prior approval of the state government. The state has mobilized nearly Rs.3000 million within five years through India’s first bond by a joint private-public municipal fund, the Tamil Nadu Urban Development Fund (TNUDF).

The Water and Sanitation Pooled Fund WSPF was the first pooled financing bond in South Asia. WSPF was installed in August 2002 as a special purpose vehicle. The WSPF pooled the water and sanitation requirements of thirteen municipalities and towns and raised Rs. 304.1 million through an unsecured municipal bond in December 2002. With 15-year tenure, it is the only true long-term financing instrument in India. The bond relied on multiple layers of credit enhancements, including a no-lien escrow account by the thirteen ULBs, a Bond Service Fund of Rs.69 million, and a USAID Credit Authority guarantee for 50% of the principal amount. The bond received a solid credit rating from Fitch Ratings and Indian credit rating agencies (Venkatachalam, 2005).¹³

For South Africa, the first municipal bond default took place when the government guarantees were eliminated together with the prescribed investment regime in 1994. In order to increase the security of municipal investments, South African municipalities have turned to collateralized debt obligations (CDO), which are essentially securities that draw on a pool of bonds and loans. The South African financial intermediary Infrastructure Finance Corporation (INCA) is a bond bank that issues debt in the financial markets against the portfolio of sub-sovereign loans. INCA has issued CDOs backed by municipal bonds and loans in the sum of R4.685 billion since 1997. Through subsidiaries, INCA also offers other types of support to municipalities, which include a special entity that helps distressed borrowers improve their financial condition. This form of credit enhancement is geared towards increasing liquidity and supporting the secondary market and may be more relevant to middle-income counties with active bond markets such as South Africa than those with shallower markets. Some of the institutional bonds Johannesburg has launched have received

¹² See Finance Minister Regulation No 147/PMK.07/2006.

¹³ See Kapur (2007) and Venkatachalam (2005) for lessons learned from pooled issuances in India

partial guarantees for 40 percent of the principal shared equally by the World Bank International Finance Corporation and the Development Bank of Southern Africa (DBSA).

Demand-side factors in sub-sovereign bond issuances in developing countries

On the demand-side, factors that promote the market for sub-sovereign bonded debt include (1) financial sector composition and depth; (2) issuer familiarity and confidence; (3) the ability to trade securities on secondary markets and (4) acceptable expected returns (Leigland, 1997, Martell and Guess, 2006).

Financial sector composition and depth

Different types of financial intermediaries were important during different stages in the development of market for sub-sovereign bonds in the US. Savings banks were the most critical intermediary that contributed to the emergence of state and later municipal level bond markets. Towards the late 19th century, commercial banks took on similar roles to that of savings banks and surpassed them in their investments in sub-sovereign bonds. Investment banks separately or in the form of syndicates were extremely important in underwriting and marketing the bonds to domestic and foreign investors. The number of individuals that invested into municipal securities increased after the creation of the income tax-exempt municipal bond market in 1913 (Platz, 2008). Other important holders of municipal debt included life insurance companies and trust companies. Mutual funds joined the field of investors in the mid 20th century. The critical contribution these financial intermediaries made in promoting the US municipal bond market suggests that the depth and the composition of the financial sector in developing countries are important parameters for the potential of municipalities to raise finance through bonds.

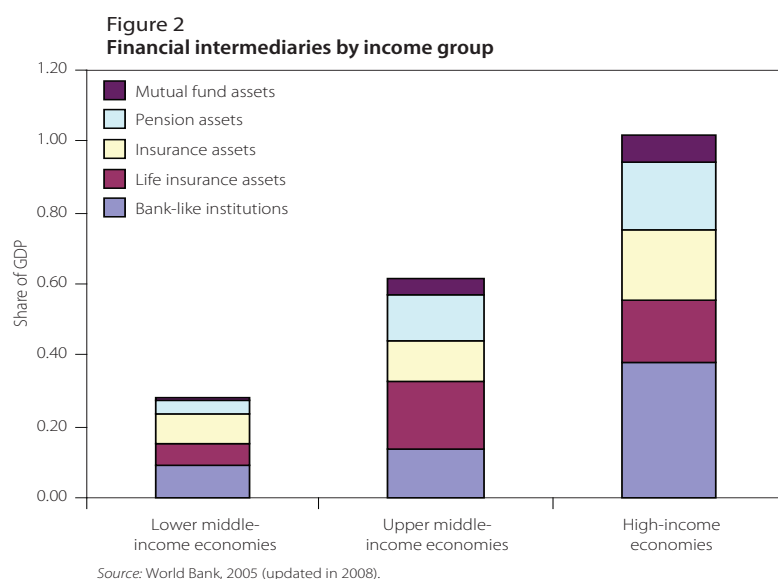
The common problem for developing countries is that they mostly face a general scarcity of capital resulting from a shallow financial sector. Contributions to savings or investment institutions are low in most developing countries due to low levels of income, high rates of unemployment and large informal sectors. There is only limited data available on financial intermediaries in these countries. In low-income economies especially, most of the financial intermediaries are underdeveloped or do not exist. Figure 2 shows that the average relative size of these financial intermediaries increases with the level of income. Similarly, table 5 shows that the large majority of sub-sovereign issuances take place in high-income countries. These findings suggest a correlation between the financial sector depth and the development of the sub-sovereign bonds market.

