

**Could land-based financing help create fiscal space
for investment by Brazil's municipalities?**

David Michael Vetter and Marcia Vetter

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Abstract

Within a 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? To address this question, we ask: How many Brazilian municipalities would be judged creditworthy by national and international creditworthiness indicators? What is the performance of municipalities ranking in the top quartile by their creditworthiness indicators? How much do municipalities in this top quartile invest? What is their fiscal effort on real estate taxes and fees? Have they passed the legislation necessary to more fully utilize the land-based instruments that help to create and capture real estate value? In summary, how much room is there for municipalities to increase their revenues from their real estate taxes and fees and other land-based instruments to create fiscal space to finance infrastructure, housing subsidies and other needs? Could a national program help to provide incentives for creating fiscal space at the municipal level?

To address these questions, we develop a database with financial and socio-economic variables for municipalities with 50,000+ inhabitants in 2008. We first rank municipal performance with a composite Creditworthiness Indicator, as it shows potential for creating fiscal space. Then, we focus on the municipalities ranking in the top quartile on creditworthiness, so that we can analyze the implications of a national program seeking to increase fiscal space at the municipal level. By using creditworthiness as a key eligibility criterion, such a program would be rewarding effective municipal financial performance, as well as providing a first step for developing modern credit market for municipal financing.

The results show that municipalities ranking in this top quartile often: Invest at low levels, show low fiscal effort with real estate taxes and fees, and have not passed the legislation necessary to use the land-based instruments. Simulations show that relatively small improvements in real estate taxes and fees could generate significant fiscal space.

Based on this, we argue that a national program allocating at least part of the annual allotment of municipal credit could provide incentives for increased generation of municipal fiscal space. For example, such a national or state program could finance the capital budgets of creditworthy municipalities that generate fiscal space by such measures as improved performance on real estate taxes and fees, effective use of the land-based instruments for value capture, or other measures. The credit could be disbursed as the municipalities effectively implement their capital budgets. As about 22 percent of the total population with incomes below the poverty line live in municipalities in this top quartile based on creditworthiness, this program would not be as regressive as it might appear.

Such a program could help municipalities to play a more entrepreneurial role in their development by helping to create real estate value through effective planning and capturing it with the land-base instruments now available. Development and timely publication of a database of the type employed here could stimulate informed debate on the above issues.

Key Words: fiscal space; municipalities; Brazil; public sector investment; creditworthiness; financial performance; land-based instruments; land use ; legislation; urban regulation; real estate; property tax; betterment levies; project finance; composite indicators; value capture; urban development; Statute of the City; capital budget.

About the Authors

David Vetter (Ph.D. University of California, Los Angeles) has worked for nearly four decades on urban finance and economics issues in Latin America. He taught and did urban research in Brazil for 17 years at IBGE, the Graduate Engineering Program (COPPE), the Institute of Urban and Regional Planning and Studies (IPPUR) and the Fundação Getúlio Vargas. He joined the World Bank in 1990, where he developed subnational investment and reform programs for Argentina, Brazil, Chile, and Ecuador. To push for greater private sector participation in financing urban development, he joined Dexia Credit Local in 1998 as Vice-President, where he established lending programs in Argentina, Brazil, and Mexico. Since his return to Brazil in 2004, he continues his work as a consultant for Dexia, IDB, and other clients as well as circling back to some of the research interests of his earlier career on land value and the appropriation of benefits from public investments. For example, in two recent studies with financing from the Lincoln Institute of Land Policy, he is exploring ways of financing municipal infrastructure via land value capture.

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Could land-based financing help create fiscal space for investment by Brazil's municipalities?

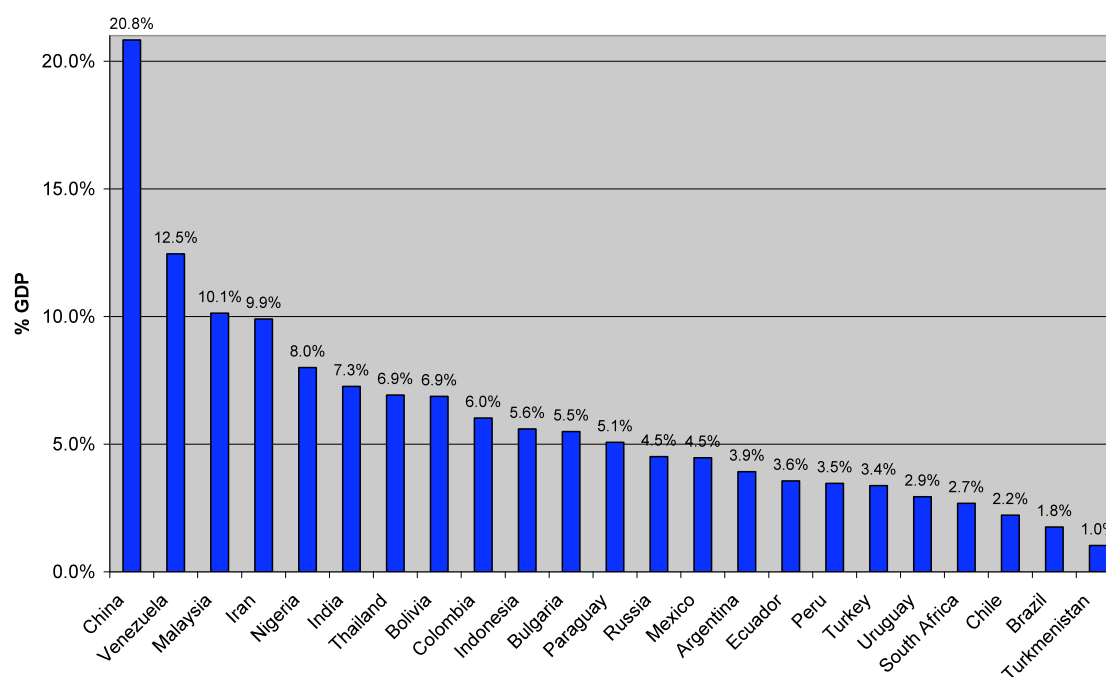
1. Introduction

According to a World Bank report (2006), Brazil's municipalities face an "urgent need to invest in productive infrastructure and the lack of fiscal space to do so due to the fiscal constraints in place by the country's macroeconomic program. Backlog in municipal infrastructure is estimated at about \$40 billion over the next 10 years."

Brazil's Low Public Investment

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. Chart 1.1 shows the average Gross Formation of Public Capital (GKP) as a percentage of GDP for a selection of emerging market countries for 2006/07 (Afonso and Junqueira 2009b). With a GKP of only 1.8% for this period, Brazil ranks second from the bottom for all of the countries and last among the BRICs with 1.8%, versus 20.8% for China, 7.3% for India, and 4.5% for Russia.

Chart 1.1: Selected Emerging Market Countries: Gross Capital Formation by the Public Sector as a Percent of GDP: Average 2006/07



Source: Generated with data from Afonso and Junqueira (2009b).

The Need to Create Fiscal Space for Investment and Poverty Reduction

Heller (2005) 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.” Despite Brazil’s very low public investment level, “the idea of **creating adequate fiscal space** to allow for increased investment has been largely ignored at national level, both by specialists, academics and government technicians, as well as by the authorities and Congress” (Afonso, Araújo and Biassoto 2005).

Control of the consolidated national and subnational (i.e., state and municipal) deficits and borrowing have been key elements in Brazil’s macroeconomic policy since the beginning of the successful stabilization program in 1994.¹ To assure price stability and attain an investment grade sovereign rating, Brazil has controlled the consolidated public sector debt by states and municipalities through a complex web of restrictions on borrowing by them or lending to them (including the Fiscal Responsibility Law -- LRF).¹

Creating Fiscal Space at the Municipal Level

In spite of all of these restrictions, investments by municipalities are already quite important, constituting 40.3% of total public sector investment in 2008 (Afonso and Junqueira 2009a).

Municipalities could further increase their fiscal space for investment by:

- Improving their overall financial performance by cutting lower priority spending and increasing overall expenditure efficiency.
- Increasing revenue through more effective administration of the real estate property and transfer taxes and fees, as well as other own-source revenues.
- Use of other land-based instruments that would not involve municipal borrowing, such as the sale of development rights and underutilized land, and project finance including concessions, leasing, and PPP.

In fact, current national policy allows two types of financing that do not impact the consolidated public sector debt: Project finance (e.g., concessions, PPP, and leasing) and asset sales. Project finance is, of course, by definition off the municipal balance sheet.

The Potential Role of Land-Based Instruments in Generating Fiscal Space

Peterson (2009) notes that “Land-based financing is not a practical or desirable way to pay for the entire capital budget. However, as part of the mix of capital financing, it has significant practical advantages.” For example, some “land-financing techniques generate revenue *before* infrastructure investment is undertaken. Others involve borrowing during the construction period, with debt repaid from subsequent gains in land value. In developing countries where it is difficult to obtain long-term credit for urban infrastructure finance, the up-front nature of the revenue generated by land financing adds flexibility to infrastructure financing decisions” (Peterson 2009). Furthermore, many times the borrower is the private sector partner, rather than the public sector (e.g., concessions). What could be the potential role of the land-based instruments in financing a municipality’s capital budget?

¹ A number of World Bank studies have stressed the importance of subnational governments in national macroeconomic strategies for Brazil (Dillinger 2002).

The full range of these land-based instruments includes:

- Real estate property and transfer taxes²
- Impact fees or developer extractions for new developments
- Betterment levies
- Sale of development rights
- Sale of public land and buildings
- Concession or leasing on public land

See Annex B for a brief review of a selection of these instruments. Note that none of these instruments involve public sector borrowing and would not, therefore, increase the public sector debt or be covered by the restrictions on lending to or borrowing by municipalities. For example, project finance (e.g., concessions, PPP, and leasing) and asset sales are by definition off the municipal balance sheet. Selling of development rights or underutilized public land and buildings would not increase municipal indebtedness because they involve the sale of assets rather than borrowing. In the case of development rights, the municipality is selling the right to build more than one floor. In the capital budget, the land-based instruments can provide a way of increasing total investment per dollar of public sector borrowing.

Brazil's Federal Constitution of 1988 grants municipalities the power to define and execute urban development policy in accord with the general guidelines set down in federal enabling legislation, called the *Estatuto da Cidade* (Statute of the City) of 2001. The definitions of property rights in the Constitution and Statute of the City have permitted innovations that resolve key problems that inhibited the use of some land-capture instruments in Brazil for many years. For example, São Paulo has sold development rights called CEPACs (*Certificados de Potencial Adicional de Construção*/Certificates of Additional Construction Potential) on the stock exchange.³

Incentives for Generation of Fiscal Space at the Municipal Level

The World Bank (2006) includes as a priority its municipal strategy: “Design a sustainable market-based sub-national credit system and assist municipalities in becoming creditworthy within a framework of continued fiscal discipline.” A first step in developing such a market-based system could be to change the current system in which the total amount of municipal borrowing is capped, then this total amount is “rationed across municipalities on a first-come, first-serve basis, at fixed interest rates regardless of the merits of the municipality or of the project financed.”

As a World Bank report (2002) points out: “Market based lending would provide additional incentives for prudent fiscal behavior, while easing the burden of regulation.” To allow development of a modern and efficient subnational credit market, the regulations could stop borrowing by those subnationals that are not creditworthy, while allowing the creditworthy subnational to borrow responsibly.

² Peterson does not include real estate taxes and fees as we do here for the reasons that we give in Vetter and Vetter (1010a).

³ For a concise review of the Faria Lima project see Biderman, Sandroni, and Smolka (2006). Biderman and Sandroni provide a more detailed analysis (2005).

To lay the foundation for modern credit markets, a national program could provide incentives to create fiscal space by providing access to credit to those municipalities that generate it:

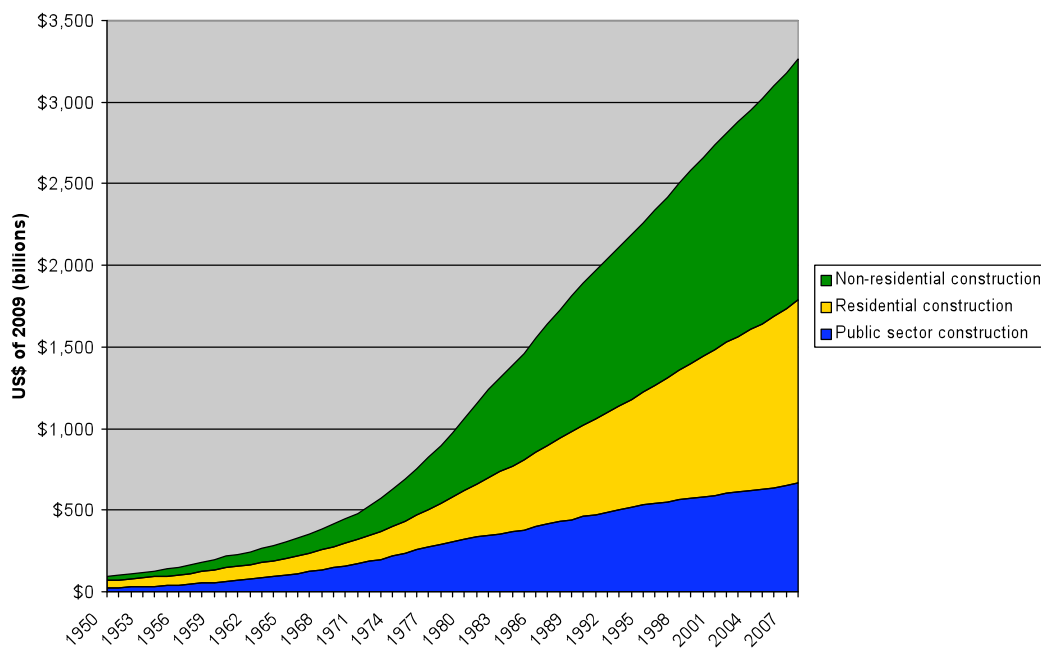
- The most creditworthy municipalities. This would provide incentive to improve at least maintain their financial performance.
- That present efficient and equitable investment plans and capital budgets.
- That leverage any borrowing by using the land-based instruments so that the total fiscal space created per R\$ of borrowing is high.

High Fixed Capital Formation in Residential and Non-Residential Real Estate

The national accounts data in Charts 1.2 and 1.3 show that capital formation in: (a) residential and non-residential construction by enterprises and families has been quite high; and (b) the public sector has not kept pace with that of residential and non-residential construction.

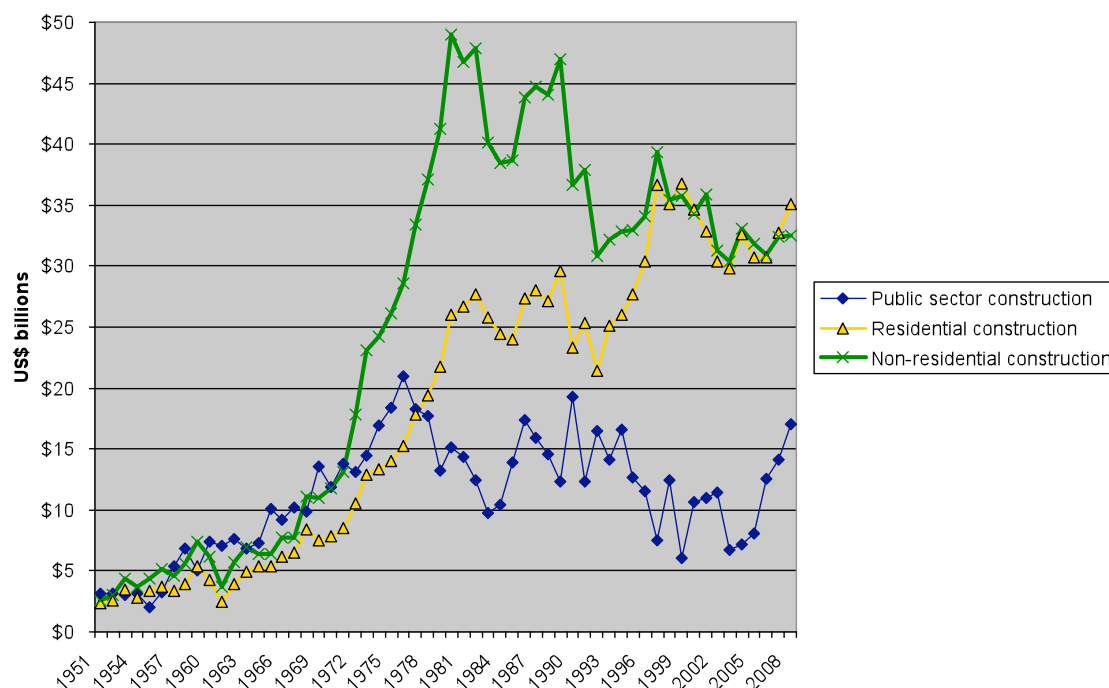
Capital formation by the public sector construction lagged far behind that of residential and non-residential construction during the 1951 thru 2008 period, although there was some upturn in public investment in 2007 and 2008. The formation of residential and non-residential capital indicates potential value capture that could help finance infrastructure. As these national accounts do not include the value of land, they underestimate the value that could be captured.

Chart 1.2: Brazil: The Evolution of the Gross Stock of Fixed Capital for Public Sector, Residential and Non-Residential Construction: 1950/2008



Source: Generated using the national accounts data from IpeaData

Chart 1.3: Brazil: The Annual Change in the Gross Stock of Fixed Capital for Public Sector, Residential and Non-Residential Construction: 1951/2008



Source: Generated using the national accounts data from IpeaData.

Estimates of Brazil's total stock of residential capital using the hedonic price method include both the value of the structure and land and are available for all municipalities for census years (1970/ 2000). These estimates show that Brazil's total stock of residential capital jumped by US\$453 billion (56.2%) over the 1991/2000 period or about 5.1% (US\$51.1 billion) per year.ⁱⁱ See Table 1.1. Although estimates using this methodology are not available after 2000, judging from the rapid rise of urban centers and housing construction, one would expect them to show significant increases. As we will discuss below, it would be useful to have these estimates of fixed capital formation of both structures and land for the years after 2000, as they would help to assess the potential for using land-based instruments.

Table 1.1: Brazil: Total Stock of Urban Residential Capital Estimated Using the Hedonic Price Method in US\$ of Constant 2009 Value

	1991	2000	Change 1991-2000		
			Absolute	%	Annual %
Total (US\$ billions)	806.5	1,259.5	453.0	56.2	5.1
Per capita US\$	7,267	10,234	2,967	40.8	3.9
Total population (millions)	111.0	123.1	12.1	10.9	1.2
% of GDP	92.9	122.8	29.9	32.1	3.1

2. The Methodology

How many Brazilian municipalities would be judged creditworthy by national and international creditworthiness indicators? What is the financial performance of municipalities by ranking in the top quarter based on their creditworthiness indicators? What is the fiscal effort of these municipalities in the top quartile use real estate taxes and fees? Have they passed the legislation necessary to more fully utilize the land-based instruments that help to create and capture real estate value? In summary, what is the potential of these municipalities to create fiscal space to finance infrastructure, housing subsidies etc.?

