



Land-Based Financing for Brazil's Municipalities

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Infrastructure investments are improving roadways in Curitiba, Brazil.

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Brazil's chronically low level of public sector investment has resulted in serious infrastructure deficits that are often cited as an impediment to its economic development. Brazil's municipalities face an urgent need to invest in infrastructure, but lack the "fiscal space to do so due to the fiscal constraints in the country's macro-economic program. Backlog in municipal infrastructure is estimated at about \$40 billion over the next 10 years" (World Bank 2006, xix). Heller (2005, 1) defines fiscal space as "room in a government's budget that allows it to provide resources for a desired purpose without jeopardizing the sustainability of its financial position or the stability of the economy."

Although public capital formation among countries varies due to their respective public-private divisions of expenditure responsibilities, Brazil's average gross formation of public capital (GKP) as a percentage of gross domestic product (GDP) was only 1.8 percent in 2006–2007, ranking second from the bottom for 28 emerging countries and last among the BRIC countries: 20.8 percent for China, 7.3 percent for India, and 4.5 percent for Russia (Afonso and Junqueira 2009b). The rise

of private financing for infrastructure in Brazil in the 1990s was not enough to compensate for the public decline (World Bank 2007). Brazil needs to increase infrastructure investment in order to further improve its economic and social performance.

This article explores how Brazil can provide funding for much-needed infrastructure investment while controlling the consolidated national and subnational public sector deficits and debt as required to maintain price stability and an investment grade sovereign rating.

The Potential of Land-Based Instruments

Traditionally Brazil's municipalities have been considered more often a potential source of fiscal problems than of fiscal space. To maintain financial sustainability and economic stability, Brazil has controlled the consolidated public sector debt of states and municipalities through a complex web of restrictions on borrowing by them or lending to them, including the Fiscal Responsibility Law of 2000. Within this framework of tight fiscal controls and fiscal discipline, could Brazil's municipalities generate fiscal space for investment and provision of social needs by increased use of land-based financing? One indication of the potential for creating such fiscal space is that municipal investments already are quite substantial, constituting

40.3 percent of Brazil's total public sector investment in 2008 (Afonso and Junqueira 2009a).

Municipalities could further increase their fiscal space for investment by (1) increasing expenditure efficiency; (2) increasing revenue through more effective administration of the real estate property and transfer taxes and fees, as well as other own-source revenues; and (3) using other land-based instruments that would not involve municipal borrowing, such as the sale of development rights and underutilized land. In other words, land-based financing could create fiscal space for investment without increasing municipal deficits or debt.

According to Peterson (2009), land-based financing is not a practical or desirable way to pay for the entire capital budget, but it has significant advantages as part of the mix of capital financing, especially when the revenues accrue before the investment is made. In this case they add flexibility to financing decisions and reduce the need for long-term credit, which is often difficult to obtain in developing countries.

In Brazil, these land-based instruments include:

- real estate property and transfer taxes;
- impact fees for new developments;
- betterment levies;
- sale of development rights;
- sale of underused public land and buildings;
- land readjustment (e.g., *consórcios urbanos*); and
- urban concessions (*concessão urbana*), a new instrument being used to revitalize the Nova Luz neighborhood in São Paulo.

None of these instruments involve public sector borrowing and therefore would not increase the public sector debt or be covered by the restrictions on borrowing by or lending to municipalities. Brazil's Federal Constitution of 1988 grants municipalities the power to define and use such land-based instruments. The guidelines were subsequently regulated by Federal Law No. 10,257 of 2001, known as Urban Development Act or City Statute (*Estatuto da Cidade*).

Incentives to Generate Fiscal Space

The municipal development strategy recommended by the World Bank (2006) gives priority to establishing a sustainable market-based subnational credit system and providing assistance to municipalities to become creditworthy within a framework of continued fiscal discipline. A first step in develop-

ing such a strategy could be to change the way the national credit allowances for different municipal programs are distributed among municipalities by the federal government.