Table 6 compares the financial sector depth of the three countries under investigation. The measure “liquid liabilities to GDP” equals currency plus demand and interest-bearing liabilities of banks and other

Table 5: International issuances of sub-sovereign bonds from different income groups

<i>Income group</i>	<i>Number of Issues 1990-1999</i>	<i>Number of Issues 2000-2007</i>	<i>Average Size 1990-1999 (\$ million)</i>	<i>Average Size 2000-2007 (\$ million)</i>	<i>Average maturity 1990-1999</i>	<i>Average maturity 2000-2007</i>
High-income economies	2 750	1 689	117.05	263.0	9.22	9.80
Upper middle-income economies	31	61	86.77	193.59	5.92	8.05
Lower middle-income economies	6	3	147.78	233.33	5.60	5.99
Low-income economies	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Source: Thomson Financial Securities Data company database of International Municipal New Issues, 2008.



financial intermediaries divided by GDP. This is the broadest available indicator of financial intermediation, since it includes all three financial sectors (central bank, deposit money bank, other financial institutions). The data shows that India's sector is very deep, South Africa's financial depth is well above average, while Mexico ranks low. Moreover, financial sector depth appears to increase with income (figure 2). Since sub-sovereign bond markets are also more common in high than in low-income countries the data seems to point to a positive correlation between financial sector

Table 6: Financial sector indicators in India, Mexico and South Africa

Country	Liquid liabilities/GDP	Other Financial Institutions Assets/Total Financial Assets
India	0.62	n.a.
Rank (world)/number of observations	32/120	n.a.
Rank (income group)/number of observations	2/36	n.a.
Mexico	0.27	0.21
Rank (world)/number of observations	92/120	10/44
Rank (income group)/number of observations	55/64	1/29
South Africa	0.52	0.45
Rank (world)/number of observations	44/120	2/44
Rank (income group)/number of observations	24/64	5/29
Memo item US	0.65	0.78
World Average	0.52	0.15
Low income group average	0.35	n.a.
Middle income group average	0.5	0.13

Source: World Bank, 2005 (updated in 2008).

depth and sub-sovereign bond issuance. However, the case of Mexico shows that other factors may outweigh financial sector depth in their importance for the development of the sub-sovereign bonds market.

Indeed, further data show that, the composition of the financial sector appears to be more important than its size when it comes to local government debt. The role of other financial intermediaries relative to central banks and deposit money banks can also be seen in table 6. Other financial institutions include insurance companies, provident and pension funds, trust and custody accounts, real investment schemes, other pooled investment schemes and compulsory savings schemes. The table shows that this ratio is well above the world average in Mexico and South Africa, which suggests a very diversified financial sector in these countries. Fast-expanding mutual funds and pension funds run mostly by big banks like Citigroup (C.N) and BBVA (BBVA.MC) have indeed turned into big players in Mexico's financial markets in recent years and this has helped increase demand for local investments. The low interest rates paid by savings account have made

Mexican mutual funds become more popular in recent years as mostly middle class and wealthy bank clients look for alternatives.

Unfortunately, table 6 shows no data for India. However, evidence from supplementary sources suggests that other financial intermediaries are well-developed in India. The relative and absolute size of Indian mutual funds, for instance, surpasses Mexico. Indian mutual funds held 9.9 % of GDP in assets compared to 8.4% in Mexico and 33.7% in South Africa (IMF, 2008). In 2008, Indian mutual funds further increased their assets to 87.1 billion USD from 74.8 billion in 2007. The information provided in table 7 shows that savings pattern of households have seen an interesting shift towards institutional investors in recent years. Over the last few years, bank deposits have developed into more popular investments for households in comparison to small savings schemes and government securities. This is primarily due to high-deposit rates offered by banks looking for funds to fuel the large demand for credit in India's economy. Recent moves of the Reserve Bank of India to curb inflation through an increase in the interest rate, as well as difficulties faced by a retail investors in entering and exiting the over-the-counter government securities market have further contributed to this trend. These developments could further promote the growth of other financial intermediaries and their demand for sub-sovereign bonds.