An Overview of the Methodology

To address these questions, we generate a municipal database that includes the indicators typically used by credit rating agencies and other financial institutions to assess municipal creditworthiness. In these assessments, municipal creditworthiness depends on financial performance and economic potential. This database contains all of the indicators and composite indicators necessary to answer the above questions for all the municipalities in the sample. For example, this database will enable to:

- Rank the municipalities by their performance on any of the indicators.
- Analyze the relationships among any of the variables, using correlation analysis or other statistical methods. We use Spearman rank correlation (rs) in all cases.ⁱⁱⁱ

Making individual municipalities the unit of analysis complements the methodology in which the analytical units are groups of municipalities (e.g., municipalities grouped by population or GDP size) as is often the case (STN 2008).

Selection of the Municipalities for Study

We focus on municipalities with 50,000 or more inhabitants in 2008, as they would be more likely to have the administrative capacity to implement the more complex land-based instruments and interest in so doing. Furthermore, a sizeable portion of Brazil's population lives in them. In 2008, the 584 municipalities with more than 50,000 inhabitants (10.5% of the total number of municipalities) had a total population of 122.2 million (65.3% of the total for Brazil). We excluded 66 municipalities due to missing financial data, leaving our final sample with 518 municipalities.

Definition of the Composite Indicators

We use two methods for normalizing the different indicators so that they can be combined (i.e., aggregated) into composite indicators: Ranking and summing binary benchmarks. With ranking, each of the municipalities in our sample will be ranked between 1 and 518 on the different indicators, with 518 representing the best or most favorable score and 1 being the worst score. We also use binary variables as second aggregation method by summing the number of indicators that are above a given benchmark. For example, we use five different binary measures of financial performance (1 = if meets benchmark, 0 = does not meet the benchmark), so that the top score is five and the lowest score is zero. In the case of the eight land-based laws of the Statue of the

City that have been passed, eight would be the top score and zero the worst. Table 2.1 shows a list of the composite indicators used in the study. Annex A provides a detailed description of all of the indicators and the variables used in defining them.

Table 2.1: The Composite Indicators Used in the Study

Type	Normalization	Basic indicators used	Composite indicator/ Aggregation
Creditworthiness			
Financial Performance Score	Benchmark	Meets 5 different financial performance criteria (if yes =1, if no = 0)	Sum of five binary variables
Financial Performance Rank	Ranking	Ranks on 5 financial performance indicators	Average ranking
Economic potential	Ranking	Ranks on 4 economic indicators	Average ranking
Other Indicators			
Investment level	Ranking	Ranks on 3 investment indicators	Average ranking
Use of real estate taxes/fees	Ranking	Ranks on three indicators of real estate taxes and fees	Average of 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 eight binary variables
Socio-economic level	Ranking	Composite indicator similar to UNDP's Human Development Index (HDI)	Ranking based on indicators of income, education and health

Price Index and Exchange Rate

We transformed all currency data into R\$ of constant average 2009 value using the Implicit GDP Deflator. The average annual commercial exchange rate for buyers and seller in 2009 was: US\$1 = R\$2.00.

Creditworthiness

Our composite Creditworthiness Indicator is based on our indicators of municipal financial performance and economic potential.

Municipal Financial Performance

We use the municipal finance data for 2008 from the National Secretary of the Treasury (STN) to calculate our indicators financial performance, as well as for real estate taxes/fees and investment developed below. Brazilian states and municipalities are legally required to submit timely, detailed, uniform financial statements. We define the indicators in ways that are close to the indicators used in Brazilian laws⁴ and regulations, and also compatible with the usual international practice.^{iv} In all cases, we try to define financial performance indicators that are at least as rigorous or even more rigorous (i.e., more conservative) than those normally used in Brazil.

⁴ See STN (2009) for a full list of these limits (pp. 14-15).

Table 2.2 shows the five indicators and their respective limits of municipal financial performance that we use in this study. These financial indicators are 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. The first four of these indicators are defined as percentages of Net Current Revenue ((NCR/ *Receita Corrente Líquida*),^v as is the case of most such Brazilian indicators.

Table 2.2: Financial Performance Indicators and Their Limits

Financial performance Indicators	%
Total Debt Stock/NCR	< 75.0
Total Debt Service/NCR	< 11.5
Total Personnel Expenditure/NCR	< 54.0
Operating Surplus (Current Expenditures – Current Revenues)/ NCR	> 10.0
Total Debt Service/ Operating Surplus	< 30.0

We develop two composite indicators based on these financial indicators: Financial Performance Score and Financial Performance Rank. To calculate the Financial Performance Score, we first code all of the five financial performance indicators in Table 2.2 as binary variables (1, if the municipality meets the criteria; 0, if it does not). The sum of the five binary variables is our Financial Performance Score. Only municipalities with a Financial Performance Score of five (5) will be considered creditworthy. However, obviously among the municipalities scoring five, some are much more creditworthy than others. To show this, we rank the municipalities using the original values of the five indicators with the most favorable performance which receives a rank of 518 and the least favorable, a rank of 1. We then calculate the average of the five ranks. The ranking of each municipality on this average is its composite Financial Performance Rank.

Economic Potential

After analyzing a number of economic indicators, we decided to include only the following four variables in the indicator:^{vi}

- Total size of municipal GDP 2007.
- Absolute change in GDP 2002-2007.
- Relative change of GDP 2002-2007.
- Municipal GDP per capita.

We ranked all four variables and then calculated the average rank of these four variables. The ranking on this average is our Economic Potential composite indicator.

Creditworthiness Indicator

We develop the Creditworthiness Indicator in two steps. First, we select municipalities that:

- Are in the top three quartiles on the Economic Potential indicator.
- Have a Financial Performance Score of 5 (i.e., meet all financial criteria).

Then, we calculate the average of the Economic Potential and Financial Performance indicators. Ranking this average gives us the Creditworthiness Indicator. The last part of our analysis will focus on the 130 municipalities ranking in the top quartile based on this Creditworthiness indicator.

Real Estate Taxes-Fees

We analyze municipal revenues from the following three real estate taxes and fees: The Tax on Urban Buildings and Land (IPTU, Imposto Predial e Territorial Urbano), the Real Estate Transfer Tax (ITBI - Imposto sobre Transmissão de Bens Imóveis), and betterment levies. Total Revenues from Real Estate Taxes and Fees (TRE) is the sum of these three revenues. Our three indicators are TRE per capita and as a percentage of NCR and municipal GDP.

Municipal Investment

We calculate the level of municipal investment in plant and equipment from STN as a percentage of NCR, GDP, and TRE, and also per capita.

Passage of Municipal Legislation for Land-based Instruments

In 2008, IBGE's⁵ annual survey of Brazil's municipalities (Pesquisa de Informações Básicas Municipais - MUNIC) included a special segment on legislation and instruments of municipal planning that covers the full range of municipal legislation needed to use the land-based instruments defined in the Statute of the City. The IBGE study shows only the passage of these laws and instruments, but not how effectively they are employed or enforced. Nonetheless, passage of these laws indicates at least the intent to enforce them.

Table 2.3 shows eight such laws that cover the creation of subdivisions, zoning, building codes, development rights (*solo criado*), betterment levies, urban revitalization (*Operação urbana consorciada*), environmental impact studies, and an urban plan. Each one of these eight laws is coded as a binary variable (1, if law exists in the municipality, 0, if not). The sum of the eight laws is our composite Score on Municipal Land-based Legislation with a range of zero to eight.

⁵ The Brazilian Institute of Geography and Statistics (IBGE) is Brazil's chief statistical agency that is responsible for the population and economic censuses, and many other statistical surveys, as well as preparation of the national accounts and several price indices.

Table 2.3: Eight Municipal Laws Necessary to Implement Land-based Instruments

	Municipal land-based legislation
1	Subdivision law
2	Zoning law
3	Building code
4	Sale of development rights law (<i>solo criado</i>)
5	Betterment levy law
6	Urban revitalization law (<i>Operação urbana consorciada</i>)
7	Law requiring environmental impact studies
8	Existence of an urban development plan as required under law

Municipal Human Development Index (IFDM)

We will use the annual indicator of socioeconomic development produced by the Federação das Indústrias do Estado do Rio de Janeiro (FIRJAN): The Índice FIRJAN de Desenvolvimento Municipal (IFDM).⁶ The methodology used for the IFDM follows that used by UNDP for the Human Development Index (HDI). It is a composite indicator combining indicators from the three principal areas of human development: Employment and income, education, and health. Each area receives equal weighting in the final composite indicator that varies between 0 and 1.0 in which 1.0 would be the highest development level. The most recent year available for IFDM was 2006.

Percent of Population below the Poverty Line

Household income per capita of one quarter of a minimum salary or less is the definition of extreme poverty (*indigente*) used for this indicator. We estimate the population in extreme poverty in 2008 using state level data on poverty and the IFDM. (See Annex C).

3. Statistical Analysis

The first part of the analysis deals with all 518 municipalities in our sample. The second part focuses on municipalities ranking in the top quartile on the Creditworthiness indicator.

Analysis of All Municipalities in the Sample

Did the majority of Brazilian municipalities met all five of the financial performance criteria in 2008 (i.e., had Financial Performance Scores of 5)? Is the Financial performance Rank indicator highly correlated with composite indicators of Economic Potential and human development (IFDM)?

⁶ For a full description of the methodology used, see:
<http://www.firjan.org.br/data/pages/2C908CE9229431C90122A3B25FA534A2.htm>

Municipal Financial Performance

Table 3.1 shows that the bulk of municipalities in the sample (68.0%) meet all five financial performance criteria (i.e., show a score of 5 on the composite Financial Performance Score). The best overall performance on the five individual scores is on Total Debt Service/ NCR, where only one municipality spent more than 11.5% of NCR on debt service. The worst overall performance was on Personnel Expenditures as a percentage of NCR, where only 83.4% of the municipalities met the criteria.

Table 3.1: The Municipalities in the Sample: Score on the Financial Performance Criteria—Total Score and Performance on Five Different Criteria

Score and performance on the five different criteria	Criteria used in this study	Total meeting the criteria	
		Absolute	%
Financial Performance Score: Meets all five criteria	If 5 = 1 If not 5 =0	352	68.0
Criterion: Personnel Expenditures/ NCR	<54.0%	432	83.4
Criterion: Operating Surplus/ NCR	>10.0%	493	95.2
Criterion: Total Debt Service/ NCR	<11.5%	517	99.8
Criterion: Total Debt Stock / NCR	<75.0%	453	87.5
Criterion: Total Debt Service/ Operating Surplus	<30.0%	477	92.1

To construct Table 3.2, we first selected only those Municipalities that met all five of the financial performance criteria in 2008 and then ranked them by their Financial Performance Rank composite indicator. Table 3.2 shows that even the municipalities in the second quartile show relatively good performance on all five financial performance indicators.

**Table 3.2: Municipalities that Meet All Five on Financial Performance Criteria 2008
- Financial Performance Indicators for the Municipalities in the Top Two Quartiles
by Their Financial Performance Rank (percentages)**

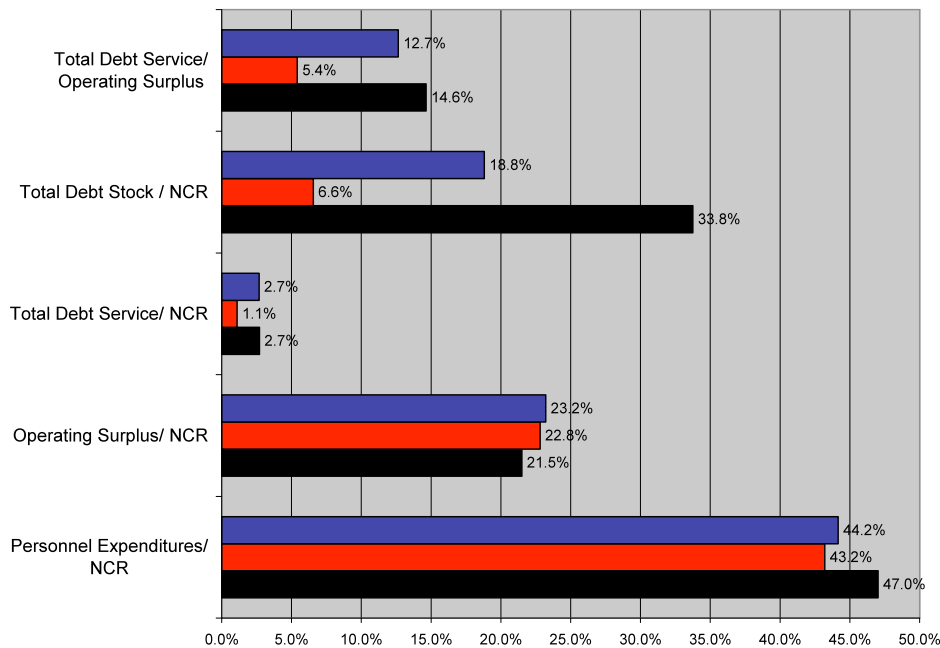
Quartiles by Composite Financial Performance Score	Personnel Expenditures/ NCR %	Operating Surplus/ NCR %	Total Debt Service/ NCR %	Total Debt Stock / NCR %	Total Debt Service/ Operating Surplus %
Total Sample					
Mean	47.0	21.5	2.7	33.8	14.6
Median	46.7	20.7	2.4	18.7	11.7
Standard deviation	7.5	8.0	1.8	45.2	18.7
Coefficient of Variation	15.9	37.3	65.9	133.8	127.6
1st quartile					
Mean	43.2	22.8	1.1	6.6	5.4
Median	43.7	21.5	1.1	4.2	5.2
Standard deviation	5.9	8.1	0.7	8.7	3.7
Coefficient of Variation	13.7	35.4	60.4	133.1	68.1
Min	24.7	10.4	0.0	0.0	0.0
Max	53.9	53.9	2.5	58.9	15.0
2nd quartile					
Mean	44.2	23.2	2.7	18.8	12.7
Median	44.4	22.8	2.7	15.2	11.6
Standard deviation	5.7	6.4	0.8	16.6	5.9
Coefficient of Variation	13.0	27.4	30.9	88.1	46.3
Min	29.3	10.3	0.9	0.0	3.6
Max	54.0	42.2	5.4	74.6	28.9

Table 3.3 and Chart 3.1 focus only on the means of the top two quartiles of the municipalities ranked as in Table 3.2. On average, the municipalities in the top two quartiles show rather high levels of financial performance by national and international standards.

**Table 3.3: Municipalities that Meet All Five on Financial performance Criteria 2008
- Means on the Indicators for the Top Two Quartiles by Their Composite Financial Performance Score (percentages)**

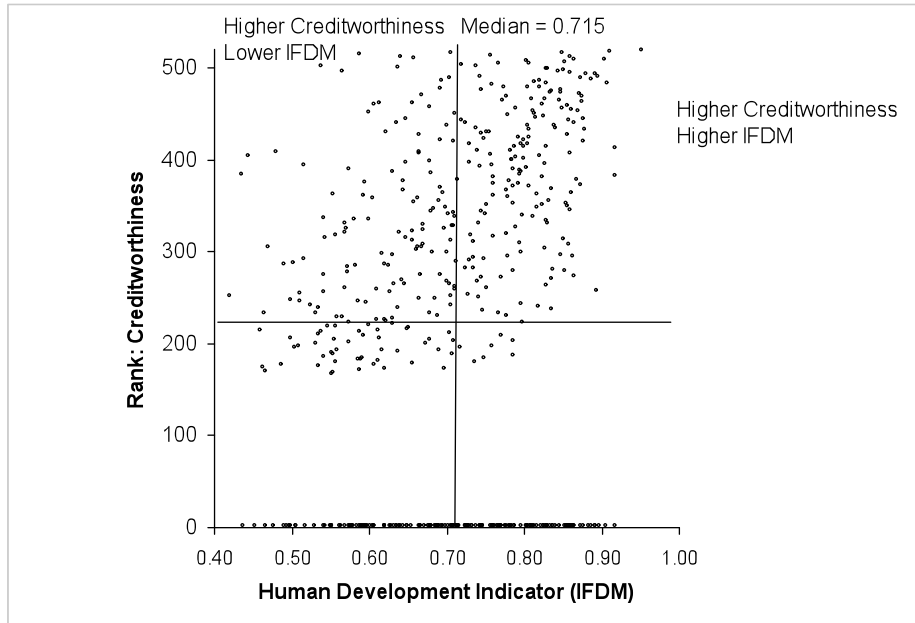
Quartiles by Number of Municipalities	Personnel Expenditures/ NCR %	Operating Surplus/ NCR %	Total Debt Service/ NCR %	Total Debt Stock / NCR %	Total Debt Service/ Operating Surplus %
Total Sample	47.0	21.5	2.7	33.8	14.6
First quartile	43.2	22.8	1.1	6.6	5.4
Second quartile	44.2	23.2	2.7	18.8	12.7

**Chart 3.1: Municipalities that Meet All Five of the Financial Performance Criteria
in 2008: Top Two Quartiles by Their Financial Performance Rank Composite
Indicator: Means of the Financial Performance Indicators**



How do creditworthy municipalities rank in terms of their IFDM? In other words, what is the correlation between the Creditworthiness and IFDM? In Chart 3.2, the scattergram shows that although there is a correlation between these two variables ($r_s = 0.27$)⁷, many municipalities ranking in the bottom half in terms of the IFDM, rank in the top half in terms of their creditworthiness. In other words, using creditworthiness as an eligibility criterion would not necessarily exclude municipalities ranking lower on the composite human development index (IFDM).