To lay the foundation for modern credit markets, a modified national credit program could provide incentives to create fiscal space by imposing performance conditions. For instance, credit would be granted to those municipalities that

- are most creditworthy, as this would provide incentives to further improve or at least maintain their financial performance;
- prepare efficient and equitable investment plans and capital budgets; and
- leverage borrowing by using the land-based instruments so the total fiscal space created per R\$ (Brazilian currency=*real*) of borrowing is high.

To assess the feasibility of such a strategy, we ask: How many Brazilian municipalities would be judged creditworthy by national and international creditworthiness standards? How fully are they using their real estate taxes and fees? What are their investment levels? Have they passed the legislation necessary to fully utilize the land-based instruments that help create and capture real estate value? In other words, what is the potential of these municipalities to create fiscal space to finance infrastructure and other needed investments?

Methodology and Analysis

To address these questions, we generated a municipal database that includes the indicators typically used by credit rating agencies and other financial institutions to assess municipal creditworthiness. This database enables us to rank municipalities by their performance on any of the indicators and to analyze relationships among variables using correlation analysis or other methods. For more details on the methodology, data, indicators, and analysis, see Vetter and Vetter (2011).

Table 1 shows the indicators and the methods used to generate them, including our composite indicators (OECD 2008). The municipalities selected for study are those with at least 50,000 inhabitants in 2008, because cities of that size are more likely to have the will and administrative capacity to increase their fiscal effort. In 2008, the 584 municipalities with populations of 50,000 or more held over 65 percent of Brazil's total population. We excluded 66 municipalities due

TABLE 1
Financial Performance and Other Indicators Used in Analyzing Brazil's Municipalities

Type	Normalization of Criteria	Basic Indicators Used	Indicator/Aggregation
Creditworthiness			
Financial Performance Score	Benchmark	Meets 5 different financial performance indicators (if yes=1, if no= 0)	Sum of 5 binary variables
Financial Performance Rank	Ranking	Ranks on 5 financial performance indicators	Average ranking
Economic Potential	Ranking	Ranks on 4 economic indicators: Total size of municipal GDP 2007; absolute change in GDP 2002–2007; relative change of GDP 2002–2007; and GDP per capita 2007	Average ranking on the 4 indicators
Creditworthiness	Ranking	Defined in the text using the financial performance and economic potential indicators	Ranking
Financial Performance Indicators			
Total Debt Service/Net Current Revenue (NCR)	< 11.5%	Estimated with financial data from STN data	None
Total Debt Stock/NCR	< 75.0%	Same as above	None
Operating Surplus/NCR	> 10.0%	Same as above	None
Total Debt Service/ Operating Surplus	< 30.0%	Same as above	None
Personnel Expenditures/NCR	< 54.0%	Same as above	None
Other Indicators			
Investment	Ranking	Municipal investment in plant and equipment as a percentage of municipal GDP	Ranking
Total Real Estate Taxes and Fees (TRE)	Ranking	Total revenue from the urban real estate property and transfer taxes (IPTU and ITBI) and betterment fees.	Ranking
Passage of Land-Based legislation	Benchmark	Passage of 8 laws needed to use the land-based instruments of the Statute of the City (if yes=1, if no= 0)	Sum of 8 binary variables
Municipal Human Development Index (IFDM)	Ranking	Annual indicator of municipal human development (IFDM) that is similar to the UNDP's Human Development Index (HDI). IFDM varies between 0 and 1.0, in which 1.0 would be the highest development level.	Based on employment, income, education, and health indicators
Population below the Poverty Line	Percentage	% of populations in households with income per capita of one quarter of a minimum salary or less. This is the definition of extreme poverty (<i>indigente</i>).	% of population

to incomplete financial data, leaving a final sample of 518 municipalities. The first part of the analysis deals with this sample and the second part focuses on 130 municipalities that ranked in the top quartile on the Creditworthiness Indicator.