Table 7: Distribution of savings in India (selected items)

<i>Financial savings (percentage of total saving)</i>	<i>1999- 2000</i>	<i>2000- 2001</i>	<i>2001- 2002</i>	<i>2002- 2003</i>	<i>2003- 2004</i>	<i>2004- 2005</i>	<i>2005- 2006</i>	<i>2006- 2007</i>
Currency	8.8	6.3	9.7	8.5	11.2	8.5	8.7	8.6
Bank deposits	36.3	41.0	39.4	41.5	38.3	36.5	46.2	55.6
Mutual funds (other than UTI)	3.4	1.3	1.8	1.3	1.2	0.4	3.6	4.8
Investment in government securities	0.9	1.7	5.8	4.3	7.5	4.9	2.4	0.2
Investment in small savings, etc.	11.3	14.0	12.1	14.3	15.1	19.6	12.2	4.9
Insurance funds	12.1	13.6	14.2	15.5	13.7	15.7	14.0	15.0
Provident and pension funds	22.8	19.3	16.1	14.3	13.6	13.0	10.5	9.2

Source: Reserve Bank of India.

The information also illustrates the increase of the share of insurance schemes in long-term savings over provident and pension funds. The larger funds channeled to these intermediaries and the small household interest in government securities suggest that demand for municipal bonds is more likely to originate from institutional investors such as commercial banks, development financial institutions, insurance companies, mutual funds, provident funds, and non-bank finance companies in India.

Whereas institutional investors are well developed in South Africa, their role in municipal finance is limited due to financial difficulties of most local governments. South Africa's municipal finance market is largely dominated by the Development Bank of Southern Africa (DBSA). Institutional investors, such as life insurance and pension funds reduced their share of municipal finance investments from roughly a third in 1997, to less than 3 percent in 2003.

Issuer familiarity and confidence

Lacks of issuer familiarity and confidence frequently prevent domestic and international investors to direct their surplus funds into sub-sovereign bonds. Few countries are able to rely on the two century-long experience of the US with municipal bonds. In most developing countries, where infrastructure finance needs are the most critical, sub-sovereign bond markets do not exist or are in a premature stage. Issuers that

contemplate to raise capital through a municipal bond need to provide some sort of assurance to investors that are unfamiliar with the concept of sub-sovereign bonds and the financial health of their issuers.

Rating agencies may be capable of providing this type of assurance where the issuer is in sound financial standing. Throughout the history of the US, the print media has played an important role in the provision of information to investors (Sylla, 2002). The first rating agency (Moody's) emerged only in 1909, which was fairly late in the history of the US municipal bond market. However, these agencies progressively increased in importance throughout the 20th century. Within the last 60 years, ratings have become a *sine qua non* for most corporate or public issuers seeking to mobilize large sums of capital. Ratings can be especially important for lesser-known issuers that seek to gain footholds in the domestic market or even access international markets.

The information provided in Figure 3 lists countries with sub-sovereign entities that are rated by at least one of the three major rating agencies (Standard and Poors, Moody's and Fitchratings) as of March 2008. Since the three rating agencies together reach a global market share of roughly 95 percent, it is safe to assume that the figure captures most of the rated sub-sovereign entities.¹⁴

There are a number of conclusions that can be drawn from the data. First, there is an immense gap between the number of rated entities at the sub-sovereign level in the US and all other countries. This gap shows that the ratings market outside the US is small or does not exist in many countries at the sub-sovereign level. Given the high number of rated sub-sovereign issuers in the US, the United States was not included in the graph. However, S&P alone rates well over 12000 sub-sovereign entities in the US. The gap further suggests that the number of sub-sovereign ratings has a positive impact on the number of issuances.

Second, the three major rating agencies only rate sub-sovereign entities in a small number of countries. Out of a total of 209, only 48 countries or territories have been rated by at least one of the three agencies, which amount to less than 23 per cent.¹⁵