Chart 3.2: Municipalities in the Sample: Scattergram Showing Creditworthiness and Human Development Indicators (IFDM)

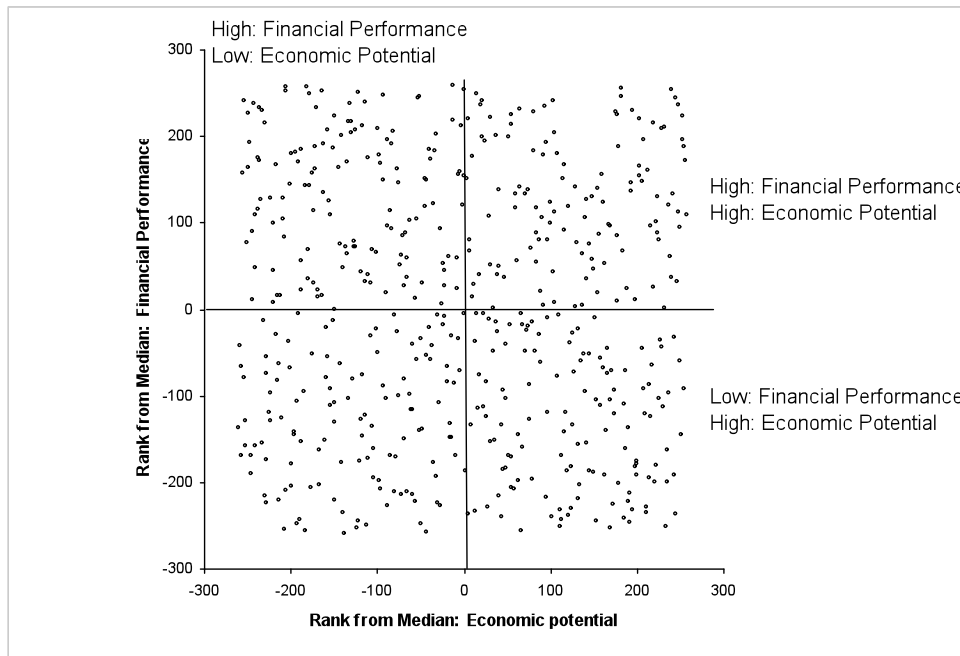


Ranks on Economic Potential and Financial Performance

Chart 3.3 shows the scattergram showing the rank from the median for our Financial Performance and Economic Potential composite indicators. The municipalities ranking above the median on both indicators (i.e., those in the upper right hand corner) will, of course, have the highest chance of being in the top quartile on the average rank of the two indicators used for the Creditworthiness Indicator. We did not expect the correlation between these two indicators to be virtually nonexistent ($r_s = -0.05\%$).

⁷ Municipalities with a Financial Performance Score below five were ranked at zero. The correlation coefficient is only for those municipalities ranking above zero.

Chart 3.3: Municipalities in the Sample: Scattergram Showing Ranks from Median on the Financial Performance and Economic Potential Indicators



Human Development Index (IFDM) and Economic Potential

Chart 3.4 shows that the correlation between the IFDM and the rank from the Median for Economic Potential was relatively high ($r_s = 0.51$). Nonetheless, there were quite a few municipalities that were below the median on IFDM, but above the median on economic potential. In other words, allocating resources based on economic potential would not be as regressive as it might appear.

Passage of Municipal Legislation for Land-based Instruments

How many municipalities had enacted enabling legislation to allow the use of the land-based instruments allowed by the Statute of the City in 2008? Is passage of this legislation correlated with the Creditworthiness Indicator? Table 3.4 shows a relatively high variation among municipalities in terms of passage of land related legislation, and that the percentage of passage rises with population size. For example, whereas 59.5% of the municipalities with more than 500,000 inhabitants had passed the development rights legislation in 2008, only 43.3% of municipalities with between 50,000 and 100,000 inhabitants had done so.

Chart 3.4: Municipalities in the Sample: Scattergram and Spearman Correlation Coefficient: Socioeconomic Development Index (IFDM) and Rank from the Median for Economic Potential

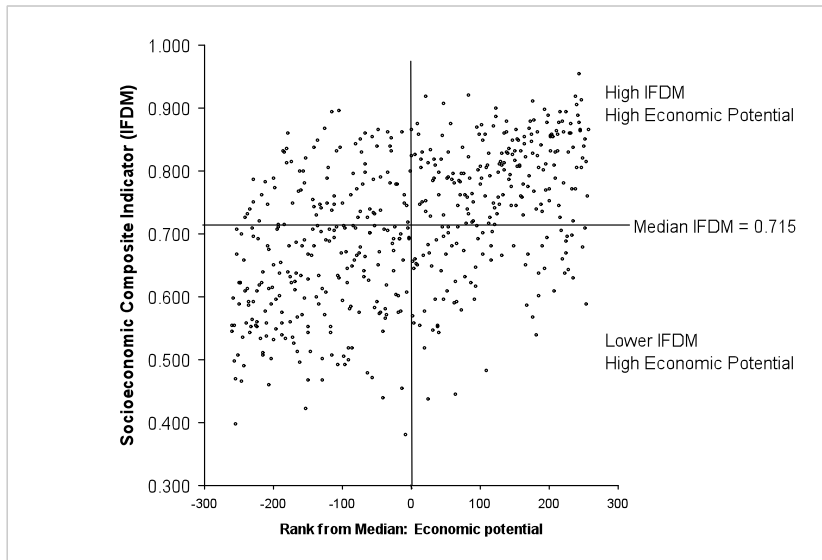


Table 3.4: All Brazilian municipalities: Passage of Legislation for Land-based Instruments by Population Size Groups: 2008

Number of with the different land use legislation or instruments	Population size groups				
	Brazil	50 000 or less	50 001 – 100 000	100 001 - 500 000	> 500 000
Total	5,564	4,979	319	229	37
Land use plan	2,176	1,696	246	199	35
Zoning law	1,810	1,361	223	191	35
Building Code	2,935	2,415	280	203	37
Development Rights	1,144	881	138	103	22
Betterment Levies	2,414	2,063	199	133	19
Urban Revitalization Areas	578	401	85	75	17
Environmental Impact Statements	720	485	117	96	22

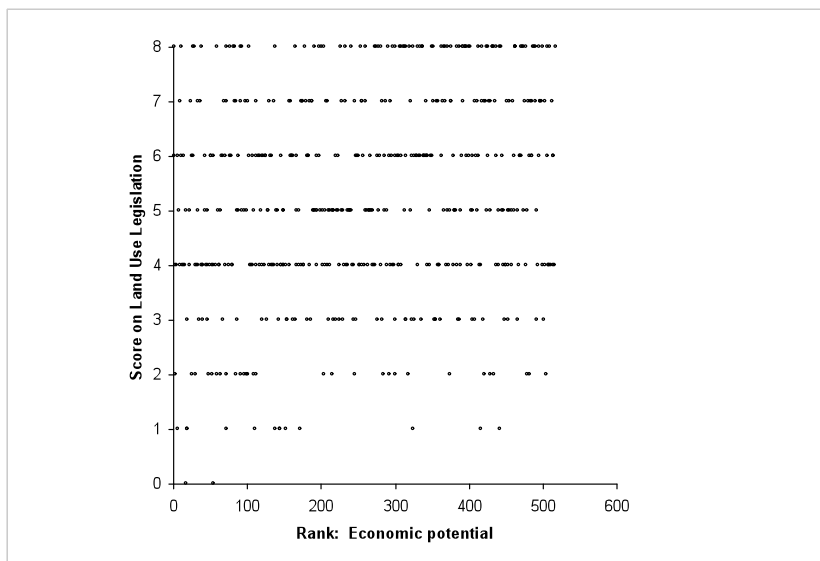
Table 3.4 (continued)

Percentages with the different land use legislation or instruments	Brazil %	50 000 or less %	50 001 – 100 000 %	100 001 - 500 000 %	> 500 000 %
Total	100.0	100.0	100.0	100.0	100.0
Land use plan	39.1	34.1	77.1	86.9	94.6
Zoning law	32.5	27.3	69.9	83.4	94.6
Building Code	52.7	48.5	87.8	88.6	100.0
Development Rights	20.6	17.7	43.3	45.0	59.5
Betterment Levies	43.4	41.4	62.4	58.1	51.4
Urban Revitalization Areas	10.4	8.1	26.6	32.8	45.9
Environmental Impact Statements	12.9	9.7	36.7	41.9	59.5

Source: IBGE, Perfil dos Municípios Brasileiros, 2007.

Chart 3.5 shows a low correlation ($r_s = 0.20$) between Score on Municipal Land-based Legislation and Economic Potential. Clearly, there are many municipalities with high economic potential that have not passed all of the legislation necessary to implement all eight of the land-based instruments.

Chart 3.5: Municipalities in the Sample: Scattergram and Spearman Correlation Coefficient: Total Score on Land Use Legislation by Economic Potential



Municipalities Ranking in the Top Quartile by the Composite Creditworthiness Indicator

Suppose that we want to develop a national program that would provide incentives for creation of fiscal space for municipalities ranking in the top quartile by our Creditworthiness indicator. This would stimulate investment in municipalities with a relatively high potential for future economic development that have also performed well in terms of financial performance (i.e., serve as a reward for responsible financial performance). In other words, such a program would be focusing on the municipalities that show the highest potential for increasing fiscal space in terms of our Creditworthiness indicator.

Characteristics of the Municipalities in the Top Quartile on the Creditworthiness Indicator

Table 3.5 Shows that the total 2008 population and 2007 GDP of the municipalities in this top quartile was 32.3 million and US\$346 billion, respectively (similar in size to Argentina: 39 million and US\$263 billion respectively). This top quartile of 130 municipalities held:

- 27.7% of the total population in the full sample and 31.7% of its GDP.
- 21.9 % of the total people living below the poverty line in our sample.

Table 3.5: All Municipalities in the sample and those in the Top Quartile by Rank on the Creditworthiness Indicator: Population, GDP, and Population below the Poverty Line

	Municipalities in the sample	
	All municipalities	Top quartile
Total population	116.4	32.3
% of total population	100.0%	27.7%
Total GDP 2007 (US\$ billions)	1,090.9	346.1
% of total GDP	100.0%	31.7%
Total population below the poverty line (millions) ⁸	5.55	1.22
% below the poverty line in 2008	4.8%	3.8%
% of total population below the poverty line	100.0%	21.9%

⁸ Estimates based on the methodology in Annex C.

Performance on the Real Estate Taxes

Chart 3.6 shows the scattergram for Total Real Estate Taxes-Fees/ GDP by their rank on the Creditworthiness indicator. The distribution of municipalities below the median of Total Real Estate Taxes-Fees/GDP (0.34%, respectively) provides an idea of how much additional fiscal space might be available based on the Creditworthiness Indicator.⁹ The correlation coefficient for these two variables is low and negative ($r_s = -0.13$). Based on these results, one could argue that there is room for more fiscal effort with real estate taxes and fees, especially at the higher end of the creditworthiness scale. Our simulation shows that raising TRE levels to this median level of 0.34% of GDP for all municipalities in the top quartile would increase total revenue by R\$509 million. For those municipalities below 0.34% GDP level, the average per capita increase in TRE to bring their level up to the median would be only R\$35. Obviously, municipalities with TRE revenues above the median could also increase their fiscal effort.

Betterment levies account for only 0.4% of TRE for all of the municipalities in the sample. Afonso, Araújo, and Nóbrega (2009) cite a number of reasons for this, including the difficulties in determining the impact on valorization. Nonetheless, it is interesting that many municipalities did, in fact, make use of the betterment levies. For example, we ranked municipalities by the total amount collected from such levies in 2008. The top 50 municipalities collected between R\$250,000 and R\$5.1 million with an average of R\$1.1 million in 2008. These 50 municipalities had a total of 10.3 million inhabitants in 2008 (average of 206,000 inhabitants) with representation of municipalities in all of Brazil's main regions. It would be interesting to analyze why these municipalities were willing and able to use betterment levies so much more effectively than the bulk of those in the sample.

⁹ We deleted the value for Balneário Camboriu (SC) of 4.12% of GDP from the Chart, as this was nearly 10 times the average for this indicator. This beach community obviously is taking good advantage of its high real estate values.

Chart 3.6: Municipalities in the Top Quartile by Rank on the Creditworthiness Indicator: Total Real Estate Taxes-Fees/ GDP X Rank on the Creditworthiness Indicator

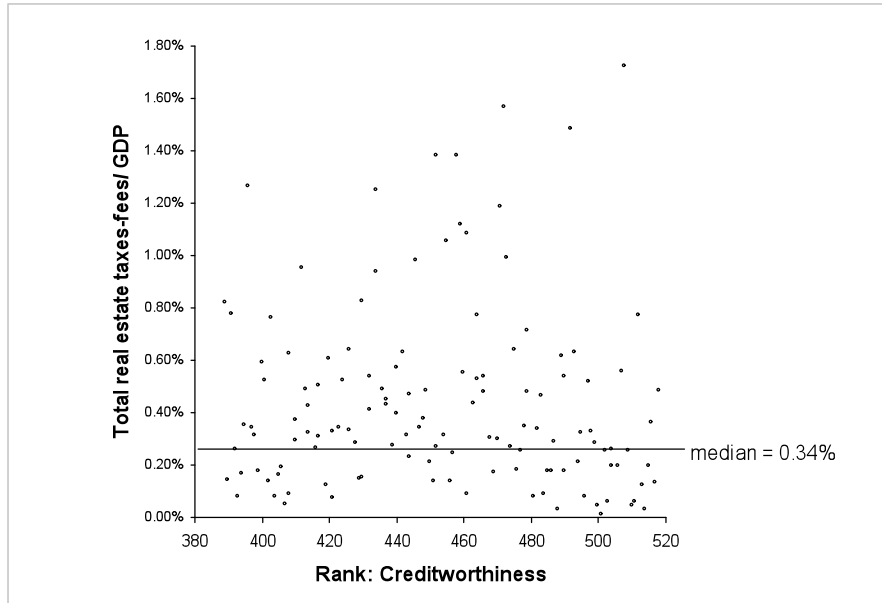


Chart 3.7: Municipalities in the Top Quartile by Rank on the Creditworthiness Indicator: Total Real Estate Taxes-Fees Per Capita by Rank on Creditworthiness

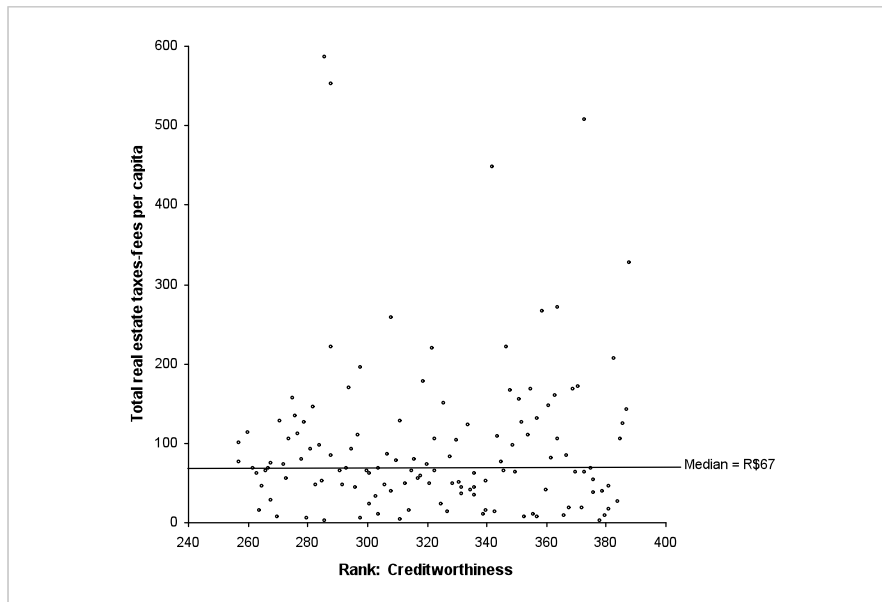


Chart 3.7 shows the distribution of TRE per capita by the Rank on the Creditworthiness Indicator. As the median of only R\$67 per capita, there would seem to be room for

greater fiscal effort. Political acceptability could increase if the increment were tied to needed investments.

Enactment of Land Use Legislation

Charts 3.8 and 3.9 show the score on the eight laws needed to fully utilize the instruments permitted by the Statute of the City by the Rank on the Creditworthiness Indicator. Clearly, many creditworthy municipalities with high economic potential have not passed all of the needed legislation. Passage of such legislation could create indicative of additional fiscal space.

Chart 3.8: Municipalities in the Top Quartile by Rank on the Creditworthiness Indicator: Total Score on Land-based Legislation by Rank on the Creditworthiness Indicator

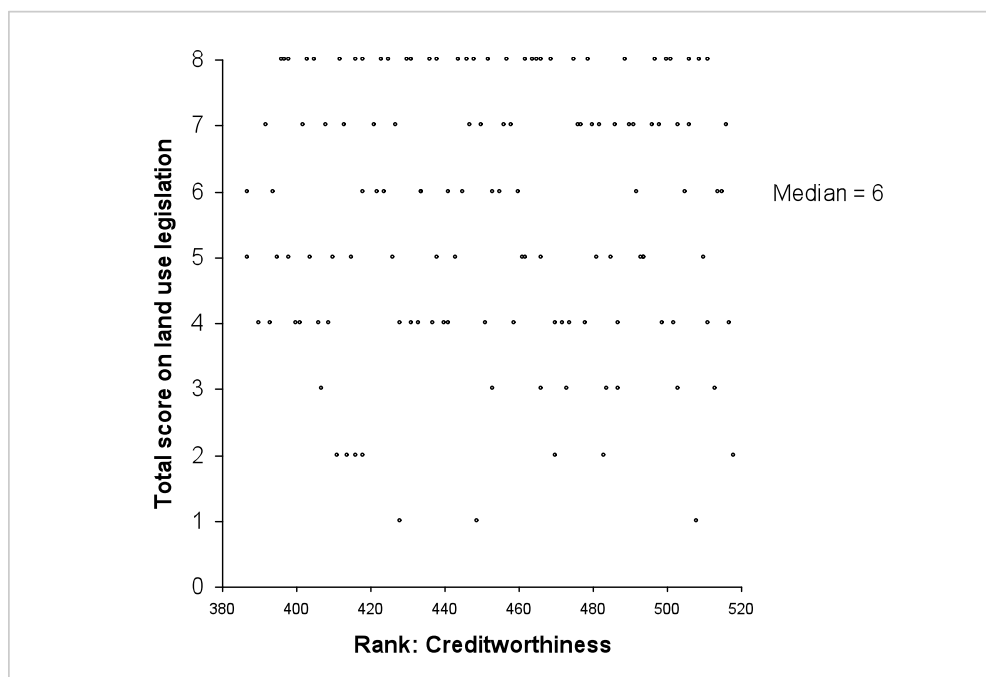


Chart 3.9: Municipalities in the Top Quartile by Rank on the Creditworthiness Indicator: Total Score on Land-based Legislation