Municipal Financial Performance Indicators

We developed two composite indicators of municipal financial performance using data from the National Secretary of the Treasury (*Secretaria do Tesouro Nacional*, STN 2008): Financial Performance Score and Financial Performance Rank. These indicators are used to judge municipal

capacity to generate fiscal surpluses and service additional debt, but do not, of course, show how effectively or efficiently the resources are employed.

Most of the 518 municipalities in the sample (68 percent) meet all five financial performance criteria. The best overall performance is shown in the Total Debt Service/Net Current Revenue (NCR) Indicator, where 99.8 percent of municipalities spent less than 11.5 percent of NCR on debt service. The worst overall performance was on Personnel Expenditures/NCR, where only 83.4 percent of the municipalities met the criteria. Among the municipalities meeting all five criteria, some are much more creditworthy than others.

To generate the Financial Performance Rank, we ranked them on the average of all five criteria, with the most favorable performance receiving a rank of 518 and the least favorable a rank of 1.

Creditworthiness

We developed the municipal Creditworthiness Indicator in two steps. First, we selected municipalities in the top three quartiles on the Economic Potential Indicator with a Financial Performance Score of five (i.e., meet all five financial criteria). Then we calculated the average rank of the two scores. Figure 1 shows that even the municipalities ranking in the second quartile on creditworthiness demonstrate relatively good performance on all five financial performance indicators by national and international standards.

Municipal Human Development Index and Creditworthiness

Figure 2 shows a low correlation between the Creditworthiness Indicator and Municipal Human Development Index (IFDM). In fact, this scattergram shows that many municipalities ranking in the bottom half in terms of the human development index rank in the top half in terms of their creditworthiness. The wide dispersion of observa-

tions shows that there is a great deal of diversity (i.e., low correlation and high variance) among Brazil’s municipalities with regard to creditworthiness and human development. As the Creditworthiness Indicator is not as highly correlated with the IFDM as might be expected, a program initially focusing on the most creditworthy municipalities would not be as regressive as it might seem.

Analysis of Top Ranking Municipalities

To develop a national program that would provide incentives in the form of access to credit for creation of fiscal space, we wanted to identify municipalities ranking in the top quartile on the Creditworthiness Indicator. Such a program would stimulate investment in municipalities with a relatively high potential for future economic development and superior financial performance, thereby rewarding responsible financial performance. Brazil’s fiscal federal system already includes many automatic transfers to municipalities that are based on population and other criteria rather than on financial performance or creditworthiness.

The total 2008 population and 2007 GDP of the 130 municipalities in the top quartile were 32.3 million and US\$346 billion, respectively. These municipalities held 27.7 percent of the total