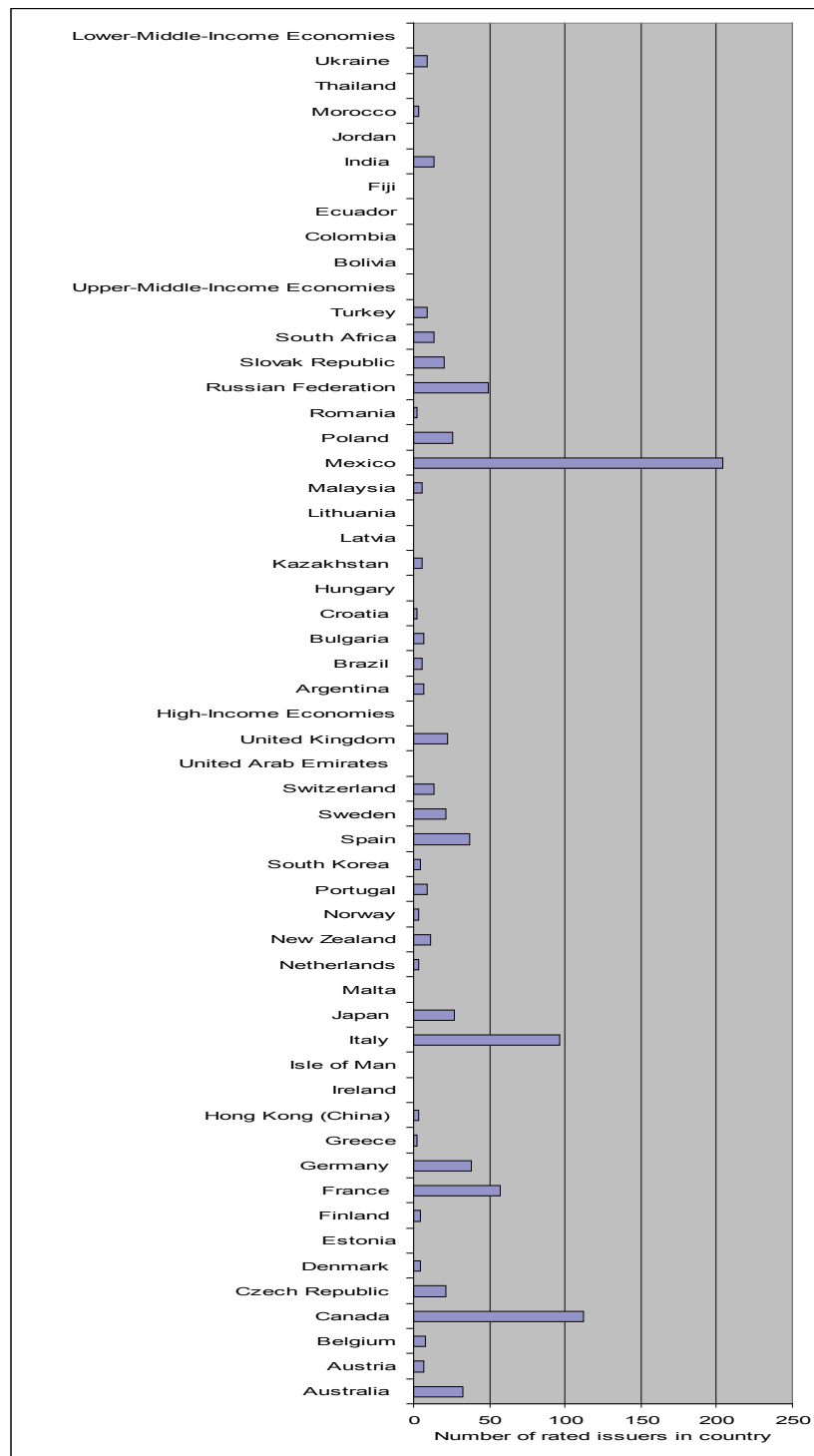
These findings may suggest that ratings are not fundamental in financing municipal expenditures. However, their low prevalence does not mean that they are not effective in the provision of access to finance for sub-sovereign-entities. Indeed, the 20th experience of the US suggests the opposite. There could be a number of reasons for the low number of ratings outside the United States. First, local governments and states may not feel the need to promote themselves to outside investors where they are in a long and close relationship with a local development or commercial bank. Second, issuers might not need to access securities markets. Some municipalities and states either may have the capacity to self-finance their expenditures out of their own revenue or may receive a sufficient amount of intergovernmental transfers to finance their capital expenses. Third, they may be rated by a local rating agency, which helps them get access to domestic capital.

However, sufficient self-finance and the existence of a local ratings industry are more probable in well-developed countries than developing ones since they presuppose a well-developed financial sector, sound municipal finances, sufficient generation of revenue and satisfactory budgetary support at the national level.

¹⁴ The 95 per cent estimate is based on 2001 numbers presented in US Congressional hearings on the role of the major rating agencies. However, it is important to note that unrated bonds or those rated by other less dominant rating agencies are not included in figure 3. Moreover, the list may not include ratings of local agencies that are owned by one of the three major credit-rating agencies and that are not included in the website listings of the major agencies.

¹⁵ The 209 countries include all World Bank member countries (185), and all other economies with populations of more than 30,000.

Figure 3
Economies with rated subnational issuers



Source: Standard & Poor's, Moody's Investors Service and Fitch Ratings. Categories for income groups follow World Bank operational guidelines (March 2008). These guidelines classify all World Bank member countries (185) and all other economies with populations of more than 30,000 (209 total).