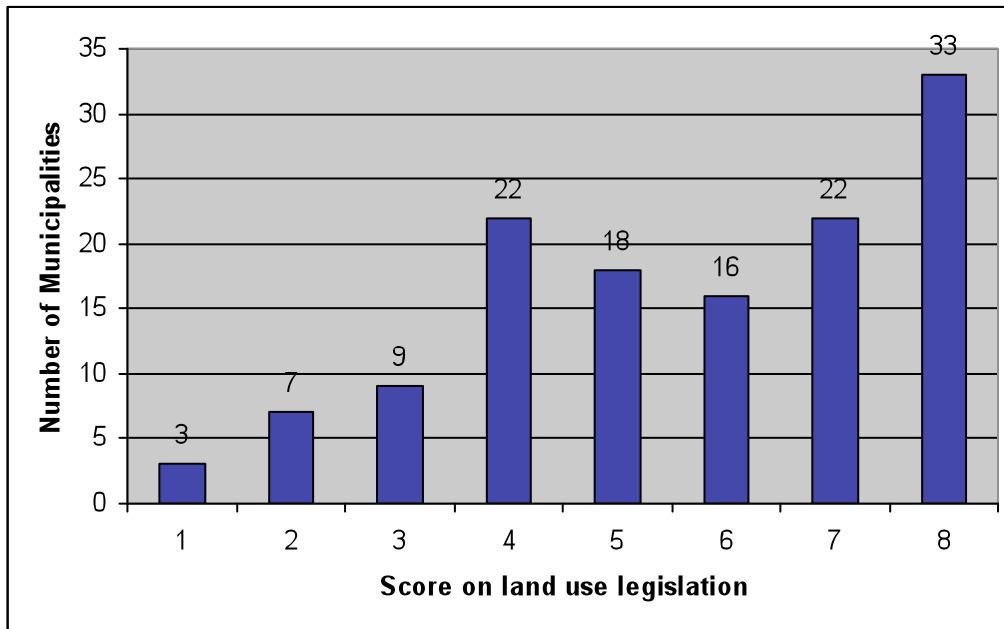
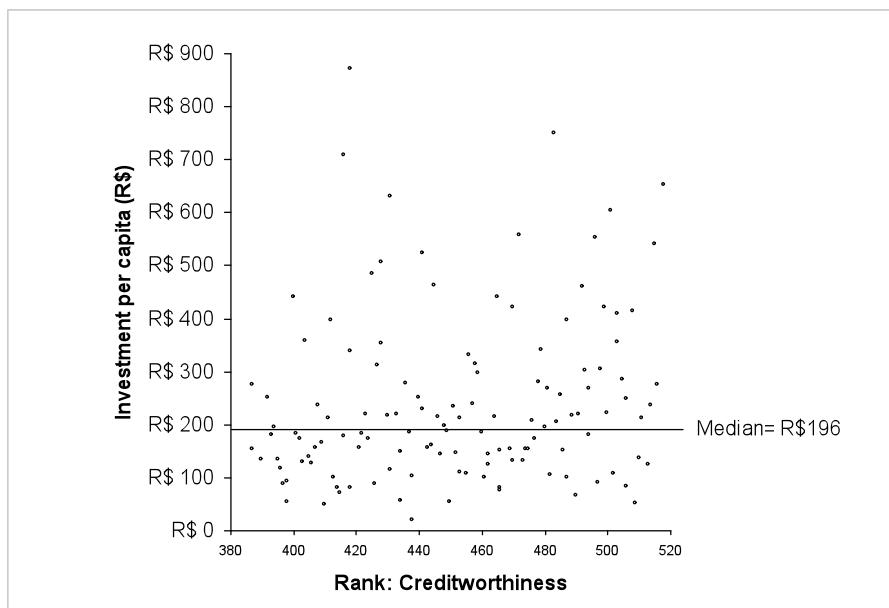


Chart 3.10: Municipalities in the Top Quartile by Rank on the Creditworthiness Indicator: Investment Per Capita X Rank on the Creditworthiness Indicator: 2008: R\$ 2009

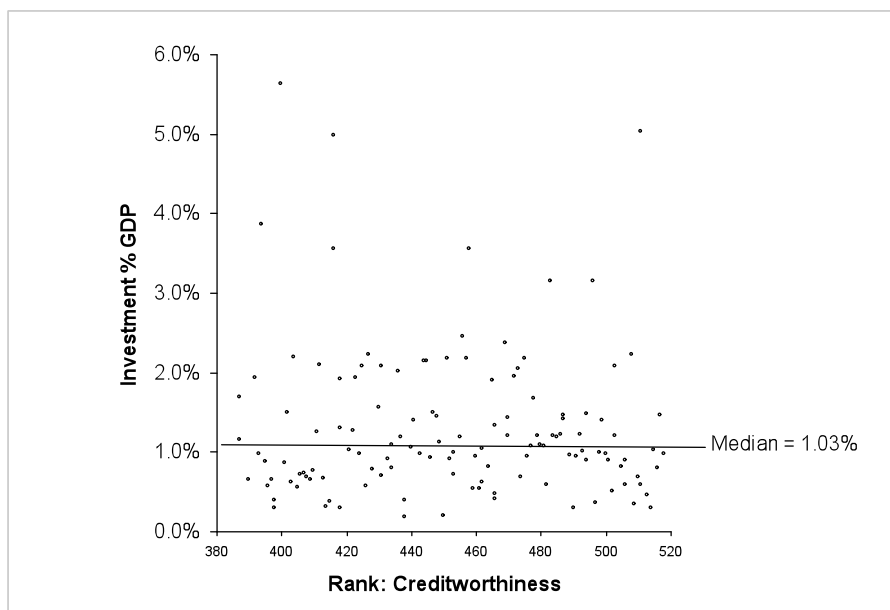


Municipal Investment

Chart 3.10 shows the Investment Per Capita by the Rank on the Creditworthiness Indicator¹⁰. The median per capita investment is only R\$196 (or about US\$100) and half of the municipalities fall below this. Furthermore, correlation between creditworthiness and per capita investment is quite low ($r_s = 0.23$).

Chart 3.11 shows that the median municipal investment as a percentage of municipal GDP is 1.04% and is not correlated with Creditworthiness indicator¹¹ ($r_s = -0.01$). Bringing all municipalities below the median up to 1% of municipal GDP would increase total municipal investment by R\$1.5 billion (US\$750 billion).

Chart 3.11: Municipalities in the Top Quartile by Rank on the Creditworthiness Indicator: Investment/ GDP X Rank on the Creditworthiness Indicator: 2008



4. Conclusions, Policy Implications, and Future Research

The results show that municipalities ranking in the top quartile in terms of creditworthiness often: Invest at low levels, show low fiscal effort with real estate taxes and fees, and have not passed all of the legislation necessary to use the land-based instruments. Simulations done show that relatively small increases in fiscal effort with the real estate taxes and fees could generate significant fiscal space for investment or other municipal priorities.

¹⁰ The chart excludes two municipalities with per capita investment of over R\$1000 in 2008: Barueri (SP) and Mariana (MG) with per capita investment of R\$ 1,575 and \$ 1,348, respectively.

¹¹ The chart excludes the municipalities of Manacapuru (AM) and Caxias (MA) that showed very high percentages of 10.50% and 8.76%, respectively. These could be due to big investment projects funded with grants or other sources.

Policy Implications

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. For example, such a national or state program could finance part of the capital budgets of creditworthy municipalities that generate fiscal space by reaching benchmarks on performance indicators for real estate taxes and fees and other revenues, effective use of the land-based instruments for value capture, and other measures to improve revenue generation or expenditure efficiency. The loan could be disbursed as the capital budget is effectively implemented and the benchmarks reached.

Such a municipal development program could be open to all municipalities meeting the creditworthiness criteria and that have an acceptable capital budget (i.e., attains the benchmarks discussed above). Technical assistance to help all municipalities become eligible 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 estimation of value), prepare and execute effective capital budgets, and use the land-based instruments (e.g., preparation of development plans, financial engineering, and bidding documents).

As our Creditworthiness Indicator is not as highly correlated with our Human Development Indicator (IFDM), such a program focusing initially on the most creditworthy municipalities would not be as regressive as it might sound. Furthermore, municipalities ranking in the top quartile on creditworthiness hold about 22% of Brazil's population living below the poverty line. One could argue that municipalities ranking in the top quartile are more likely to generate opportunities that will reduce poverty than those with lower financial performance and economic potential. Brazil's fiscal federal system already includes many automatic transfers to municipalities that are not based on financial performance or creditworthiness. Policy makers could, of course, implement additional compensatory transfer and grant programs if they deem them necessary.

In summary, national program could provide incentives for municipalities to increase their fiscal space for investment and other priorities (e.g., housing subsidies for lower income families and education). In this way, it would help municipalities to play a more entrepreneurial role in their development, such as by helping to create real estate value through effective planning and capturing it with the land-base instruments now available.

In the coming years, much such real estate value will be created as Brazil's municipalities grow and provide infrastructure. For example, the currently planned transportation investments in the Rio de Janeiro Metropolitan Region's periphery will greatly alter the space/time relationships within the region and thus the land value surface. These projects are part of the investment program being implemented to prepare Metro Rio for its role as the locus of Brazil's rapidly developing petroleum industry, as well as for the World Cup in 2014 and the Olympics in 2016. One such project is the

new beltway (Arco Metropolitano).¹² The State of Rio de Janeiro is currently developing a Plano Diretor Estratégico for the Arco Metropolitano that includes major strategic public and private sector investments of over US\$30 billion along this new corridor, including major petrochemical and steel facilities already being implemented. The Bus Rapid Transit corridors (BRTs) will greatly improve access to outlying neighborhoods. Metro Line 4 that will connect the older higher income area (Zona Sul) with the rapidly growing higher income area of Barra da Tijuca.¹³ Could integrated urban development projects within the impact areas of these projects generate value that could be captured via the land-based instruments to help finance infrastructure, as well as provide cross subsidies for the lowest income families?

Future Research

This research demonstrates the usefulness of a database with municipal financial and socioeconomic indicators for tracking municipal financial performance on a number of dimensions and policy analysis. Other researchers could use the dataset to address issues beyond the scope of this study. On the other hand, we learned that generating such database is quite labor intensive and time consuming. Timely publication of a set of municipal financial indicators would greatly facilitate and encourage research and policy analysis with STN's rich municipal financial data, thereby complementing the data and reports that STN currently provides. For example, STN might distribute a database with the financial and socio-economic indicators annually on its website along with the municipal dataset currently provided and its **Perfil e Evolução das Finanças Municipais** (STN 2008). Lowering the effort needed to produce the indicators could induce more research and dialogue on related policy issues and the indicators per se. The quality of the data could improve through this use as policy makers and researchers hone their questions. Ranking the municipalities by their financial performance with these indicators could provide incentives for better performance, although it might be best for non-governmental entities to do such ranking, as they could be less subject to political pressures.

How Much Real Estate Value Is Being Created?

Should the value of urban land be included in the national and subnational accounts? Although land itself is non-produced, an urban location provides access to jobs, services and amenities that are largely generated in urban areas by public and private investments. The section on Land and Dwellings of the OECD manual (2009) on *Measuring Capital*¹⁴ states that although land is a non-produced asset, it is "an asset that provides a flow of capital services into production." The Manual goes on to describe methods of estimating the total land value for the national accounts. The Australian methodology attributes from 62.7% to 65.1% of total fixed residential capital to land for the 2005 to 2010 period. The Canadian estimates show that land constituted an average of 46% of total fixed capital for residential and non-residential structures for families and unincorporated

¹² For more details see Vetter, Massena and Vetter (2011).

¹³ This line is being financed in large part from the sale of excess land left after the construction of the first lines of Rio's Metro. To increase the value of this land, the municipality changed the zoning to allow the new owners to build higher buildings.

¹⁴ Section 18.1.

businesses for the 2007 and 2008 period. Davis and Palumbo (2006) estimated that at the end of 2004, the “value of residential land accounted for about 50 percent of the total market value of housing” in the US cities in their sample. Their results show considerable variance among regions and by city size in the percentages of residential land in total market value:

- Midwest 36.2 percent
 - Chicago 52.1 percent
 - Pittsburgh 26.0 percent
- West Coast 73.8 percent
 - Los Angeles 78.7 percent
 - Portland 57.9 percent

There are a number of different methodologies that could be used to estimate real estate value in Brazil. As discussed above, a number of Brazilian studies use the hedonic price method to estimate the value of residential housing including land using census and household survey data for municipalities. The Ipeadata website publishes estimates of residential capital for all census years between 1970 and 2000. Hedonic functions could, of course, be fitted with 2010 Census data to estimate residential capital. For the Municipality of Rio de Janeiro, the real estate transfer and property tax data would allow calculation of such accounts for residential and nonresidential units at the neighborhood level (Vetter and Vetter 2010). Comparing the estimates generated using alternative methodologies (e.g., real estate tax and hedonic functions) would be useful in honing the analytical instruments. Des Rosiers (2002) does this kind of triangulation by comparing the estimates of the value of capital housing stock for Canada done using different methodologies, including hedonic functions and real estate assessments.

Data on the effective use of the land-based instruments

As noted above, the current IBGE data shows only whether the necessary land-based legislation has been enacted. But how many municipalities are effectively using the land-based instruments? Why have they been successful or unsuccessful in so doing? For example, why have some municipalities been quite successful in using betterment fees, when most don’t use them at all and some argue that using them is not feasible?

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Annexes ¹⁵

Annex A. Indicator Definition and Sample Selection - Definition of Simple and Composite Indicators

Indicators for Land-Based Taxes/ Fees and Creditworthiness

Municipal Finance Data from STN

STN documents provide very detailed descriptions of the budget categories used (See the STN documents in our References). ¹⁶ There are nearly 300 budget categories for a universe of over 5,560 municipalities at the end of 2002 and 5,563 (excluding Brasilia) at the end of 2005 to 2008.

Table A.1 shows the listing of indicators that we generate with the STN and other variables in our database. Table A.2 shows the categories for revenues, expenditures, assets and liabilities used in the STN data for 2002/2008. Although STN's budget categories have evolved over the years as part of an effort to increase their accuracy and consistency, the categories used in the 2002-2008 series are reasonably consistent. The total number of budget categories in 2002 was:

Categories	Total Number
Total	295
Revenues & expenditures	190
Assets & Liabilities	105

The bolded titles in parentheses in Table A.2 are some of the main categories used in Table A.1.

¹⁵ In some cases, the annexes repeat short sections of the main text to maintain the structure of the material presented. Some portions of the text have been left in Portuguese, especially when referring to detailed technical and legal matters.

¹⁶ See STN (2010) for very detailed descriptions of these variables.

Table A.1: Financial Summary Accounts and Indicators

<i>Codes</i>	<i>Definitions</i>	<i>BUDGET CATEGORIES</i>	<i>2002</i>	<i>2008</i>
1	1 = 2 + 6 + 11	CURRENT REVENUES		
2	2 = 3 + 4 + 5	Land based Tax and Fees		
3	Data	Real Estate Property Tax (IPTU)		
4	Data	Real Estate Transfer Tax (ITBI)		
5	Data	Betterment levies		
6	6 = 7	Other Current Revenues		
7	Data	Tax on Services (ISS)		
8	Data	Other non-transfer revenues		
11	11 = 12 + 16 + 17 + 18	Transfers		
12	Data	National transfers		
16	Data	State Transfers		
17	Data	Municipal and multi-government		
18	Data	Contracted Transfers		
19	19 = 20 + 21	CURRENT EXPENDITURES		
20	Data	Personnel Expenditures		
21	Data	Other Current Expenditures		
22	22 = 1 – 19	OPERATING SURPLUS		
23	<u>Data</u>	Capital Revenues and Transfers		
24	24 = 25 + 26	Capital Expenditures		
25	Data	Investments		
26	Data	Financial Investments		
27	27 = 22 + 28	PRIMARY SURPLUS		
28	Data	Interest payments		
29	29 = 30 – 31	NET DEBT FLOWS		
30	Data	New Borrowings		
31	Data	Amortization		
32	Data	NET STOCK OF DEBT		
		EXPENDITURES BY		
33	Data	Legislative branch		
34	Data	All other expenditures		

Table A.1 (continued) Financial Summary Accounts and Indicators

INDICATORS	2002	2008
<i>Operating Ratios</i>		
Operating Surplus/ Current Revenues		
Own Source Revenues/Current Rev.		
Personnel Exp./ Total Expenditures		
Exp. Legislative Branch/ Current Rev.		
<i>Debt Ratios</i>		
Debt/Current Revenues		
Debt/ Operating Surplus		
Debt Service/Current Revenues		
<i>Financing of Investment</i>		
Operating Surplus/ Investment		
Investment/ Current Revenues		
Betterment levies/ Investment		
Indicators per capita and % of municipal GDP		
Real Estate Property Tax (IPTU)		
Real Estate Transfer Tax (ITBI)		
Betterment levies		
Real estate revenues		
Concessions and royalties		
Total Expenditures		
Investment		
Personnel		
Stock of debt		
Debt Service		

Table A.2. Budget Categories Used for Municipal Financial Data from STN
Receitas e Despesas

<u>RECEITAS</u>	
#	
1	RECEITA TOTAL = (2+63-86)
2	<u>RECEITAS CORRENTES = (3+13+16+21+22+23+24+58)</u> (CURRENT REVENUES)
3	Receita Tributária = (4+9+12)
4	Impostos (5+...+8)
5	<u>Imposto sobre a Propriedade Predial e Territorial Urbana – IPTU</u>
6	(Real Estate Property Tax (IPTU))
7	<u>Imposto sobre a Renda e Proventos de Qualquer Natureza – IR</u>
8	<u>Imposto sobre Transmissão "Inter Vivos" de Bens Imóveis e de Direitos Reais sobre Imóveis – ITBI</u> (Real Estate Transfer Tax (ITBI))
9	<u>Imposto sobre Serviços de Qualquer Natureza – ISSQN</u>
10	(Tax on Services (ISS))
11	Taxas = (10+11)
12	<u>Taxas pelo Exercício do Poder de Polícia</u>
13	<u>Taxas pela Prestação de Serviços</u>
14	Contribuição de Melhoria (Betterment levies)
15	Receitas de Contribuições = (14+15)
16	Contribuições Sociais
17	Contribuições Econômicas
18	Receita Patrimonial = (17+...+20)
19	Receitas Imobiliárias (Real estate revenues)
20	Receitas de Valores Mobiliários
21	Receita de Concessões e Permissões (Concessions and royalties)
22	Outras Receitas Patrimoniais
23	Receita Agropecuária
24	Receita Industrial
25	Receita de Serviços
26	Transferências Correntes = (25+50+51+52+53) (Total Current Transfers)
27	Transferências Intergovernamentais = (26+37+44+47)
28	<u>Transferências da União = (27+...+36)</u> (National Transfers)
29	Cota-Parte do Fundo de Participação dos Municípios – FPM
30	Cota-Parte do Imposto Sobre a Propriedade Territorial Rural – ITR
31	Cota-Parte do Imposto sobre Operações de Crédito, Câmbio e Seguro ou Relativo a
32	Títulos ou Valores Mobiliários – Comercialização do Ouro
33	Transferência Financeira - L.C. Nº 87/96 – Lei Kandir
34	Compensação Financeira de Extração Mineral – CFEM
35	(Compensation for Mineral Extraction)
36	Cota-Parte do Fundo Especial do Petróleo – FEP
37	(Transfers from the Fundo Especial do Petróleo)
38	Transferência de Recursos do Sistema Único de Saúde – SUS
39	Transferências de Recursos do Fundo Nacional de Assistência Social – FNAS
40	Transferências de Recursos do Fundo Nacional do Desenvolvimento da Educação –
41	FNDE
42	<u>Transferências dos Estados = (38+...+43)</u> (State Transfers)
43	Cota-Parte do ICMS
44	Cota-Parte do IPVA
45	Cota-Parte do Imposto sobre Produtos Industrializados-Estados Exportadores – IPI-ex
46	Cota-Parte da Contribuição do Salário-Educação
47	Transferência de Recursos do Sistema Único de Saúde – SUS