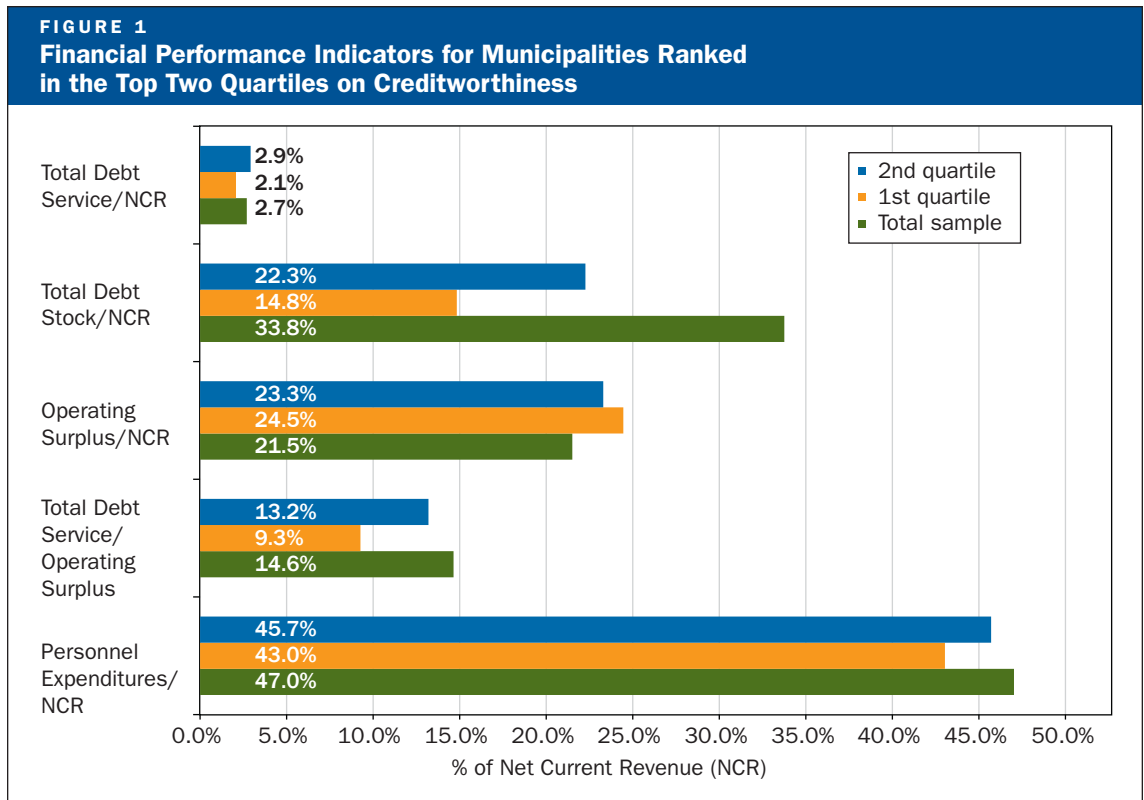
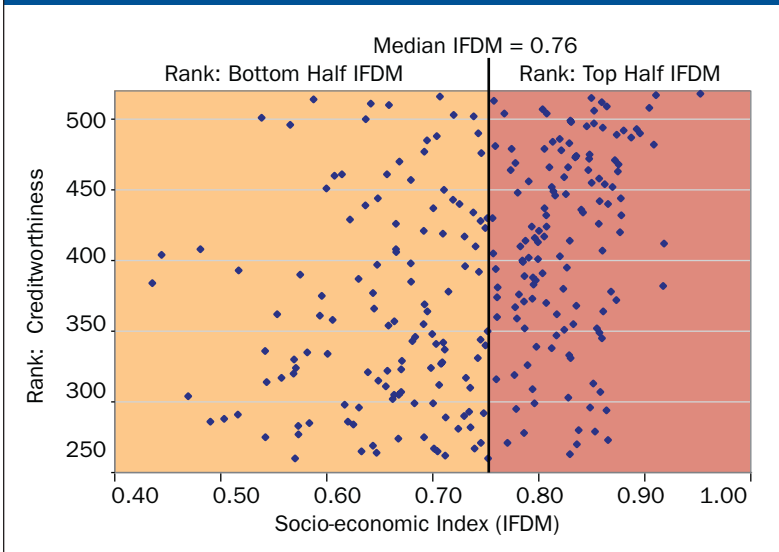


FIGURE 2
Relationship Between the Creditworthiness Rank and Municipal Human Development Indicator (IFDM) for Municipalities Ranking in the Top Half on Creditworthiness



population in the full sample, 31.7 percent of its GDP, and 21.9 percent of the total population living below the poverty line.

Municipal Investment and Performance on the Real Estate Taxes and Fees

For the top ranked municipalities, median investment as a percentage of municipal GDP is 1.03 percent and is not correlated with the Creditworthiness Indicator (Spearman correlation = -0.01). Bringing all municipalities now below the median up to 1 percent of municipal GDP would increase total annual municipal investment by US\$750 million for this top quartile, that is about a 20 percent increase over this median investment level.

Bahl and Martinez-Vazquez (2007) estimated the average real estate property tax (TRE)/GDP ratio for developing countries in their sample to be 0.6 percent in 2000. Half of the municipalities in this top creditworthiness quartile had TRE/GDP median ratios below the observed low 0.34 percent level indicating how much additional fiscal space might be available.