Municipalities and other sub-sovereign entities in developing countries face a myriad of challenges. First, there may be no point for getting a rating if there is no debt market or if there are federal restrictions on sub-sovereign bond issuances. Second, sub-sovereign issuers with unsound finances will find it difficult to get an investment grade rating. There may be no incentive for them to pay sizable fees for ratings where the outcome is expected to be a negative one. This leads to the third point. Even creditworthy sub-sovereign issuers in poor countries may not find it cost-effective to pay for the ratings. Municipal ratings are issued on request. Rating fees are paid by issuers themselves or covered by insurers, guarantors, other obligors, and underwriters. For instance, Fitchratings fees for municipal bonds can reach up to USD750,000 (or the applicable currency equivalent) per issue¹⁶. Fees depend on the size and frequency of debt issuance, as well as the presence of the rating agency or its subsidiary in the issuing country. The time and expense it takes to evaluate the bond issuer will also influence the charge of the rating agencies. These factors are usually more pronounced in developing countries where data availability is typically more limited than in developed ones. Where the fees increase too much, the issuer may decide against ratings. The larger the fees the more likely issuers will have to increase mark-ups and lower yields on their securities, which make their securities less interesting for investors. Supporting a local credit rating industry may be a critical step to make this process more affordable in developing countries. One possible course is to foster linkages between local and international agencies to increase the reputational capital of domestic ratings companies. Other ways to improve the incentive of sub-sovereign issuers in developing countries to obtain ratings include the simplification of reporting requirements and changes in the legal and regulatory environment.

Third, the number of rated issuers increases with the level of income. Differences are more pronounced between the lower income brackets. For low-income countries, the share of rated sub-sovereign issuers is 2 percent, for the lower middle-income group 10 per cent, for upper-middle-income economies 40 percent and for high-income countries 42 per cent. The sounder financial standings of municipalities in higher-income countries enables them to afford the fee charged for a rating, as well as provides them with a better prospect to get an investment grade.

Fourth, the information provided in figure 3 further shows that Mexico displays the largest number of rated entities of all countries outside of the US, even though the country does not belong to the high-income group.

The large increase in ratings in Mexico was promoted through new regulations that were introduced in August 2004 by the national banking and securities commission “Comisión Nacional Bancaria y de Valores” (CNBV). CNBV regulations govern the rules by which commercial banks and development banks are providing loans to sub-sovereign entities. The regulations specify that banks are supposed to make loan-loss provisions (i.e., earmark reserve funds for potential defaults) that increase with the maturity of the outstanding debt. For loans greater than MxP300,000 loan loss provisions should be made in proportion to the risk level determined by the credit rating assigned by at least one external rating agency to the sub-sovereign entity. If the loan or the underlying structured transaction has only received one rating, it will be given a higher risk level than implied in the rating. If the sub-sovereign entity is rated by two rating agencies, the lowest rating is relevant. If the sub-sovereign entity is not rated banks should assign a relatively high risk level¹⁷. These regulations have led to an enormous increase in ratings for Mexican states. The greater number of ratings has helped increase investor confidence in the rated issuers.

¹⁶ See www.fitchratings.com

¹⁷ The different risk levels are A1,A2.B1.B2,B3,C1,C2,D and E. A1 is the highest and E is the lowest. Unrated entities are given a C1 rating.

For local government issuances in India, ratings are mandatory where the maturity exceeds 18 months. The domestic bond market in India is covered by three major credit rating agencies, namely the Credit Research and Information Systems of India Ltd (CRISIL), the Indian Credit Rating Agency (ICRA), and Credit Analysis and Research (CARE). Each one of these agencies has links with one of the major international credit rating agencies (RISIL with S&P, ICCRA with Moody's and CARE with Fitch Ratings). Contrary to the US experience, rating agencies emerged in India before the first municipal bond issuances. India's largest rating agency CRISL was incorporated in 1987, 11 years before the first municipal bond was issued. The criteria used by Indian rating agencies have evolved as city governments have improved financial disclosure and accountability. Moreover, criteria have to be flexible to take into account the wide differences urban and local bodies show in their capacity to raise revenue, provide services and manage debt.

The South African municipal bond market has been in existence for a long time. Utilities ("local service providers,") such as the Rand Water Board, have sold bonds since at least the 1920s. However, in spite of decades of investments in the municipal bond market during the apartheid regime, there has been no private investment into municipal bonds in the post apartheid days with the notable exceptions of Durham (1993) and Johannesburg (2004). Financial difficulties encountered by most municipalities described in the previous section eroded investor confidences. Similar to India, international ratings agencies have established units in the South African market. CA Ratings (now part of Standard's and Poors) and Duff And Phelps (purchased by FitchRatings) have monitored municipal debt for banks, insurance companies and other institutional investors that have only limited capacity for analysis of the sub-sovereign bonds market. However, very few of South African municipalities have received a credit rating that could help them restore investor confidence.

The ability to trade securities on secondary markets

The US experience highlights the importance of tradability of sub-sovereign bonds. The increased sophistication of broker and dealer networks towards the late 19th century, the willingness of investment banks and syndicates thereof to underwrite large issuances, the familiarity of investors with instruments similar to municipal bonds and, ultimately, with municipal bonds themselves, coincide with a particular active and demand-driven period of the municipal bond market (Platz, 2008).

In most developing countries, secondary markets do not exist or are underdeveloped. There are often only a small number of market players. The dominance of a limited number of players can reduce competition in the secondary market and distort yields. Table 8 shows that the majority of countries with sub-sovereign bond issuances has a banking sector that is more diversified than those of most economies in the corresponding income group. Moreover, transaction costs are high in countries that do not have well developed broker dealer networks or underwriting agencies that are willing to take on an entire issue. Since government or corporate bond markets are often underdeveloped in developing countries, there are no benchmarks for investors to price municipal bonds.