43	Outras Transferências dos Estados
44	<u>Transferências dos Municípios = (45+46)</u> (Municipal Transfers)
45	Transferência de Recursos do Sistema Único de Saúde – SUS
46	Outras Transferências dos Municípios
	<u>Transferências Multigovernamentais = (48+49)</u>
47	(Multigovernmental Transfers)
48	Transferências de Recursos do FUNDEF
49	Transferências de Recursos da Complementação do FUNDEF
50	Transferências de Instituições Privadas
51	Transferências do Exterior
52	Transferências de Pessoas
53	<u>Transferências de Convênios = (54 +...+57)</u> (Contracted Transfers)
54	Transferências de Convênios da União e de Suas Entidades
55	Transferência de Convênios dos Estados e do Distrito Federal e de Suas Entidades
56	Transferência de Convênios dos Municípios e de Suas Entidades
57	Transferência de Convênios de Instituições Privadas
58	Outras Receitas Correntes (59+...+62)
59	<u>Multas e Juros de Mora</u>
60	<u>Indenizações e Restituições</u>
61	<u>Receita da Dívida Ativa</u>
62	<u>Receitas Correntes Diversas</u>
63	<u>RECEITAS DE CAPITAL = (64+67+70+71+85)</u>
64	Operações de Crédito =(65+66)
65	Operações de Crédito Internas
66	Operações de Crédito Externas
67	Alienação de Bens =(68+69)
68	Alienação de Bens Móveis
69	Alienação de Bens Imóveis
70	Amortização de Empréstimos
71	Transferências de Capital = (72+76+77+78+79+80)
72	Transferências Intergovernamentais = (73+74+75)
73	<u>Transferências da União</u>
74	<u>Transferências dos Estados</u>
75	<u>Transferências dos Municípios</u>
76	Transferências de Instituições Privadas
77	Transferências do Exterior
78	Transferências de Pessoas
79	Transferência de Outras Instituições Públicas
80	Transferências de Convênios = (81+...+84)
81	<u>Transferência de Convênios da União e de suas Entidades</u>
82	<u>Transferência de Convênios dos Estados</u>
83	<u>Transferência de Convênios dos Municípios e de suas Entidades</u>
84	<u>Transferência de Convênios de Instituições Privadas</u>
85	Outras Receitas de Capital
86	<u>Deduções da Receita Corrente =(87+88+89+90)</u>
87	Dedução de Receita para a Formação do FUNDEF – Origem FPM
88	Dedução de Receita para a Formação do FUNDEF – Origem L.C. 87/96
89	Dedução de Receita para a Formação do FUNDEF – Origem ICMS

Receitas e Despesas (continuação)

90 DESPESAS

#

91 **DESPESA TOTAL = (92+158)**

92 **DESPESAS CORRENTES = (93+113+114) (CURRENT EXPENDITURES)**

93	Pessoal e Encargos Sociais = (94+95+96)	(Personnel Expenditures)
94	Transferências a Estados e ao Distrito Federal	
95	Transferências ao Exterior	
96	Aplicações Diretas = (97+...+112)	
97	Aposentadorias e Reformas	
98	Pensões	
99	Contratação por Tempo Determinado	
100	Contribuição a Entidades Fechadas de Previdência	
101	Salário-Família	
102	Vencimentos e Vantagens Fixas – Pessoal Civil	
103	Vencimentos e Vantagens Fixas – Pessoal Militar	
104	Obrigações Patronais	
105	Outras Despesas Variáveis - Pessoal Civil	
106	Outras Despesas Variáveis - Pessoal Militar	
107	Outras Despesas de Pessoal decorrentes de Contratos de Terceirização	
108	Depósitos Compulsórios	
109	Sentenças Judiciais	
110	Despesas de Exercícios Anteriores	
111	Indenizações Restituições Trabalhistas	
112	Ressarcimento de Despesas de Pessoal Requisitado	
113	Juros e Encargos da Dívida	(Interest payments)
114	Outras Despesas Correntes = (115+...+122)	
115	Transferências à União	
116	Transferências a Estados e ao Distrito Federal	
117	Transferências a Municípios	
118	Transferências a Instituições Privadas sem Fins Lucrativos	
119	Transferências a Instituições Privadas com Fins Lucrativos	
120	Transferências a Instituições Multigovernamentais Nacionais	
121	Transferências ao Exterior	
122	Aplicações Diretas = (123+...+157)	
123	Aposentadorias e Reformas	
124	Pensões	
125	Contratação por Tempo Determinado	
126	Outros Benefícios Previdenciários	
127	Benefício Mensal ao Deficiente e ao Idoso	
128	Outros Benefícios Assistenciais	
129	Salário-Família	
130	Outros Benefícios de Natureza Social	
131	Diárias – Civil	
132	Diárias – Militar	
133	Auxílio Financeiro a Estudantes	
134	Auxílio-Fardamento	
135	Auxílio Financeiro a Pesquisadores	
136	Obrigações decorrentes de Política Monetária	
137	Encargos pela Honra de Avais, Garantias, Seguros e Similares	
138	Remuneração de Cotas de Fundos Autárquicos	
139	Material de Consumo	
140	Premiações Culturais, Artísticas, Científicas, Desportivas e Outras	
141	Material de Distribuição Gratuita	
142	Passagens e Despesas com Locomoção	

143	Serviços de Consultoria	
144	Outros Serviços de Terceiros – Pessoa Física	
145	Locação de Mão-de-Obra	
146	Arrendamento Mercantil	
147	Outros Serviços de Terceiros – Pessoa Jurídica	
148	Equalização de Preços e Taxas	
149	Auxílio-Alimentação	
150	Obrigações Tributárias e Contributivas	
151	Outros Auxílios Financeiros a Pessoas Físicas	
152	Auxílio-Transporte	
153	Depósitos Compulsórios	
154	Sentenças Judiciais	
155	Despesas de Exercícios Anteriores	
156	Indenizações e Restituições	
157	Indenização pela Execução de Trabalhos de Campo	
158	DESPESAS DE CAPITAL = (159+...+161)	
159	Investimentos	(Investments)
160	Inversões Financeiras	
161	Amortização da dívida	(Amortization)
162	SUPERÁVIT/DÉFICIT = (1-91)	

Despesas discriminadas por função

163	Legislativa
164	Judiciária
165	Essencial à Justiça
166	Administração
167	Defesa Nacional
168	Segurança Pública
169	Relações Exteriores
170	Assistência Social
171	Previdência Social
172	Saúde
173	Trabalho
174	Educação
175	Cultura
176	Direitos da Cidadania
177	Urbanismo
178	Habitação
179	Saneamento
180	Gestão Ambiental
181	Ciência e Tecnologia
182	Agricultura
183	Organização Agrária
184	Indústria
185	Comércio E Serviços
186	Comunicações
187	Energia
188	Transporte
189	Desporto e Lazer
190	Encargos Especiais

Ativo e Passivo

#	<u>ATIVO</u>
1	ATIVO = (52+53)
2	ATIVO FINANCEIRO = (3+7)
3	DISPONÍVEL = (4+5+6)
4	Caixa
5	Bancos c/ Movimento
6	Aplicações Financeiras
7	CRÉDITOS EM CIRCULAÇÃO = (8+9+10)
8	Créditos a Receber
9	Depósitos Realizáveis a Curto Prazo
10	Outros Valores Realizáveis
11	ATIVO NÃO FINANCEIRO = (12+26+30+40)
12	REALIZÁVEL A CURTO PRAZO = (13+22)
13	Créditos em Circulação = (14 + ... + 20 – 21)
14	Fornecimentos a Receber
15	Créditos Parcelados
16	Diversos Responsáveis
17	Empréstimos e Financiamentos
18	Adiantamentos Concedidos
19	Recursos Vinculados
20	Outros Créditos em Circulação
21	(*) Provisão p/ Devedores Duvidosos
22	Bens e Valores em Circulação = (23+24-25)
23	Estoques
24	Outros Bens e Valores em Circulação
25	(*) Provisão p/ Perdas Prováveis
26	VALORES PENDENTES A CURTO PRAZO = (27+28+29)
27	Despesas Antecipadas
28	Valores Diferidos
29	Outros Valores Pendentes a Curto Prazo
30	REALIZÁVEL A LONGO PRAZO = (31+34)
31	Depósitos Realizáveis a Longo Prazo = (32+33)
32	Depósitos Compulsórios
33	Recursos Vinculados
34	Créditos Realizáveis a Longo Prazo=(35+...+38-39)
35	Dívida Ativa
36	Devedores – Entidades e Agentes
37	Empréstimos e Financiamentos
38	Créditos a Receber
39	(*) Provisão p/ Perdas Prováveis
40	PERMANENTE = (41+45+49)
41	Investimentos = (42 + 43 - 44)
42	Participação Societária
43	Outros Investimentos
44	(*) Provisão p/ Perdas Prováveis
45	Imobilizado = (46+47-48)
46	Bens Móveis e Imóveis
47	Títulos, Valores e Bens Intangíveis

48 (*) Depreciação, Amortização e Exaustão Acumulados
 49 **Diferido = (50 – 51)**
 50 Despesas Diferidas
 51 (*) Amortização Acumulada
 52 **ATIVO REAL = (2+11)**
 53 **ATIVO COMPENSADO = (54 + ... + 57)**
 54 **Responsabilidade por Títulos e Valores**
 55 **Garantias de Valores**
 56 **Convênios e Contratos**
 57 **Outras Compensações**

PASSIVO

58 **PASSIVO = (100+101+105)**
 59 **PASSIVO FINANCEIRO = (60+63)**
 60 **DEPÓSITOS = (61+62)**
 61 **Consignações**
 62 **Depósitos de Diversas Origens**
 63 **OBRIGAÇÕES EM CIRCULAÇÃO = (64+75+77)**
 64 **Restos a Pagar Processados = (65 + ... + 74)**
 65 Fornecedores - Do Exercício
 66 Fornecedores - De Exercícios Anteriores
 67 Convênios a Pagar
 68 Pessoal a Pagar - Do Exercício
 69 Pessoal a Pagar - De Exercício Anteriores
 70 Precatórios
 71 Encargos Sociais a Recolher
 72 Provisões Diversas
 73 Obrigações Tributárias
 74 Débitos Diversos a Pagar
 75 **Restos a Pagar Não Processados = (76)**
 76 A Liquidar
 77 **Credores Diversos = (78+79)**
 78 Adiantamentos Recebidos
 79 Outras Obrigações a Pagar
 80 **PASSIVO NÃO FINANCEIRO = (81+89+91+99)**
 81 **OBRIGAÇÕES EM CIRCULAÇÃO = (82 + ... + 88)**
 82 **Diferido**
 83 **Provisões**
 84 **Operações de Crédito – Internas**
 85 **Operações de Crédito – Externas**
 86 **Adiantamentos Diversos Recebidos**
 87 **Precatórios**
 88 **Outros Débitos a Pagar**
 89 **VALORES PENDENTES A CURTO PRAZO = (90)**
 90 **Valores Pendentes**
 91 **EXIGÍVEL A LONGO PRAZO = (92+93)**
 92 **Depósitos Exigíveis a Longo Prazo**
 93 **Obrigações Exigíveis a Longo Prazo = (94 + ... +98)**
 94 Operações de Crédito – Internas
 95 Operações de Crédito – Externas

96	Obrigações Legais e Tributárias
97	Obrigações a Pagar
98	Outras Exigibilidades
99	RESULTADO DE EXERCÍCIOS FUTUROS
100	<u>PASSIVO REAL = (59+80)</u>
101	<u>PATRIMÔNIO LÍQUIDO = (102+103+104)</u>
102	Patrimônio/Capital
103	Reservas
104	Resultado Acumulado
105	<u>PASSIVO COMPENSADO</u>

Indicators of Land-based Taxes/ Fees

We decided not to include some other revenues from real estate, including those from renting municipal properties, concessions, and royalties because these are difficult to interpret represented only 1.0% of the total real estate revenue from taxes, fees and other sources in 2008. See Table A.3.

Table A.3. Real Estate Revenue from Taxes, Fees and Other Sources: 2008

	R\$ millions: constant 2009 value	%
Total	15,685	100.1
Real Estate Property Tax (IPTU) 2008	11,774	75.1
Real Estate Transfer Tax (ITBI) 2008	3,338	21.3
Betterment levies 2008	64	0.4
Real estate revenues 2008	157	1.0
Concessions and royalties 2008	350	2.2

Table A.4 shows the 12 different indicators that we developed for these taxes and fees.

Table A.4. Indicators of Revenues from Land-based Taxes and Fees

	% Net Current Revenues	Per Capita	% Municipal GDP
Total Revenues from Land-based Taxes and Fees (TRE)			
Real Estate Property Tax (IPTU)			
Real Estate Transfer Tax (ITBI)			
Betterment levies			

Indicators of Municipal Creditworthiness

The remainder of this section will discuss the definitions of these indicators under Brazilian laws and regulations shown in Table A.5 and the definitions that we will use in this study.¹⁷

Table A.5. Selected Brazilian Municipal Creditworthiness and Debt Limits Defined as Percent of Net Current Revenue (NCR)

Demonstrativo dos Limites	% of NCR
Dívida Consolidada Líquida (Limite Definido por Resolução do Senado Federal)	< 120.0
Limite do Dispendio da Dívida/ Serviço da dívida: amortizações, juros e demais encargos da dívida consolidada (inciso II do art. 7º da Resolução nº 43/2001)	< 11.5
Despesa com Pessoal (Executivo): Limite Máximo (incisos I, II e III, art. 20 da Lei de Responsabilidade Fiscal (LRF))	< 54.0
Limite Prudencial (§ único, art. 22 da LRF)	< 51.3

The denominator for all of the indicators in Table A.5 is Net Current Revenue (NCR - Receita Corrente Líquida). Table A.6 shows the variables used in the Brazilian definition of Net Current Revenue (NCR) in Brazil. We use this definition of NCR in this study.

Table A.6. Calculation of Net Current Revenue: Brazilian Definition

Especificação
Receitas Correntes (I)
Receita Tributária
IPTU
ISS
ITBI
Outras Receitas Tributárias
Receita de Contribuições
Receita Patrimonial
Receita Agropecuária
Receita Industrial
Receita de Serviços
Transferências Correntes
Cota-Parte do FPM
Cota-Parte do ICMS
Cota-Parte do IPVA
Transferências do FUNDEF
Outras Transferências Correntes
Outras Receitas Correntes

¹⁷ See STN (2009) for a full list of these limits (pp. 14-15).

Table A.6. (continued)

Deduções (II)
Contribuições Plano de Seguridade Social Servidor
Servidor
Patronal
Compensação Financiamento entre Regimes Previdência
Dedução de Receita para Formação do FUNDEF ¹⁸
Receita Corrente Líquida (I-II)

Table A.7 shows the Brazilian definition of Dívida Consolidada Líquida (Net Debt Stock). We will use Dívida Consolidada (Total Debt Stock), rather than Net Debt Stock and reduce the limit from 120% to 75%, as the former seems a bit lenient by international standards. In summary, our limit for Total Debt Stock will be 75% of NCR.

Table A.7. Brazilian Definitions: Total and Net Stock of Municipal Debt

Especificação
Dívida Consolidada - DC (I)
Dívida Mobiliária
Dívida Contratual
Precatórios posteriores a 5/5/2000 (inclusive)
Operações de Crédito Inferiores a 12 meses
Parcelamentos de Dívidas
De Tributos
De Contribuições Sociais
Previdenciárias
Demais contribuições Sociais
Do FGTS
Outras Dívidas
Deduções (II)
Ativo Disponível
Haveres Financeiros
(-) Restos a Pagar Processados
Obrigações não Integrantes da DC

¹⁸ O Fundo de Manutenção e Desenvolvimento do Ensino Fundamental e de Valorização do Magistério (**FUNDEF**) foi instituído pela Emenda Constitucional n.º 14, de setembro de 1996, e regulamentado pela Lei n.º 9.424, de 24 de dezembro do mesmo ano, e pelo Decreto n.º 2.264, de junho de 1997. A maior inovação do FUNDEF consiste na mudança da estrutura de financiamento do **Ensino Fundamental** no País (1ª a 8ª séries do antigo 1º grau), ao subvincular a esse nível de ensino uma parcela dos recursos constitucionalmente destinados à Educação. A Constituição de 1988 vincula 25% das receitas dos Estados e Municípios à Educação. Com a Emenda Constitucional n.º 14/96, 60% desses recursos (o que representa 15% da arrecadação global de Estados e Municípios) ficam reservados ao Ensino Fundamental. Genericamente, um fundo pode ser definido como o produto de receitas específicas que, por lei, vincula-se à realização de determinados objetivos. O FUNDEF é caracterizado como um fundo de natureza contábil, com tratamento idêntico ao Fundo de Participação dos Estados (FPE) e ao Fundo de Participação dos Municípios (FPM), dada a automaticidade nos repasses de seus recursos aos Estados e Municípios, de acordo com coeficientes de distribuição estabelecidos e publicados previamente. As receitas e despesas, por sua vez, deverão estar previstas no orçamento, e a execução contabilizada de forma específica.

Precatórios anteriores a 5/5/2000
Insuficiência Financeira
Outras Obrigações
Dívida consolidada Líquida (DCL)=(I - II)
Receita Corrente Líquida – RCL
% da DC sobre a RCL
% da DCL sobre a RCL
Limite definido por Resolução N° 40, de 2001, do Senado Federal

Table A.8 shows the Brazilian definition of Total Personnel Expenditures. Due to problems in identifying the exact expenditure categories we did not deduct all of the items shown with asterisks. We will use the limit of 54.0% of NCR for Total Personnel Expenditures. The interpretation of this indicator is not without its problems, as high personnel expenditures could be for teachers or doctors or for nonproductive political appointees. Although the general consensus that it is more the latter, this might not always be the case.

