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LOCAL GOVERNMENT CAPACITY IN BRAZIL: AN INDEX PROPOSAL

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GRUPO TEMÁTICO: 18 Performance dos governos subnacionais e locais na administração pública

Local Government Capacity in Brazil: An Index Proposal

Abstract:
Understanding government instruments and state capacities are critical to comprehend socioeconomic development and public policy performance. The topic assumes greater importance in decentralized political systems, given the constitutional role of sub-national units in policy design and implementation. Our knowledge about local government capacities, how they can be measured, and how they relate to social-economic outcomes is, nonetheless, limited. This paper develops a conceptual framework to measure a multidimensional index of Local Government Capacity (LGC) in Brazil. Three LGC dimensions were defined: 1) Fiscal Management Capacity; 2) Political Capacity; and 3) Administrative Capacity. Using official databases for the years 2011 and 2012, covering a sample of 5,565 municipalities, exploratory factor analyses were employed to calculate, for each municipality, sub-indexes for the three capacity dimensions. The final LGC construct was calculated, then, averaging the sub-indexes. The results suggest that the process of decentralization in Brazil is still marked by inter-regional disparities.
Keywords: Federalism. Local Government Capacity. Exploratory Factor Analysis.

1. Introduction

Since the 1970's, several authors have been dealing with the theme of state capacity, such as Mann (1984), Tilly (1975; 1996), Skocpol (1985), Evans, Rueschemeyer and Skocpol (1985), Geddes (1994), Grindle (1996), and Fukuyama (2013). In its multiple dimensions, state capacity has been linked to various outcomes, such as economic development and growth (Evans & Rauch 1999; Hamm et al., 2010; Dincecco & Katz 2016), performance of government programs (Skocpol & Finegold, 1982), corruption (Bersch et al., 2017), among others. Furthermore, in decentralized political systems, the theme takes further importance given the role of subnational governments in policy implementation. Studies on how subnational governments create and accumulate capacity has acquired, therefore, a pivotal status. At the municipal level outcomes such as federal grant receipts (Hall, 2008; Aragón et al., 2008), citizens satisfaction (Harbers, 2015), or tax enforcement (Fjeldstad, 2001; Kjær, 2009) are common outcomes partially explained by local government capacities.

In this respect, our article contributes to the national literature by measuring a multidimensional index of local government capacity in Brazil. Considering, moreover, the country persistent context of extreme heterogeneity, from available financial resources to shortage of qualified bureaucracy, empirical studies of local governments' capacity in Brazil are still required. This paper is structured as follows: the next section briefly reviews key aspects of the state capacity literature and offers a local government capacity concept to be empirically measured. Section 3 contextualize the Brazilian context. Section 4 describes the methodology, data source, the indicators selected and the factorial analysis results. Finally, the last section summarizes the study main findings, and outline some directions for future studies.

2. State Capacity: A Multidimensional Concept

The theme of state capacity is back in vogue in the public administration agenda. However, the variety of concepts and uses of the term still stands out. The literature has defined an eclectic list of state capacity types, such as institutional, extractive, fiscal, administrative, relational, bureaucratic, political, legal, transformative, among others (see Cingolani, 2018). Despite this diversity of notions, much of the discussion relates to the nature and availability of the instruments and mechanisms used to provide goods and services to society. As Sikkink (1991) says, definitions of state capacity often rest on the ability of state institutions to effectively implement official goals. Michael Mann (1984), for instance, associates the evolution of the state with its infrastructural power, since the state should be able to establish its presence on the ground with offices and personnel.

Operationalizing capacity dimensions is, however, a controversial task, also marked by empirical divergences. The strategy of disaggregating state capacity into different types or dimensions of capacity became, nonetheless, the conventional research strategy. A typical disaggregation method relates to the understanding of activities and functions performed by the state, together with its tools, instruments, and processes. Furthermore, as highlighted by several authors, state capacity is unevenly distributed within a state, especially in decentralized political systems. In this direction, an important line of works shifted the attention to the role of local governments on the provision of goods and services, as we discuss next.

2.1. Local Government Capacity: Developing a Concept

According to Ziblatt (2008) an exclusive focus on the national level neglects the pivotal role of municipalities, in which the link between social preferences and policy outcomes can be more easily identified, and where essential public goods are often created. In other words, not only governments with high capacities help translate social preferences into policy outcomes, but local governments with greater capacity will also aggressively pursue the creation of public goods and services (Ziblatt, 2008).

As expected, and because several government functions fall under the jurisdiction of local governments, especially in federal systems, the theme of local governance and the performance of local state institutions have flourished. As a result, the wide set of capacity concepts frequently used to characterize the central government started to be adapted to the local level. Following the methodological path of defining conceptually distinct capacity dimensions, several authors faced the

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research challenge of defining and measuring local government capacity (see Wolman, 2008; Wolman et al. 2008; Aragón and Casas, 2008). In the Brazilian context, given the information available at official channels, the analysis of state capacities at the municipal level have also witnessed an increase in empirical studies using quantitative methodologies (Fontanelli, 2020; Grin & Abrucio, 2017; Grin et al., 2018, Sátyro et al., 2016).

Even though the operationalization of local capacity may be controversial, there is no doubt that municipal administrations do differ in their ability to deal with local problems and demands. Local government capacity needs, consequently, to be accurately defined. This work, adapting the concept of local government capacity constructed by Fontanelli (2020), proposes a three-dimensional concept (see Figure 1).