The US experience shows a certain sequence in the development of the bond market. The Federal bond market emerged first. The state market, municipal, and corporate debt followed successively (Platz, 2008). Investor familiarity with government and state bonds has served as an important benchmark for municipal bonds. Similar sequencing could promote the tradability for sub-sovereign bonds in developing countries. Other factors that may hamper a secondary market include tax laws that discourage trading, small volumes of outstanding debt that generate little investor interest and the lack of information on the credit quality of the issuer.

The listing of municipal bonds in stock markets can promote secondary trading of these instruments. This phenomenon is illustrated by the fact that over the counter market has increased transaction costs for investors in the US. Nowadays, municipal bonds are almost exclusively traded in over the counter markets, where the market is based on bilateral and informal contacts between dealers. However, historical research has highlighted that many municipal bonds were actively traded on the New York Stock Exchange prior to World War II. Market activity dropped dramatically in the late 1920s for municipals when over the counter trading increased. Research indicates that retail investors have faced higher transaction costs since the 1920s (Biais and Green, 2005).

With the exception of Johannesburg's issuance in South Africa, there is almost no secondary market for sub-sovereign bonded debt within the three selected countries. For Mexico, data are not readily available but interviews with local investors and rating agencies suggest that investors typically hold on to the sub-sovereign bonds for the maturity of the bond. Investors are allowed to issue collateral debt obligations secured by the bonds but there have only been one or two such instruments issued within the last two years.

The government securities market in India, including the municipal bond market, is dominated by over the counter trading over the telephone, although electronic trading is picking up. India has introduced important measures to promote liquidity on the secondary market such as the introduction of Gilt funds and the listing of Government securities on stock exchanges in 2003¹⁸. The most decisive improvement was perhaps the introduction of the Primary Dealers system (PDS) in 1995 into the Government securities market. The PDS resulted in finer bids in the primary market and more liquidity and trading in the secondary market¹⁹. Incentives like underwriting commissions encouraged PDs to underwrite primary issuances. The Negotiated Dealing System (NDS) developed by the Reserve Bank of India has brought some increased transparency to the secondary market and reduced transaction costs since it has reduced the need for brokers. Within that system, quotes can be either indicative or firm. For indicative quotes, negotiation takes place on the screen. While important steps have been taken to increase trading in the government bond market, the secondary market for municipal and state debt is still underdeveloped due to a low level of outstanding stock, a predominance of investors that prefer to hold securities and the fragmentation across issuers and securities (Gopinath, 2007).

¹⁸ Gilt funds are mutual fund schemes floated by asset management companies with exclusive investments in government securities.

¹⁹ Primary Dealers, public sector banks, and financial institutions are the only dealers in India, which are allowed to underwrite primary issues of government securities other than the Reserve Bank of India, which has not fulfilled this role in recent years.

Table 8: Bank concentration in countries with sub-sovereign issuers

Country	Bank concentration
Argentina	0.57 [0.70; 0.63]
Australia	0.67 [0.62; 0.70]
Austria	0.72 [0.62; 0.70]
Belgium	0.62 [0.62; 0.70]
Canada	0.58 [0.62; 0.70]
Chile	0.49 [0.70; 0.63]
Denmark	0.75 [0.62; 0.70]
Finland	0.86 [0.62; 0.70]
France	0.41 [0.62; 0.70]
Germany	0.44 [0.62; 0.70]
Italy	0.36 [0.62; 0.70]
Japan	0.21 [0.62; 0.70]
Luxembourg	0.38 [0.62; 0.70]
Netherlands	0.73 [0.62; 0.70]
Norway	0.85 [0.62; 0.70]
Portugal	0.45 [0.62; 0.70]
Singapore	0.73 [0.62; 0.70]
South Korea	0.33 [0.62; 0.70]
Spain	0.46 [0.62; 0.70]
Sweden	0.88 [0.62; 0.70]
Switzerland	0.74 [0.62; 0.70]
Turkey	0.45 [0.66; 0.66]
United Kingdom	0.58 [0.62; 0.70]

Source: World Bank, 2008.

Notes: Concentration is defined as the share of the assets of the three largest banks in total banking assets. Lower numbers point to a more diversified banking sector. The numbers in brackets are the average and median of the country's income group. The numbers where concentration is lower than the median or average of the country income group are highlighted in bold. Issuers without data on bank concentration where not included.

Secondary trading of debt instruments is generally well developed in South Africa. South Africa's debt capital market is regulated by the Bond Exchange of South Africa (BESA). The exchange lists over 375 fixed-income securities, or bonds. Some 70% of the listed debts are government bonds, which provide an important benchmark for the pricing of sub-sovereign bonds. The market is one of the most liquid emerging bond markets in the world (38 times the market capitalization). The municipal bonds of Johannesburg are listed on BESA and traded actively.