Table A.8. Brazilian Definition: Total Personnel Expenditures as a percentage of Net Current Revenue

Demonstrativo da Despesa com Pessoal - Poder Executivo
Despesa Líquida com Pessoal (I)
Pessoal Ativo
Pessoal Inativo e Pensionistas
Despesas não Computadas (art. 19 § 1º da LRF) (*)
(-)Indenizações por Demissão e Incentivos à Demissão Voluntária (*)
(-)Decorrentes de Decisão Judicial (*)
(-)Despesas de Exercícios Anteriores (*)
(-)Inativos e Pensionistas com Recursos Vinculados(*)
Outras Despesas de Pessoal Decorrentes de Contratos de Terceirização (art. 18, § 1º da LRF) (II)
Total da Despesa com Pessoal para Fins de Apuração do Limite - TDP (III)=(I+II)
Receita Corrente Líquida - RCL (IV)
% do Total da Despesa com Pessoal para Fins de Apuração do Limite - TDP sobre a RCL (V)=[(III/IV)*100]
Limite Máximo (incisos I, II e III, art. 20 da LRF) - 54,00%
Limite Prudencial (§ único, art. 22 da LRF) – 46,55%
Fonte: relatórios fiscais do município.

Table A.9 shows the indicators and limits of municipal creditworthiness and debt that we will use in this study.

Table A.9. Summary Table of Our Indicators and Limits for Municipal Creditworthiness and Debt

Demonstrativo dos Limites	%
Total Debt Stock/NCR	< 75.0%
Total Debt Service/NCR	<11.5%
Total Personnel Expenditure/NCR	< 54.0%
Operating Surplus (Current Expenditures – Current Revenues)/ NCR	> 10.0%
Total Debt Service/ Operating Surplus	<30.0%

Passage of Municipal Legislation for Land-based Instruments

IBGE does an annual survey of Brazil's municipalities: **Pesquisa de Informações Básicas Municipais (MUNIC)**. From these data, it produces its annual *Perfil dos Municípios Brasileiros*. MUNIC 2005 and 2008 included a special segment on a number of themes, including:

1. Estrutura Administrativa
2. Legislação e Instrumentos de Planejamento no Município
3. Habitação
4. Transporte
5. Meio Ambiente
6. Variáveis Externas

In 2008, the MUNIC data were collected from March to July via direct interviews.

In 2008, Section 2 on Legislation and Instruments of Municipal Planning includes questions on the following:

2. Legislação e Instrumentos de Planejamento no Município
 - 2.1 Conselho municipal de política urbana, desenvolvimento urbano, da cidade ou similar
 - Conselho Municipal de Política urbana, Desenvolvimento Urbano, da Cidade ou similar - existência
 - Existência de paridade no conselho
 - Periodicidade das reuniões
 - 2.2 Instrumentos de planejamento municipal
 - Lei de parcelamento do solo - existência
 - Lei de zoneamento ou equivalente - existência
 - Código de obras – existência
 - 2.3 Instrumentos de política urbana
 - Existência de lei específica de Solo criado
 - Existência de lei específica de Contribuição de melhoria
 - Existência de lei específica de Operação urbana consorciada
 - Existência de lei específica de Estudo de impacto de vizinhança
 - Plano Diretor - existência
 - O município está revendo o Plano Diretor
 - O município está elaborando o Plano Diretor

The results of the study in Chart A.1 show the portions of the municipalities with specific legislation covering development rights (solo criado), definition of urban development areas (Operação urbana consorciada) as well as for the other variables (e.g., the existence of building codes, subdivision legislation and a zoning law). As these variables are part of our municipal database, we will be able to correlate these responses with the other variables. For example, in the case of the legislation on betterment levies, we will be able to correlate the existence of the law with actual collections of these levies from the STN data. The IBGE study shows only the existence of these laws and instruments, but not how effectively they are employed or enforced. In Brazil, many laws are passed but many of these are not enforced.

Table A.10 shows a relatively high variation among municipalities with regard to the passage of land use regulations and the use of land-based instruments.

Table A.10. Brazilian municipalities with urban legislation and instruments by population size group: 2008

Number of with the different land use legislation or instruments	Population size groups							
	Brazil	5 000 or less	5 001 – 10 000	10 001 – 20 000	20 001 – 50 000	50 001 – 100 000	100 001 – 500 000	> 500 000
	5 564	1 267	1 290	1 385	1 037	319	229	37
Land use plan	2 176	329	372	459	536	246	199	35
Zoning law	1 810	255	297	350	459	223	191	35
Building Code	2 935	423	577	715	700	280	203	37
Development Rights	1 144	154	184	233	310	138	103	22
Betterment Levies	2 414	488	507	558	510	199	133	19
Urban Revitalization Areas	578	48	76	107	170	85	75	17
Environmental Impact Statements	720	52	80	128	225	117	96	22
Percentages with the different land use legislation or instruments	Brazil	5 000 or less	5 001 – 10 000	10 001 – 20 000	20 001 – 50 000	50 001 – 100 000	100 001 – 500 000	> 500 000
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Land use plan	39.1%	26.0%	28.8%	33.1%	51.7%	77.1%	86.9%	94.6%
Zoning law	32.5%	20.1%	23.0%	25.3%	44.3%	69.9%	83.4%	94.6%
Building Code	52.7%	33.4%	44.7%	51.6%	67.5%	87.8%	88.6%	100.0%
Development Rights	20.6%	12.2%	14.3%	16.8%	29.9%	43.3%	45.0%	59.5%
Betterment Levies	43.4%	38.5%	39.3%	40.3%	49.2%	62.4%	58.1%	51.4%
Urban Revitalization Areas	10.4%	3.8%	5.9%	7.7%	16.4%	26.6%	32.8%	45.9%
Environmental Impact Statements	12.9%	4.1%	6.2%	9.2%	21.7%	36.7%	41.9%	59.5%

Source: IBGE, Perfil dos Municípios Brasileiros, 2007.

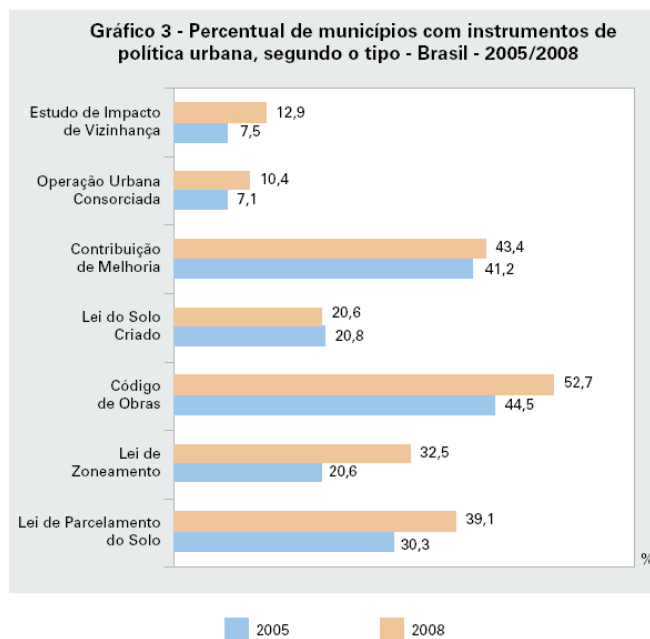
Table A.11 shows the eight laws to be used in the calculation of the score on land-based legislation.

Table A.11. Passage of Municipal Land-based Legislation Necessary to Calculate the Score

	Municipal land-based legislation
1	Subdivision law
2	Zoning law
3	Building code
4	Sale of development rights law
5	Betterment levy law
6	Urban revitalization law
7	Law requiring environmental impact studies
8	Existence of an urban plan as required under law

As Chart A.1 shows relatively little change in the passage of this land use legislation between 2005 and 2008, we decided to focus on only 2008.

Chart A.1. Percentage of Brazilian Municipalities that Have Enacted Enabling Legislation for Land-Based Instruments: 2005/2008



Fonte: IBGE, Diretoria de Pesquisas, Coordenação de População e Indicadores Sociais, Pesquisa de Informações Básicas Municipais 2005/2008.

Socioeconomic Indicators

Population and Municipal GDP

IBGE provides annual estimates of municipal population and GDP. For municipal GDP, 2002 marks the beginning of new data series using the revised methodology. Municipal GDP data are now available for 2002 through 2007. The first step was to use the implicit deflator of the GDP in the national accounts (Deflator Implicit do PIB Nacional) to transform the monetary values into R\$ of constant average value of 2009.

Poverty Levels

See Annex C.

Socioeconomic Development Index

We will use the annual index of socioeconomic development produced by the Federação das Indústrias do Estado do Rio de Janeiro (FIRJAN) that is similar to the Human Development Index (IHD) generated by UNDP: The Índice FIRJAN de Desenvolvimento Municipal (IFDM).¹⁹

The IFDM is a composite indicator combining indicators from the three principal areas of human development: employment and income, education and health. Each area receives equal weighting in the final composite indicator that varies between 0 and 1.0 in which 1.0 would be the highest development level. The most recent year available at the time of the study was 2006. Although this year does not coincide with the STN data, we will show that the municipal ranking by IFDM is reasonably stable over time by correlating this IFDM for 2006 with one or more previous years.

Stock of Residential Capital

Although we explored the possibility of using this variable as it would be interesting to know more about the evolution of the stock of residential capital, we decided not to use this variable as estimates are not available after 2000. IpeaData presents estimates for all municipalities for census years:

Capital Residencial - Total - R\$ de 2000(mil) - Deflacionado pelo IGP-DI	Valor presente do fluxo perpétuo constantes dos aluguéis mensais descontado à taxa de desconto de 0,75% ao mês. O aluguel dos imóveis, inclusive dos próprios, foi simulado por um modelo hedônico cujos argumentos são os atributos dos imóveis inclusive sua localização captada pela renda mediana do setor censitário. Em todos os anos utilizaram-se as estimativas dos preços hedônicos referentes a 1999 obtendo-se, portanto, um índice de base fixa. Para os anos de 1970, 1980, 1991 e 2000 foram utilizados dados do Censo Demográfico, para os demais, da PNAD. Para os anos de
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¹⁹ <http://www.firjan.org.br/data/pages/2C908CE9229431C90122A3B25FA534A2.htm>

1985 e 1996, a distribuição do estoque de residência nos municípios foi feita pelo rateio em nível estadual da interpolação geométrica dos anos censitários adjacentes.

For the 2000 estimates of Residential Capital, IBGE's hedonic price methodology fixes prices at 1999 levels then uses the changes in quantities of housing services to estimate the total stock of residential capital in 2000. This is, of course, the opposite of a price index, where quantities are constant and the prices vary over time. IBGE provides estimates of Residential Capital at the municipal level for urban and rural areas using census data for 1970, 1980, 1991 and 2000. For non-census years, they use the household survey data (PNAD) at the lowest level of spatial aggregation available.

Following a methodology used by other authors discussed below, Ipea first estimated hedonic price functions for rental units with 1999 data on housing characteristics and location measured by the median income of census tract. They then used these functions to estimate the value of non-rented units. Property values were estimated using the present value of perpetual flow of the monthly rents discounted at the rate of 0.75% per month. As they used the 1999 estimates of hedonic prices for all years, this is a fixed base index.²⁰

A number of authors have done hedonic price models to estimate residential capital in Brazil. Cruz and Morais (2000) estimate the demand for housing and urban services in 10 Brazilian metropolitan areas using data from IBGE's 1997 National Household Survey (PNAD). They argue that this kind of study helps "policy makers to obtain more detailed information on the nature of housing demand – regarding the consumers' preferences for the different attributes of the house and levels of provision of urban services, as well as on the capacity of cost-recovery, and the social impacts of the different housing, sanitation and urban development programs."

Morandi (2005) discusses the methods used in measuring the stock and productivity of fixed capital in Brazil's national accounts, including hedonic prices models. In a paper of the Bank for International Settlements (BIS), Reiff and Barbosa (2005) estimate the value of Brazil's housing stock from 1970 to 1999 using the hedonic price method. They first estimate property prices as the present value of perpetual flow of the monthly rents discounted at the rate of 0.75% per month (9.38% per year). The data on rent as well as the housing characteristics are from IBGE's Population Censuses (1970, 1980, and 1991) and from the National Household Survey (PNADs) for the other years. They use the hedonic price model for rental units to estimate value of non-rental units.

Selection of the Municipalities for Study and Generation of the Study's Database

Selection of the Municipalities

Table A.12 shows the distribution of the total of 5,563 Brazilian municipalities in MUNIC 2008 by population size groups. The 584 municipalities with more than 50,000 inhabitants (10.5% of the total number of municipalities) had a total population of 122.2 million (65.3% of the total).

²⁰ This indicator is available on the excellent Ipeadata website: Capital Residential - Total - £ 2000 (thousand) - Deflated by the Domestic General Price Index (IGP-DI).

Table A.12. Distribution of Population and Municipalities by Population Size Groups: 2008

Population size groups	Population	Population %	Municipalities	Municipalities %
TOTAL	187,055,656	100.0	5,563	100.0
50,000 or less	64,858,409	34.7	4,979	89.5
50,001 +	122,197,247	65.3	584	10.5
50,001 thru 100,000	22,435,075	12.0	319	5.7
100,001 thru 500,000	47,016,406	25.1	229	4.1
> 500,000	52,745,766	28.2	36	0.6

Source: MUNIC database.

Table A.13 shows the population and number of municipalities for all of the 584 municipalities with more than 50,000 inhabitants in 2008 and also for the 518 municipalities in our sample. Overall, our sample covers 95.3% of the total population in 2008 and 88.7% of the municipalities.

Table A.13. Population and Municipalities for the Total and in the Sample by Population Size Groups: 2008

Population size groups	Total Population of all the 584 municipalities in the 50,0001+ size group	Population in the 518 municipalities in our sample	Coverage of Population %
50,001 +	122,197,247	116,424,939	95.3
50,001 thru 100,000	22,435,075	19,189,724	85.5
100,001 thru 500,000	47,016,406	44,489,449	94.6
> 500,000	52,745,766	52,745,766	100.0
	Municipalities	Municipalities in Sample	Coverage of Municipalities %
50,001 +	584	518	88.7
50,001 thru 100,000	319	267	83.7
100,001 thru 500,000	229	215	93.9
> 500,000	36	36	100.0

Source: MUNIC database.

Table A.14 lists the 66 municipalities that did not provide data to be considered in our analysis of creditworthiness. As the total in 2008 population of the 584 municipalities

with 50,000 or more inhabitants was 122.2 million, the population of the excluded municipalities of 5.8 million inhabitants represented only 4.7% of the total population.

Generation of the Study's Database

The following are the steps for generating the study's database:

1. Generate the:
 - The financial indicators with the STN data.
 - The passage of legislation to enable use of the land-based instruments with the MUNIC data for 2008.
 - The Socioeconomic Indicators.
2. Combine the indicators into the database for the 518 municipalities.

Table A.14. Municipalities Excluded Due to Failure to Report to STN in 2005 and 2008

#	State	Municipality	Population 2008	Reported to STN 2005	Reported to STN 2008
Total			5,772,308		
1	AL	Atalaia	51,903	NO	NO
2	BA	Araci	54,092	NO	NO
3	PA	Novo Repartimento	54,506	NO	NO
4	PA	Alenquer	55,688	NO	NO
5	MG	Nova Serrana	65,176	NO	NO
6	PA	Breves	99,223	NO	NO
7	PA	Viseu	55,144	YES	NO
8	PA	Igarapé-Miri	56,639	YES	NO
9	MG	Esmeraldas	58,307	YES	NO
10	BA	Itaberaba	61,302	YES	NO
11	SP	Vinhedo	62,240	YES	NO
12	PB	Sousa	65,568	YES	NO
13	MG	Januária	67,206	YES	NO
14	MG	Cataguases	69,955	YES	NO
15	MA	Santa Luzia	71,314	YES	NO
16	MG	Manhuaçu	77,598	YES	NO
17	BA	Candeias	81,306	YES	NO
18	PA	Tucuruí	94,015	YES	NO
19	PA	Marituba	98,746	YES	NO
20	RJ	Araruama	107,285	YES	NO
21	BA	Simões Filho	114,649	YES	NO
22	PR	Araucária	115,849	YES	NO
23	BA	Porto Seguro	120,460	YES	NO
24	GO	Água Lindas de Goiás	139,804	YES	NO
25	PE	Camaragibe	141,973	YES	NO
26	BA	Itabuna	212,245	YES	NO
27	BA	Ilhéus	219,710	YES	NO

28	RJ	Petrópolis	312,766	YES	NO
29	RJ	Campos dos Goytacazes	431,839	YES	NO
30	SP	Olimpia	50,215	NO	YES
31	RO	Rolim de Moura	50,249	NO	YES
32	PA	Breu Branco	50,400	NO	YES
33	BA	Catu	50,470	NO	YES
34	CE	Acopiara	50,485	NO	YES
35	PR	Prudentópolis	50,614	NO	YES
36	CE	Trairi	50,788	NO	YES
37	SP	Itararé	51,000	NO	YES
38	MT	Alta Floresta	51,136	NO	YES
39	SC	Laguna	51,282	NO	YES
40	GO	Cidade Ocidental	51,303	NO	YES
41	PE	Buíque	52,466	NO	YES
42	CE	Horizonte	52,488	NO	YES
43	AL	Coruripe	52,584	NO	YES
44	PA	Santana do Araguaia	52,856	NO	YES
45	AL	São Miguel dos Campos	53,070	NO	YES
46	CE	Granja	53,486	NO	YES
47	MG	Frutal	54,094	NO	YES
48	PA	Santa Isabel do Pará	54,464	NO	YES
49	PA	Jacundá	54,513	NO	YES
50	CE	Viçosa do Ceará	55,670	NO	YES
51	SC	Navegantes	55,691	NO	YES
52	MA	Grajau	55,833	NO	YES
53	MT	Sorriso	57,799	NO	YES
54	SP	Cosmópolis	57,951	NO	YES
55	CE	Camocim	60,784	NO	YES
56	PA	São Félix do Xingu	64,223	NO	YES
57	AM	Tefé	64,703	NO	YES
58	GO	Planaltina	79,162	NO	YES
59	SP	Cruzeiro	79,418	NO	YES
60	SP	Leme	88,299	NO	YES
61	RJ	Rio Das Ostras	91,085	NO	YES
62	PA	Altamira	96,842	NO	YES
63	PR	Pinhais	116,984	NO	YES
64	PA	Itaituba	124,865	NO	YES
65	ES	Linhares	130,901	NO	YES
66	BA	Juazeiro	237,627	NO	YES

Detailed Composition of Some of the Revenue Categories

Some of the budget categories contain many different subcategories. To provide a better idea of the composition of these categories, Table A.14 shows some of the more relevant subcategories within the categories used in the definition of the following indicators:

- Betterment levies
- Real estate revenues include rents from real estate and other related revenues.

- Concessions and royalties
- Other revenues

The bolded titles in parentheses are the categories used in the definition of these indicators.