Our simulation shows that raising TRE/GDP to 0.6 percent for all municipalities in the top quartile would increase total annual municipal revenue by over US\$700 million. Bringing all the municipalities below 0.6 percent up to this level would involve an average annual per capita TRE increase

of only about US\$24. Obviously, municipalities with TRE revenues above this 0.6 percent level could also increase their fiscal effort. Based on these results, one could argue that there is room for more fiscal effort with respect to real estate taxes and fees by municipalities in this top quartile.

Betterment levies account for only 0.4 percent of TRE for all of the municipalities in the sample. However, the top 20 municipalities ranked by total revenue from betterment levies had collected between US\$473,000 and US\$2.6 million in 2008, with an average collection of US\$928,000. For these 20 municipalities, these levies represented on average more than 10 percent of total municipal investment, but the average levy as a percent of GDP was only 0.18 percent. It would be interesting to analyze why these few municipalities were willing and able to use betterment levies so much more effectively than most others in the sample.

Enactment of Land-Based Legislation

According to the annual survey of municipalities by the Brazilian Institute of Geography and Statistics (IBGE 2009), only 32 of the 130 municipalities (24.6 percent) passed all eight laws needed to fully utilize the land-based fiscal instruments permitted by the Statute of the City, and 43 municipalities (33 percent) had passed four or fewer laws. Since passage of such legislation could create additional fiscal space for municipal investment without increasing municipal debt or deficits, there seems to be much room for increased use of these instruments.

Sandroni (2011) estimated the total revenue for the City of São Paulo from the single law that allows charges for the sale of additional development rights (*Outoga Onerosa do Direito de Construir—OODC*) to be over US\$300 million for the 2006–2010 period. This total excludes the more than US\$1 billion from the municipality’s 13 urban development operations financed by selling development rights (e.g., Faria Lima and Água Espraiada).

Summary and Policy Implications

This analysis of municipalities ranking in the top quartile by the Creditworthiness Indicator shows that they often invest at low levels, demonstrate low fiscal effort on real estate taxes and fees, and have not passed all of the legislation necessary to use the land-based instruments. Simulations also indicate that relatively small increases in fiscal effort on real estate taxes and fees could generate

significant fiscal space for municipal investment or other priorities.

Additional real estate value will be created in future years as Brazil's municipalities grow and provide new infrastructure. For example, the development plan for the new beltway in Rio de Janeiro includes major strategic public and private sector investments of more than US\$30 billion, including major petrochemical (COMPERJ) and steel facilities already being implemented. Such projects are likely to generate value that could be captured in part by the land-based instruments to help finance infrastructure, and they could provide subsidies for housing lower-income families.

Based on these findings, we argue that a national program allocating at least part of the annual allotment of municipal credit based on performance criteria could provide incentives for increased generation of municipal fiscal space while maintaining fiscal discipline.

Such a program could be open to all municipalities that meet the creditworthiness criteria and have an acceptable capital budget (i.e., attain the benchmarks discussed above). To help all municipalities become eligible, technical assistance could be available within the program, including help to improve collection of real estate taxes and fees (e.g., better cadastres, collection systems, and improved valuations), prepare and execute effective capital budgets, and put the land-based instruments into operation.

This research demonstrates the utility of a database combining municipal financial and socioeconomic indicators to improve municipal financial performance. Periodic publication of such a database could complement the information that STN currently provides and facilitate future research and policy analysis. Continuing the estimates of residential capital at the municipal level for this database using the hedonic price method with the 2010 Census data would be most useful.

In summary, a national program could provide incentives for municipalities to increase their fiscal space for investment and other priorities. The program also could encourage municipalities to recognize that effectively planning interventions (public works and land use regulations) can significantly increase land values that then can be captured in part by using the available land-based instruments. In short, such a program could help finance a brighter future for Brazil's municipalities. **L**

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