Acceptable expected returns

Throughout the history of the US, municipal bonds were low risk investments in comparison with other bonds. The two key risk factors were credit risk and market risk and both were low compared to other securities. Municipal bonds defaulted less often than corporate bonds during times of crises. Market risk decreased when more effective dealer networks emerged towards the last 15 years of the 19th century and continued to evolve throughout the last century.

Credit risk matters more where revenue streams are unreliable and weak. Frail accounting, auditing and regulatory frameworks can increase real and perceived credit risk. Reliable data on local budgets, debt service obligations, and intergovernmental fiscal flows would facilitate informed investment decisions and the work of rating agencies, where they operate. One crucial element for successful development of municipal bond markets could thus be the introduction of public disclosure guidelines (Leigland, 1997).

The existence of secondary markets decreases market risk. Where securities are traded, investors have the chance to sell them when the market conditions change. The US municipal bond market could draw on a deep and diversified domestic financial sector. Foreign investors played a limited role. However, international finance was critical for the predecessors of the municipal bond market, in particular the markets for government and state bonds (Wilkins, 1989). In the early 19th century US, international investors directed enormous funds into federal and state securities and these securities provided important benchmarks for investors interested in municipal bonds. Given the shallow financial sector in many developing countries a case can be made that creditworthy municipalities may want to try to tap foreign capital. However, international capital markets imply foreign exchange rate risk. Who will carry that risk depends on the transaction currency. If the domestic currency is the transaction currency, the investor carries the exchange rate risk. In the opposite scenario, it will be the issuer. Moreover, where issuers try to market their bonds to foreign investors they face a "sovereign ceiling" or foreign currency rating of the sovereign government. In terms of the currency risk, issuers will not exceed that rating unless they can rely on special guarantee mechanisms that mitigate foreign exchange risk.

Foreign exchange rate risk is of particular concern to essential services like water in developing countries for several reasons. First, amortization is a lengthy process for water and power assets. During the 20-30 years it takes to recover the investment into a water or power supply system it is not unlikely that a currency crisis might occur. Second, construction and expansion costs are sometimes priced in hard currency, as many countries import the equipment required for network extension from outside the country. Whoever invests in these parts, whether public or private investor, is exposed to foreign exchange risk. Third, in the event of a financial crisis, investors are in a weak bargaining position. Project assets, once installed, may not be redeployed. As a result, it is more difficult for investors to exit the investment in order to minimize foreign exchange losses. Fourth, water is a non-tradable good (power may be tradable to a limited extent with neighbouring countries). Consequently, currency movements are not compensated for by increases and

decreases in revenue. Foreign exchange exposure not only raises the risk for the issuer but also for the recipient of the service provided. There is a significant risk for households in the event of a financial crisis. Higher interest rates that result from a currency crisis may decrease the incentive of the government to honor price regulations to curb the abuse of monopoly power in these sectors. If prices of utilities go up as a result of higher interest rates, households will be the one to suffer the most. This will be further exacerbated by factors that usually accompany a financial crisis, such as rising unemployment and inflation (Matsukawa, Sheppard, Wright, 2003). Protective mechanisms against foreign exchange risk of investors include the use of local currency instruments, currency hedging, exchange rate guarantees (often based on tariff indexation) and other innovative mechanisms such as liquidity facilities, sovereign guarantee pools and escrow accounts.

In Mexico there is no foreign exchange rate risk for issuers or investors in municipalities or states since state and local government entities are prohibited from borrowing in foreign currency or from foreign sources. There are essentially three features of the master trust contract that serve as credit enhancements and significantly lower credit risks for Mexican investors. First, instructions to the federal government from the state or local legislature to direct tax-sharing grants to the trust rather than the municipality are irrevocable, i.e. funds provided to the master trust cannot be withdrawn by the municipality for other purposes. Second, debt that is issued or repaid through trusts is overcollateralized, which provides investors with a repayment guarantee during times of lower revenues. Third, covenants with bondholders provide supplementary guarantees in cases of negative events such as rating down grades or lower levels of tax participations, which include larger contributions to reserve accounts, the creation of additional reserve accounts, acceleration of debt repayment, or immediate repayment of all debt using all pledged revenues as they become available.

The small size of issuances, the lack of issuer familiarity and exchange rate risk are likely to be the major factors that limit the interest of the international investor in the Indian municipal bond market. The dominant type of risk domestic investors in India face is credit risk. Several institutional improvements and innovative financing mechanisms have lowered credit risk for potential investors. The promotion of secondary market trading, as well as credit enhancements, guarantees and pooled financing arrangements have played a critical role in the promotion of investor interest.