It is important to include compensatory payments to municipalities for use of natural resources such as in mining, hydroelectric generation and gas and oil, as they can have huge impacts on the revenues and GDPs of the municipalities that receive them. Royalties are classified as both revenues from assets and also as transfers from the federal government in the budget categories used Table A.15:

Revenues from assets: Receita Patrimonial (line 16 in Table A.15)

Receita de Concessões e Permissões (line 19): Exploracao de Recursos Naturais.

See categories under

- 1332.00.00 Receita de Concessões e Permissões – Exploração de Recursos Naturais
- 1340.00.00 Compensações Financeiras Registra o valor total da arrecadação de receita de contribuições econômicas de recursos resultantes da exploração de petróleo bruto, xisto betuminoso e gás, de recursos hídricos e de recursos minerais.
 - 1340.04.00 Compensação Financeira com Royalties pela Produção de Petróleo ou Gás Natural – Em Terra
 - 1340.05.00 Compensação Financeira com Royalties pela Produção de Petróleo ou Gás Natural – Em Plataforma
 - 1340.06.00 Compensação Financeira com Royalties Excedentes pela Produção de Petróleo ou Gás Natural – Em Terra
 - 1340.07.00 Compensação Financeira com Royalties Excedentes pela Produção de Petróleo ou Gás Natural – Em Plataforma
 - 1340.08.00 Compensação Financeira com Participação Especial pela Produção de Petróleo ou Gás Natural
- Transfers from the national government: Transferências da União (line 26)
 - **Cota - Parte do Fundo Especial do Petróleo (line 32) (Transfers from the Fundo Especial do Petróleo)**
 - 1721.22.30 Cota-parte Royalties – Compensação Financeira pela Produção de Petróleo – Lei nº 7.990/89
 - 1721.22.40 Cota-parte Royalties pelo Excedente da Produção do Petróleo – Lei nº 9.478/97, artigo 49, I e II
 - 1721.22.50 Cota-parte Royalties pela Participação Especial – Lei nº 9.478/97, artigo 50
 - 1721.22.70 Cota-Parte do Fundo Especial do Petróleo – FEP

As a result, we need to use both the revenue and transfer categories in analyzing the municipal distribution on natural gas and oil royalties from the National Petroleum Institute (ANP) with STN's municipal financial data.

Table A.15. Detailed Composition of Some of the Revenue Categories

<u>RECEITAS</u>	
#	
1	RECEITA TOTAL = (2+63 – 86)
2	<u>RECEITAS CORRENTES = (3+13+16+21+22+23+24+58)</u>
3	Receita Tributária =(4+9+12)
4	Impostos (5+...+8)
5	<u>Imposto sobre a Propriedade Predial e Territorial Urbana – IPTU</u>
6	(Real Estate Property Tax (IPTU))
7	<u>Imposto sobre a Renda e Proventos de Qualquer Natureza – IR</u>
8	<u>Imposto sobre Transmissão "Inter Vivos" de Bens Imóveis e de Direitos Reais sobre Imóveis – ITBI</u>
9	(Real Estate Transfer Tax (ITBI))
	<u>Imposto sobre Serviços de Qualquer Natureza – ISSQN</u>
	(Tax on Services (ISS))
	Taxas =(10+11)
	<u>Taxas pelo Exercício do Poder de Polícia (Other revenues)</u>
	1121.31.00 Taxa de Utilização de Área de Domínio Público Registra o valor da arrecadação de receita de taxa de utilização de área de domínio público, referente a espaço ocupado por balcões, barracas, mesas, tabuleiros e semelhantes, nas feiras, vias e logradouros públicos ou como depósito de materiais ou estacionamento de veículos em locais designados pela Prefeitura.
	1121.32.00 Taxa de Aprovação do Projeto de Construção Civil Registra o valor da arrecadação de receita de taxa de licença e aprovação do projeto de construção civil correspondente à certificação das condições de utilização de prédios e residências.
	1121.34.00 Taxa de Fiscalização de Aparelhos de Transporte Registra o valor da arrecadação de receita de taxa de fiscalização exercida em instalações (conservação e funcionamento) de elevadores de passageiros e de cargas, de alçapões, escadas rolantes, planos inclinados móveis e outros de natureza especial, em observância à legislação específica.
	1121.35.00 Taxa de Alinhamento e Nivelamento Registra o valor da arrecadação de receita de taxa de fiscalização da metragem no tocante ao alinhamento e nivelamento de áreas ou terrenos.
	1121.36.00 Taxa de Apreensão, Depósito ou Liberação de Animais Registra o valor da arrecadação de receita de taxa de apreensão, depósito ou liberação de animais recolhidos em ruas em função de riscos causados à população.
	1121.37.00 Taxa de Regulação de Serviços de Gás Canalizado Registra o valor da receita decorrente da cobrança de taxa pela prestação de serviço público de fiscalização e regulação de serviços de gás canalizado.
	1121.38.00 Taxa de Serviços de Transporte Metroviário de Passageiros Registra o valor da receita decorrente da cobrança de taxa pela prestação de serviço público de fiscalização e regulação de serviços de transporte metroviário de passageiros.
	1121.39.00 Taxa de Serviços de Transporte Ferroviário de Passageiros Registra o valor da receita decorrente da cobrança de taxa pela prestação de serviço público de fiscalização e regulação de serviços de transporte ferroviário de passageiros.
	1121.40.00 Taxa de Serviços de Transporte Marítimo de Passageiros Registra o valor da receita decorrente da cobrança de taxa pela prestação de serviço público de fiscalização e regulação de serviços de transporte marítimo de passageiros.
	1121.99.00 Outras Taxas pelo Exercício do Poder de Polícia Registra o valor da arrecadação de receita de outras taxas pelo exercício do poder de polícia, não classificadas nos itens anteriores.
10	<u>Taxas pela Prestação de Serviços</u> (Other Revenues)
11	Registra o valor total da arrecadação de taxas pela utilização efetiva ou potencial de serviços prestados ao contribuinte ou colocados a sua disposição. Neste título são classificadas as taxas pela prestação de serviços públicos:

a) utilizados pelo contribuinte – efetivamente, quando por ele usufruídos a qualquer título; potencialmente, quando, sendo de utilização compulsória, sejam postos a sua disposição mediante atividade administrativa em efetivo funcionamento;

b) específicos, quando possam ser destacados em unidades autônomas de intervenção, de utilidade ou de necessidade pública; c) divisíveis, quando suscetíveis de utilização, separadamente, por parte de cada um dos seus usuários.

1122.21.00 Taxas de Serviços Cadastrais Registra o valor da arrecadação de receita de taxa de serviços de apuração, inscrição e cobrança da Dívida Ativa, da Taxa de Serviços Cadastrais.

1122.28.00 Taxa de Cemitérios Registra o valor da arrecadação de receita de taxa de prestação de serviços de administração de cemitérios referentes à utilização de necrotério e ocupação da sala mortuária, bem como matrículas, entrada e saída de ossos.

1122.90.00 Taxa de Limpeza Pública Registra o valor da arrecadação de receita cobrada pela utilização efetiva ou potencial do serviço pelo proprietário de imóvel edificado ou não, situado em logradouro beneficiado pela coleta do lixo.

1122.99.00 Outras Taxas pela Prestação de Serviços Registra o valor da arrecadação de receita de outras taxas de utilização efetiva ou potencial de serviços, não classificadas nos itens anteriores.

Contribuição de Melhoria

(Betterment levies)

Registra o valor total da arrecadação com contribuições de melhoria decorrentes de obras públicas. De competência da União, Estados, Distrito Federal ou Municípios, no âmbito de suas respectivas atribuições. É arrecadada dos proprietários de imóveis beneficiados por obras públicas, e terá como limite total a despesa realizada.

1130.01.00 Contribuição de Melhoria para Expansão da Rede de Água Potável e Esgoto Sanitário Registra o valor da arrecadação de receita de contribuição de melhoria decorrente de valorização de propriedades em função da expansão da rede de água potável e esgoto sanitário.

1130.02.00 Contribuição de Melhoria para Expansão da Rede de Iluminação Pública na Cidade Registra o valor da arrecadação de receita de contribuição de melhoria decorrente de valorização de propriedades em função da expansão da rede de iluminação pública na cidade.

1130.03.00 Contribuição de Melhoria para Expansão de Rede de Iluminação Pública Rural Registra o valor da arrecadação de receita sobre a cobrança decorrente de valorização de propriedades em função da expansão da rede de iluminação pública rural.

1130.04.00 Contribuição de Melhoria para Pavimentação e Obras Complementares Registra o valor da arrecadação de receita de contribuição de melhoria decorrente de valorização de propriedades em função da pavimentação asfáltica, bem como pela colocação de guias, sarjetas e calçamento.

1130.99.00 Outras Contribuições de Melhoria Registra o valor de outras contribuições de melhorias, não classificadas nos itens anteriores.

Receitas de Contribuições =(14+15)

Contribuições Sociais

Contribuições Econômicas

Receita Patrimonial =(17+...+20)

Receitas Imobiliárias

(Real estate revenue)

Provenientes da utilização, por terceiros, de bens imóveis pertencentes ao setor público.

1311.00.00 Aluguéis Registra o valor total das receitas arrecadadas provenientes do pagamento de aluguéis pela utilização de próprios do poder público.

1312.00.00 Arrendamentos Registra o valor total da receita com o contrato pelo qual o poder público cede a terceiros, por certo tempo e preço, o uso e gozo de determinada área.

1313.00.00 Foros Registra o valor total da arrecadação com a quantia ou pensão paga pela pessoa que recebe por enfiteuse o domínio útil de um imóvel.

1314.00.00 Laudêmios Registra o valor total da arrecadação com pensão ou prêmio que o foreiro paga, quando há alienação do respectivo prédio por parte da pessoa que recebe por enfiteuse o domínio do imóvel, exceto nos casos de sucessão hereditária.

	1315.00.00 Taxa de Ocupação de Imóveis Registra o valor total da arrecadação de taxa de ocupação de imóveis devida por seus ocupantes.
	1319.00.00 Outras Receitas Imobiliárias Registra o valor total da arrecadação com outras receitas que tem origem na fruição do patrimônio imobiliário, não classificadas nos itens anteriores.
18	Receitas de Valores Mobiliários (Other revenues)
19	<p>Receita de Concessões e Permissões (Revenue from concessions and royalties)</p> <p>Registra o valor total da arrecadação de receitas originadas da concessão ou permissão ao particular do direito de exploração de serviços públicos, os quais estão sujeitos ao controle, fiscalização e regulação do poder público.</p> <p>1331.00.00 Receita de Concessões e Permissões – Serviços Registra o valor da arrecadação de receita de concessões e permissões do direito de exploração de serviços públicos.</p> <p>1331.01.00 Receita de Concessões e Permissões – Serviços de Transporte Registra o valor da arrecadação de receita de concessões e permissões do direito de exploração de serviços públicos de transporte.</p> <p>1331.01.01 Receita de Outorga dos Serviços de Transporte Ferroviário Registra o valor da arrecadação de receita de concessões e permissões dos serviços públicos de transporte ferroviário à iniciativa privada, em suas seis malhas regionais, que atuará na fiscalização, normatização e controle dos serviços concedidos.</p> <p>1331.01.02 Receita de Outorga dos Serviços de Transportes Rodoviário Interestadual e Internacional de Passageiros Registra o valor da arrecadação de receita de concessões e permissões do direito de exploração dos serviços de transportes rodoviário interestadual e internacional de passageiros.</p> <p>1331.01.03 Receita de Outorga dos Serviços de Transporte Metroviário de Passageiros Registra o valor da arrecadação de receita de outorga dos serviços de transporte metroviário de passageiros.</p> <p>1331.01.04 Receita de Outorga dos Serviços de Transporte Marítimo de Passageiros Registra o valor da arrecadação de receita de outorga dos serviços de transporte marítimo de passageiros.</p> <p>1331.01.05 Receita de Outorga dos Serviços de Transporte Coletivo Local e Intermunicipal Registra o valor da arrecadação de receita de outorga dos serviços de transporte coletivo local e intermunicipal de passageiros.</p> <p>1331.01.99 Outras Receitas de Concessões e Permissões – Serviços de Transporte Registra o valor da arrecadação de outras receitas de concessões e permissões de serviços de transportes, não previstas nos itens anteriores.</p> <p>1332.00.00 Receita de Concessões e Permissões – Exploração de Recursos Naturais Registra o valor da arrecadação de receita de concessões e permissões do direito de exploração de recursos naturais.</p> <p>1332.01.00 Receita de Outorga dos Serviços de Exploração e Produção de Petróleo e Gás Natural Registra o valor da arrecadação de receita de concessões e permissões de exploração, desenvolvimento e produção de petróleo e gás natural, exercidas mediante contratos de concessão.</p> <p>1332.01.01 Bônus de Assinatura de Contrato de Concessão Registra o valor da arrecadação de receita de concessões e permissões da proposta para obtenção da concessão. O bônus de assinatura terá valor mínimo estabelecido em edital e corresponderá ao pagamento ofertado na proposta para obtenção da concessão, devendo ser pago no ato da assinatura do contrato.</p> <p>1332.01.02 Pagamento pela Retenção de Área para Exploração ou Produção Registra o valor da arrecadação de receita de concessões e permissões da retenção de área para exploração, desenvolvimento ou produção de petróleo e gás natural.</p> <p>1332.02.00 Receita de Outorga de Direitos de Uso de Recursos Hídricos Registra o</p>

valor da arrecadação de receita decorrente de outorga a particulares de direitos de uso da água. Os recursos são vinculados ao financiamento de estudos, programas, projetos e obras, incluídos nos Planos de Recursos Hídricos, e ao pagamento de despesas de implantação e custeio administrativo dos órgãos e entidades integrantes do Sistema Nacional de Gerenciamento de Recursos Hídricos.

1332.03.00 Receita de Outorga de Direitos de Exploração e Pesquisa Mineral Registra o valor da arrecadação de receita decorrente da outorga do Alvará de Pesquisa Mineral. (INCLUÍDO CONFORME ART. 1º DA PORTARIA STN Nº 406 DE 26/5/2006)

1332.99.00 Outras Receitas de Concessões e Permissões – Recursos Naturais Registra o valor da arrecadação de outras receitas de concessões e permissões de recursos naturais, não previstas nos itens anteriores.

1333.00.00 Receita de Concessões e Permissões – Direitos de Uso de Bens Públicos Registra o valor da arrecadação de receita de concessões e permissões de direitos de uso de bens públicos.

1333.01.00 Receita de Concessão de Direito Real de Uso de Área Pública Registra o valor da arrecadação de receita auferida em função do pagamento feito por terceiros pela utilização e exploração de área pública. Os recursos arrecadados serão destinados ao financiamento das despesas do órgão concedente.

1333.99.00 Outras Receitas de Concessões e Permissões – Direitos de Uso de Bens Públicos Registra o valor da arrecadação de receita de outorga de direitos de uso de outros bens públicos.

1339.00.00 Outras Receitas de Concessões e Permissões Registra o valor de outras receitas de concessões e permissões não Previstas nos itens anteriores.

1340.00.00 Compensações Financeiras Registra o valor total da arrecadação de receita de contribuições econômicas de recursos resultantes da exploração de petróleo bruto, xisto betuminoso e gás, de recursos hídricos e de recursos minerais.

1340.01.00 Utilização de Recursos Hídricos – Itaipu Registra o valor do pagamento de compensação financeira relativa aos royalties devidos por Itaipu Binacional do Brasil.

1340.02.00 Utilização de Recursos Hídricos – Demais Empresas Registra o valor da receita com o pagamento de compensação financeira relativa aos royalties devidos pela utilização de recursos hídricos para geração de energia elétrica por outras empresas, exceto Itaipu.

1340.03.00 Compensação Financeira com a Exploração de Recursos Minerais Registra o valor da arrecadação de receita de contribuições econômicas da compensação financeira pela exploração de recursos minerais.

1340.04.00 Compensação Financeira com Royalties pela Produção de Petróleo ou Gás Natural – Em Terra Registra o valor da arrecadação de receita de contribuições econômicas da compensação financeira devida pela exploração de petróleo, xisto e gás.

1340.05.00 Compensação Financeira com Royalties pela Produção de Petróleo ou Gás Natural – Em Plataforma Registra o valor da arrecadação de receita de contribuições econômicas da compensação financeira aos Estados, Distrito Federal e Municípios confrontantes, quando o óleo, xisto e gás forem extraídos da plataforma continental.

1340.06.00 Compensação Financeira com Royalties Excedentes pela Produção de Petróleo ou Gás Natural – Em Terra Registra o valor da arrecadação de receita de contribuições econômicas dos royalties que excederem a 5% da produção de petróleo ou gás natural, quando a lavra ocorrer em terra ou em lagos, rios, ilhas fluviais e lacustres.

1340.07.00 Compensação Financeira com Royalties Excedentes pela Produção de Petróleo ou Gás Natural – Em Plataforma Registra o valor da arrecadação de receita de contribuições econômica dos royalties que excederem a 5% da produção de petróleo ou gás natural, quando a lavra ocorrer na plataforma continental.

1340.08.00 Compensação Financeira com Participação Especial pela Produção de Petróleo ou Gás Natural Registra o valor da arrecadação de receita de contribuições econômicas de participação especial nos casos de grande volume de produção de petróleo, ou grande rentabilidade.

	1340.99.00 Outras Compensações Financeiras Registra o valor de outras compensações financeiras, não classificadas nos itens anteriores.	
20	Outras Receitas Patrimoniais	
21	Receita Agropecuária	(Other revenues)
22	Receita Industrial	(Other revenues)
23	Receita de Serviços	(Other revenues)
24	Transferências Correntes $= (25+50+51+52+53)$	
25	Transferências Intergovernamentais $= (26+37+44+47)$	
26	<u>Transferências da União $= (27+...+36)$</u>	
27	Cota - Parte do Fundo de Participação dos Municípios – FPM	
28	Cota - Parte do Imposto Sobre a Propriedade Territorial Rural – ITR	
29	Cota - Parte do Imposto sobre Operações de Crédito, Câmbio e Seguro ou Relativo a Títulos ou Valores Mobiliários – Comercialização do Ouro	
30	Transferência Financeira - L.C. Nº 87/96 – Lei Kandir	
31	Compensação Financeira de Extração Mineral – CFEM	
	(Compensation for Mineral Extraction)	
	1721.22.00 Transferência da Compensação Financeira pela Exploração de Recursos Naturais Registra o valor da arrecadação de receita de transferência da compensação financeira pela exploração de recursos naturais.	
	1721.22.11 Cota-parte da Compensação Financeira de Recursos Hídricos Registra o valor da arrecadação da receita da cota-parte da compensação financeira de recursos hídricos, para fins de geração de energia elétrica.	
	1721.22.20 Cota-parte da Compensação Financeira de Recursos Minerais - CFEM Registra o valor da arrecadação da receita da cota-parte da compensação financeira de recursos minerais, para fins de aproveitamento econômico.	
	1721.22.90 Outras Transferências decorrentes de Compensação Financeira pela Exploração de Recursos Naturais Registra o valor da arrecadação de receita com outras transferências decorrentes de compensação financeira proveniente da exploração de recursos naturais.	
	Cota - Parte do Fundo Especial do Petróleo – FEP	
32	(Transfers from the Fundo Especial do Petróleo)	
	1721.22.30 Cota-parte Royalties – Compensação Financeira pela Produção de Petróleo – Lei nº 7.990/89 Registra o valor da arrecadação da receita com a cota-parte royalties – compensação financeira pela produção de petróleo.	
	1721.22.40 Cota-parte Royalties pelo Excedente da Produção do Petróleo – Lei nº 9.478/97, artigo 49, I e II Registra o valor da arrecadação de receita com a cota-parte royalties pelo excedente da produção do petróleo.	
	1721.22.50 Cota-parte Royalties pela Participação Especial – Lei nº 9.478/97, artigo 50 Registra o valor da arrecadação de receita com a cota-parte royalties pela participação especial prevista na Lei nº 9.478/97, art. 50.	
	1721.22.70 Cota-Parte do Fundo Especial do Petróleo – FEP Registra o valor da arrecadação de receita de transferência da cota-parte do Fundo Especial do Petróleo – FEP.	
33	Demais Transferências da União	
34	Transferência de Recursos do Sistema Único de Saúde - SUS	
35	Transferências de Recursos do Fundo Nacional de Assistência Social – FNAS	
36	Transferências de Recursos do Fundo Nacional do Desenvolvimento da Educação – FNDE	
37	<u>Transferências dos Estados $= (38+...+43)$</u>	
38	Cota - Parte do ICMS	
39	Cota - Parte do IPVA	
40	Cota - Parte do Imposto sobre Produtos Industrializados - Estados Exportadores – IPI – ex	
41	Cota - Parte da Contribuição do Salário – Educação	
42	Transferência de Recursos do Sistema Único de Saúde – SUS	
43	Outras Transferências dos Estados	

44	<u>Transferências dos Municípios = (45+46)</u>
45	Transferência de Recursos do Sistema Único de Saúde – SUS
46	Outras Transferências dos Municípios
47	<u>Transferências Multigovernamentais = (48+49)</u>
48	Transferências de Recursos do FUNDEF
49	Transferências de Recursos da Complementação do FUNDEF
50	Transferências de Instituições Privadas
51	Transferências do Exterior
52	Transferências de Pessoas
53	<u>Transferências de Convênios = (54 +...+57)</u>
54	Transferências de Convênios da União e de Suas Entidades
55	Transferência de Convênios dos Estados e do Distrito Federal e de Suas Entidades
56	Transferência de Convênios dos Municípios e de Suas Entidades
57	Transferência de Convênios de Instituições Privadas
58	Outras Receitas Correntes (59+...+62)
59	<u>Multas e Juros de Mora</u>
60	<u>Indenizações e Restituições</u>
61	<u>Receita da Dívida Ativa</u>
62	<u>Receitas Correntes Diversas</u>

The Structure of the Database

The attached spreadsheet with the database contains the following worksheets:

1. Variables MUNIC: List of the variables in the MUNIC study
2. MUNIC 2008: The variables selected from MUNIC 2008
3. Sample: The municipalities in the 2005 and 2008 STN database
4. Database 2008: All of the variables used in the study
5. Analysis: The indicators used in the analysis
6. Quartiles: Provides descriptive statistics by quartiles for any ranking done with variables on the Analysis worksheet.

In some cases, to facilitate analysis by placing variables being analyzed in close proximity, we have repeated some variables on the Analysis Worksheet.

Annex B. A Brief Review of a Selection of the Land-Instruments Under Brazilian Law²¹

Real Estate Property and Transfer Taxes

We include real estate property and transfer taxes in our list of land-based instruments, because we agree with Smolka and Amborski (2000) that value capture initiatives should not “contribute to the fiscal neglect of property taxes and therefore be counter-productive to fiscal effectiveness.” The real estate property and transfer taxes can complement the other forms of land-value capture, rather than serve as *supplements* or surrogates for them (as unfortunately often been the case in Latin America).

²¹ This is a summary from a much more detailed review of these instruments and the international experience with them from Vetter and Vetter (2010).

Sale of Development Rights

CEPACs are an ingenious market-based instrument for capturing the value generated by a development program in an Urban Revitalization Area (*área consorciada urbana*).²² Each CEPAC establishes the right of the holder to build a number of additional square meters on his lot. Selling CEPACs at public auction on the stock exchange resolves the problem that inhibited the sale of development rights for years by providing a regulated, transparent and reasonable way of determining their value.

Since the municipal agency can issue the CEPACs at various auctions at different times during the implementation of the development program, it can capture part of the valorization of the area. The revenue from auctions of CEPACs is kept in a separate account and can only be used in the Urban Revitalization Area. This assures potential investors that the proposed investments will be made in the area.

Sale or Concession of Publicly Owned Land or Buildings

Subnational governments can also finance infrastructure by selling assets such as underutilized public land and buildings. To assure transparency and avoid corruption, Brazilian law requires that publicly owned land be sold via auction or public tender. Contracts or other agreements can be used to provide assurance that the property sold will be developed in accord with the municipality's development plans. One problem is that the public owners of the land may **not** wish to sell it or to use the proceeds of the sale for infrastructure development in or around the site.

Selling public land and buildings will also generate further revenue increases from IPTU and ITBI, as well as other taxes resulting from greater and more productive use of these resources.

Concessions

Another option that is being widely used in Brazil is for the public sector to contract with the private sector for provision of infrastructure under the concession or Public Private Partnership (PPP) laws. In the case where the municipality owns the land or buildings, it could compensate the private partners for investments in infrastructure by allowing them to keep part of the proceeds from the sale or leasing of land and buildings after development is complete. In the case of a *concessão urbanística*, a public entity can take the necessary legal steps to expropriate an area, including a declaration of public need, and then delegate the actual carrying out of the expropriation to a private concessionaire. In the United States, this would be equivalent to a municipality passing a resolution to take property (condemnation) using the right of eminent domain, but delegating the actual purchasing of the properties involved and their development to a private concessionaire. Leasing is a similar form of financing. For example, the Municipality of Rio leased an historic building (Automóvel Clube) for use as a jazz club. In this way, the building was restored and will be maintained by the private partner.

²² For a concise review of the Faria Lima project see Biderman, Sandroni, and Smolka (2006). Biderman and Sandroni provide a more detailed analysis (2005).

Annex C. Estimate of Extreme Poverty in 2008 at the Municipal Level

As municipal level data on poverty are available only for census years, we calibrated the following regression model with data from the annual household survey and the IFDM indicator at the state level and then used this model to estimate poverty at the municipal level:

- Dependent variable = % of people living in households with total income of less than a quarter of a minimum salary per capita for all of Brazil's states in 2008 from the annual household survey (PNAD).²³
- Independent variable: IFDM in 2006.

The latest IFDM available when we created our database was 2006. However, as the correlations between the years for IFDM at the state level tend to be quite high, the distortion should be minimal. For example, the correlation between IFDM 2006 and 2007 at the state level was 0.99.

As shown on Chart C.1, the power function provided a relatively good fit with an R-square of 0.71.

We then used the model to estimate the percent of households in extreme poverty in 2008 for all municipalities in our sample. In doing this, we also set the bottom and top limits to the estimates of extreme poverty:

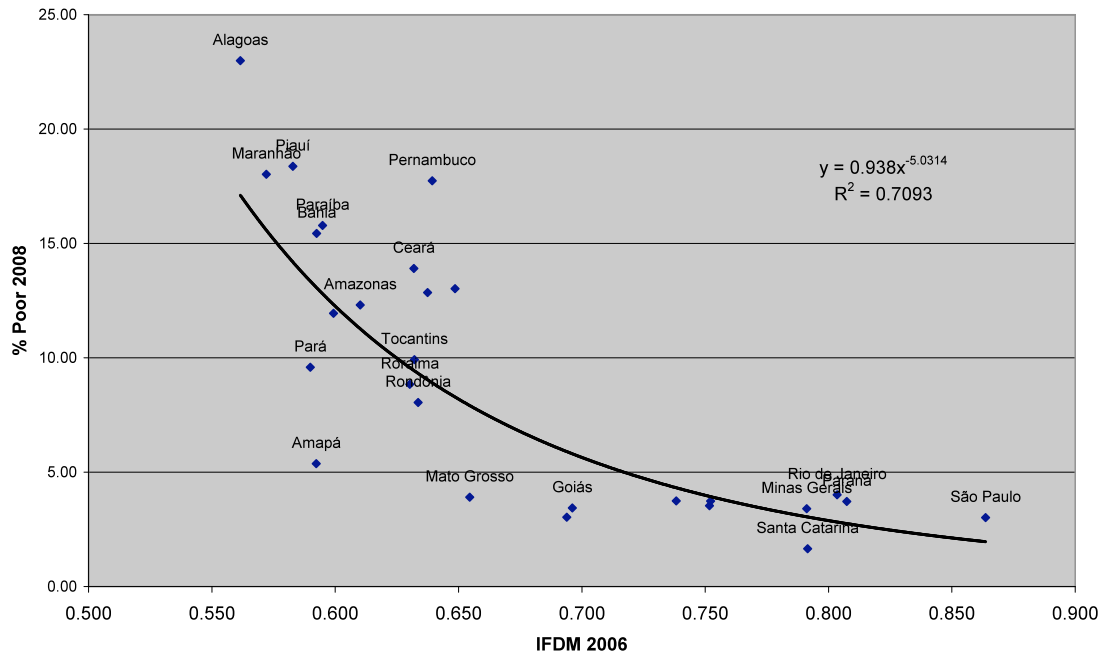
- Bottom: 1.66 percent: The lowest percentage of extreme poverty in 2008 in the State of Santa Catarina.
- Top: 22.99 percent: The highest value in State of Alagoas.

The following compares the results from the PNAD in 2008 for all of Brazil with the estimates from our model for only the municipalities in the sample:

	Population living in extreme poverty
All of Brazil: PNAD	
Total (millions)	13.9
% in extreme poverty	7.6%
Our sample of municipalities	
Total (millions)	5.6
% in extreme poverty	4.8%

²³ Pobreza - taxa de extrema pobreza - (%) - Instituto de Pesquisa Econômica Aplicada – IPEA.

Chart C.1. Brazilian States: Scattergram: % of Population in Extreme Poverty in 2008 X IFDM in 2006



As one would expect, the incidence of poverty is lower in our sample of municipalities, as much poverty is concentrated in smaller rural municipalities. The 2010 population census will, of course, allow direct measurement of poverty at the municipal level.

Endnotes

ⁱ For example, in 2001, Financial Monetary Council (Conselho Monetário Nacional -- CMN) Resolution 2827 set the cap on lending to the public sector for all banks at 45% of net equity. Furthermore, Article 9-B of this Resolution capped overall lending to the subnational public sector at R\$1 billion. Although subsequent resolutions have raised the cap, the overall impact has been to severely constrain subnational borrowing by even the most creditworthy subnationals.

ⁱⁱ In a paper of the Bank for International Settlements (BIS), Reiff and Barbosa (2005) estimate the value of Brazil's housing stock from 1970 to 1999 using the hedonic price method. They first estimate property prices as the present value of perpetual flow of the monthly rents discounted at the rate of 0.75% per month (9.38% per year). The data on rent as well as the housing characteristics are from IBGE's Population Censuses (1970, 1980, and 1991) and from the National Household Survey (PNADs) for the other years. Cruz and Morais (2000) also use the hedonic price method to estimate in this way for 10 Brazilian metropolitan areas using data from IBGE's 1997 National Household Survey (PNAD). They argue that this kind of study helps "policy makers to obtain more detailed information on the nature of housing demand – regarding the consumers' preferences for the different attributes of the house and levels of provision of urban services, as well as on the capacity of cost-recovery, and the social impacts of the different housing, sanitation and urban development programs."

Estimates of the Stock of Residential Capital

Using this hedonic method, Ipeadata provides estimates of Residential Capital at the municipal level for urban and rural areas using census data for 1970, 1980, 1991 and 2000. For non-census years, they use the household survey data (PNAD) at the lowest level of spatial aggregation available. For rental units, they estimate hedonic price functions with 1999 data on housing characteristics and location measured by the median income of census tract. As with the above studies above, property values were estimated using the present value of perpetual flow of the monthly rents discounted at the rate of 0.75% per month. Given that IBGE used the 1999 estimates of hedonic prices for all years, this is an estimate of the value of the housing stock with the characteristic measured by the census and surveys at fixed 1999 rents. This indicator is available on the excellent Ipeadata website: Capital Residential - Total – R\$ 2000 (thousand) - Deflated by the Domestic General Price Index (IGP-DI).

ⁱⁱⁱ "Spearman's rank correlation is equivalent to Pearson correlation on ranks, but does not require the assumption of normality of X and Y . Nor does it require variables measured on an interval scale or a linear association between variables. For a sufficiently large sample size (> 20), the variable has a Student's t -distribution under the null hypothesis (absence of correlation) and can be used to test the presence of statistically significant rank correlations OECD (2003)." We will consider statistically significant r_s correlation coefficients above 0.50 to be "high".

^{iv} Our original intention was to define the financial performance indicators in the same way as in Brazilian law and regulations. However, conversations with officials of STN

cautioned us that this would not always be possible with the STN dataset that we are using, because STN's current methodology does not fully harmonize the accounting categories being used in calculating the complex financial performance indicators defined in Brazilian law. STN is currently working on a methodology that will fully harmonize the budget categories. We selected what we consider to be the most relevant options from the numerous criteria defined under Brazilian law and also include a number of additional financial indicators that are used internationally to assess subnational government financial performance.

^v To calculate Net Current Revenue the municipality deducts from its current revenue its contributions to a basic education fund (FUNDEF), as well as payments from municipal employees for social security or other specified payments for pensions. We try to define NCR as close to the regulatory definition as possible using the STN dataset. One problem is that the definition of NCR uses categories that are not included in the dataset or use different names than those in the definition of NCR.

^{vi} We first selected the following indicators:

- Total size of municipal GDP 2007.
- Absolute change in GDP 2002-2007.
- Relative change of GDP 2002-2007.
- Total size of municipal GDP per capita in 2007.
- Absolute change in GDP per capita 2002-2007.
- Relative change of GDP per capita 2002-2007.
- Change in total population 2002-2007.

We then analyzed the correlation coefficients to assess the amount of redundancy (i.e., high correlations) among them. Given the high correlation coefficients among some of the variables, we selected only the four of them.

Endnotes

^{vi} For example, in 2001, Financial Monetary Council (Conselho Monetário Nacional -- CMN) Resolution 2827 set the cap on lending to the public sector for all banks at 45% of net equity. Furthermore, Article 9-B of this Resolution capped overall lending to the subnational public sector at R\$1 billion. Although subsequent resolutions have raised the cap, the overall impact has been to severely constrain subnational borrowing by even the most creditworthy subnationals.

^{vi} In a paper of the Bank for International Settlements (BIS), Reiff and Barbosa (2005) estimate the value of Brazil's housing stock from 1970 to 1999 using the hedonic price method. They first estimate property prices as the present value of perpetual flow of the monthly rents discounted at the rate of 0.75% per month (9.38% per year). The data on rent as well as the housing characteristics are from IBGE's Population Censuses (1970, 1980, and 1991) and from the National Household Survey (PNADs) for the other years. Cruz and Morais (2000) also use the hedonic price method to estimate in this way for 10 Brazilian metropolitan areas using data from IBGE's 1997 National Household Survey (PNAD). They argue that this kind of study helps "policy makers to obtain more detailed information on the nature of housing demand – regarding

the consumers' preferences for the different attributes of the house and levels of provision of urban services, as well as on the capacity of cost-recovery, and the social impacts of the different housing, sanitation and urban development programs.”

Estimates of the Stock of Residential Capital

Using this hedonic method, IpeaData provides estimates of Residential Capital at the municipal level for urban and rural areas using census data for 1970, 1980, 1991 and 2000. For non-census years, they use the household survey data (PNAD) at the lowest level of spatial aggregation available. For rental units, they estimate hedonic price functions with 1999 data on housing characteristics and location measured by the median income of census tract. As with the above studies above, property values were estimated using the present value of perpetual flow of the monthly rents discounted at the rate of 0.75% per month. Given that IBGE used the 1999 estimates of hedonic prices for all years, this is an estimate of the value of the housing stock with the characteristic measured by the census and surveys at fixed 1999 rents. This indicator is available on the excellent Ipeadata website: Capital Residential - Total – R\$ 2000 (thousand) - Deflated by the Domestic General Price Index (IGP-DI).

^{vi} “Spearman’s rank correlation is equivalent to Pearson correlation on ranks, but does not require the assumption of normality of X and Y . Nor does it require variables measured on an interval scale or a linear association between variables. For a sufficiently large sample size (> 20), the variable has a Student’s t -distribution under the null hypothesis (absence of correlation) and can be used to test the presence of statistically significant rank correlations OECD (2003).” We will consider statistically significant r_s correlation coefficients above 0.50 to be “high”.

^{vi} Our original intention was to define the financial performance indicators in the same way as in Brazilian law and regulations. However, conversations with officials of STN cautioned us that this would not always be possible with the STN dataset that we are using, because STN’s current methodology does not fully harmonize the accounting categories being used in calculating the complex financial performance indicators defined in Brazilian law. STN is currently working on a methodology that will fully harmonize the budget categories. We selected what we consider to be the most relevant options from the numerous criteria defined under Brazilian law and also include a number of additional financial indicators that are used internationally to assess subnational government financial performance.

^{vi} To calculate Net Current Revenue the municipality deducts from its current revenue its contributions to a basic education fund (FUNDEF), as well as payments from municipal employees for social security or other specified payments for pensions. We try to define NCR as close to the regulatory definition as possible using the STN dataset. One problem is that the definition of NCR uses categories that are not included in the dataset or use different names than those in the definition of NCR.

^{vi} We first selected the following indicators:

- Total size of municipal GDP 2007.
- Absolute change in GDP 2002-2007.
- Relative change of GDP 2002-2007.
- Total size of municipal GDP per capita in 2007.
- Absolute change in GDP per capita 2002-2007.
- Relative change of GDP per capita 2002-2007.

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- Change in total population 2002-2007.

We then analyzed the correlation coefficients to assess the amount of redundancy (i.e., high correlations) among them. Given the high correlation coefficients among some of the variables, we selected only the four of them.