Investor risk, in particular credit risk, has increased after the end of the apartheid-regime. During the apartheid government, South Africa had a prescribed investment regime. Financial institutions were legally required to invest certain percentages of their portfolios in government debt, including municipal debt. These investments were restricted to WLA while BLAs were excluded from market funds. The government or the DBSA financed the capital investments for these local governments through grants or loans. Market risk was low for investors in WLA since most of the debt carried a low interest rate premium. Moreover, there was no credit risk during this period since the government guaranteed municipal issuances. Consequently, credit risk increased during the post apartheid era when the government ceased to provide these guarantees.

Conclusion

This paper set out to (1) build the case for more research into subsovereign bond issuances, (2) fill an important research gap in providing some global systematic data on sub-sovereign bond issuances, (3) develop a supply and demand side framework for analysis of the market for sub-sovereign bonded debt in developing countries and (4) apply this framework to Mexico, India and South Africa. Finally, it intended to draw lessons for countries seeking to promote markets for sub-sovereign bonds.

In terms of the justification for more research, the paper notes the lack of information available on these financing mechanisms, the immense funding needs for infrastructure in the developing world and the positive experiences with municipal bonds in the US.

With regard to the international extent of sub-sovereign bond markets the paper highlights that outside the US, sub-sovereign bonds continue to fulfill a less important role for infrastructure investment than they have done for American cities and town. However, the data show that the market for sub-sovereign bonded debt has deepened significantly over the periods under consideration in terms of total volume of issuance, average issuance sizes and extended maturities. Conversely, there were very few issuances of municipalities in developing countries, which face the most urgent financing needs. Nevertheless, recent successful experiences in Mexico, South Africa and India show that this form of finance has some potential in less developed economies.

The paper also notes that much of the information was extremely hard to obtain and remains susceptible to critique with regard to its reliability and completeness. The creation of a public repository on sub-sovereign bonds should therefore remain an urgent task on the municipal finance agenda.

Following the clues from existing literature and the historical US experience the paper identifies a range of factors that are important for the development of sub-sovereign bond markets in the context of developing countries. Supply-side factors include financing needs and responsibilities of municipalities, debt service capacity, low borrowing costs, suitable regulatory and legal environments, and credit enhancements. On the demand-side, the paper highlights the role of financial sector composition and depth, issuer familiarity and confidence, secondary markets and acceptable expected returns.

Some conclusions related to the relative importance of these factors can be drawn from the examples of Mexico, South Africa and India, which are the three developing countries with the largest markets for sub-sovereign bond issuances. The most obvious one is that the right regulatory environment spurs the development of the sub-sovereign bond market.

In all three countries, the regulatory environment for municipal finance is clearly defined. Most importantly, there is no general federal restriction that prohibits municipalities to borrow for public improvements. This is not the case for many other developing countries, including large emerging economies like China and Brazil. The example of Mexico particularly shows how regulatory changes can have an enormously positive impact on the development of the market for sub-sovereign debt. Despite the comparably shallow financial sector, the introduction of master trusts and mandatory ratings have promoted investor interest in municipal bonds and have increased access for municipalities to long term bank loans. Regulatory changes that enhance the creditworthiness of the issuer and promote the local rating industry are therefore important reform measures on the road to a deeper market for sub-sovereign bonded debt.

When it comes to the financial sector, composition matters more than its relative size. Whereas in India and South Africa financial sectors are deep, Mexico's financial sector is significantly shallower. However, one of the features Mexico, India and South Africa have in common is a diversified financial sector. Financial intermediaries with long-term portfolio needs, like pension funds, the insurance sector and mutual funds, are well-developed in all three countries. This suggests that careful surveys and studies on the composition of the financial sector and their investment needs should inform decisions whether to promote the market for sub-sovereign bonded debt. For some countries the financial sector may not have yet reached a sufficient level of diversification.

The paper also noted that fiscal structures are different in the three cases. In South Africa fiscal responsibilities are decentralized whereas Mexican and Indian municipalities rely on federal transfers. Therefore, the financial standings of states and municipalities are more relevant to investors in South Africa and India than in Mexico where cities and states can rely on tax participations as effective guarantee mechanisms. Consequently, the urgency to increase issuer familiarity and confidence through more financial transparency is greater for issuers in countries with less centralized fiscal systems.

Further forms of credit enhancements have successfully lowered the perceived and real risk of issuers. Mechanisms can take on the form of semi-independent trusts supported by tax participations like the ones in Mexico, simple external guarantees such as the ones employed in Johannesburg, South Africa, or pooled financing arrangements like the WSPF in Tamil Nadu. In this connection, the paper also mentioned bond banks and state revolving funds, which have helped diversify risk for local government issuances in the US and may have some potential in developing countries.

Finally, the paper highlighted that low creditworthiness remains a fundamental impediment for municipal bond market development. Progress in tax administration and revenue collection at the national and sub-sovereign level and more intergovernmental fiscal support are crucial. Moreover, debt management capacity can be enhanced through more effective capital programming, budgeting and accounting systems.

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