The first dimension, fiscal management capacity, is defined as extractive capacity combined with the ability to maintain a certain level budgetary freedom to allow investment expenditures. The second capacity dimension, the political capacity, relates to the government ability to engage civil society on the administration and the municipality ability to cooperate with other levels of government or international institutions. Our third dimension, the administrative capacity, is formed by three factors: *i*) Technological Capacity; *ii*) Bureaucratic Capacity; *iii*) Institutional Capacity. While technological and bureaucratic capacities have a straightforward interpretation, the Institutional Capacity needs further clarification. Institutional Capacity encompasses the availability of institutionalized tools and instruments, in form of municipal laws, regulations, and sectoral funds and plans. They enhance the administrative capacity because they reinforce the ability to manage public policy with a more permanent and accountable framework.

As Figure 1 shows, the local government capacity concept was formulated based on a family resemblance structure. In other words, the relationship between the three defined dimensions and the local capacity concept is ontological, since it is assumed that there is no causal relationship between the secondary and the basic level. Our capacity concept is, thus, a combination of an ontological approach with a family resemblance structure, using Goertz terms (2006). In the next section we present the Brazilian context.
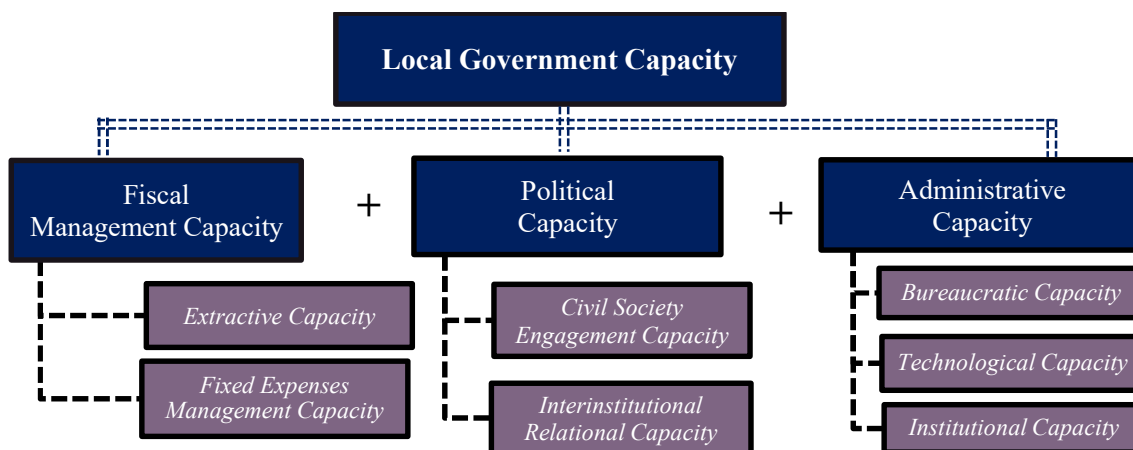
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Figure 1. Local Government Capacity Concept based on Goertz's Family Resemblance Structure

Legend:
+   Logical OR
Ontological: ============
Substitutability: ------------

3. The Brazilian Context

In Brazil, a "three-level" federal country with a presidential system, states and municipalities have become the main responsible for the provision of public services to the citizens. Amendments to the 1988 constitution, moreover, have imposed limits on local governments' budgetary freedom and earmarked specific resources to be spent on health and education services. Local governments' current expenses comprise a wide range of services. They are responsible for providing education and health care services, urbanization and urban infrastructure investments, arborization, public transportation, public lighting, social assistance actions, civil security guards to public property protection, among other services. Regarding education and health services, the municipality is usually the responsible for fundamental education and basic health care, although they often maintain small hospitals or clinics. Municipalities, after the creation of the Unified Social Assistance System (SUAS), have also become the main responsible for the local management of social assistance programs, such as conditional cash transfer programs. Municipalities also provide services without legal obligations to do so, such as kindergartens (children below 4 years old), extracurricular courses for precollege students, or transportations of citizens working at neighbor's cities. Specific services characterized by large externalities and economies of scale, such as landfill management, are increasingly been provided by intermunicipal consortiums. Regarding waste management, municipalities that efficiently segregate recyclable garbage, for instance, have not only been able to reduce expenses in landfills, but also have been able to receive revenues selling the recyclables. A

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proper environmental policy, therefore, not may may generate revenues, but also protect administrations to be charged with fines. Municipalities in Brazil are constantly being fined by environmental agencies. These municipalities current expenses also include items such as the non-durable goods and personnel expenses, that comprises salaries, pensions, among others. The other main type of local expenses relates to the capital spending and public investments. Considering the current situation of the majority of the Brazilians' municipalities, with its high levels of personnel expenses, the budgetary freedom to invest is quite limited ate the local level.

Important to note that several services provided by local governments are designed and financially supported by uplevels government. Several state governments, for instance, induce and finance environmental oriented investments, such as in recycling, urban parks, environmental education, among others. The Paraná state government, in the south of Brazil, for example, are utilizing a millionaire fine imposed on Petrobras to finance environmental projects in its municipalities. The resource has been allocated to the construction of urban parks, recycling actions, among others. The municipalities, however, must comply with the guidelines and rules imposed by the State Government. The capacity to fulfil uplevels' rules and capture such loans or sunk funds, therefore, have been quite important to local governments in Brazil.

To finance such array of public services, apart from upper levels mandatory and discretionary transfers, municipalities mainly rely on a tax charged from companies and businesses providing services (ISSQN), and on a tax charged on real estate and urban land property (IPTU). Brazilian municipalities are also authorized to tax real state transmissions (ITBI) and impose fees on specifics public services, if such services are offered to the citizens. Brazilian municipalities collect numerous fees for services such as issuing licenses, public cleanliness, public lighting, among others. These fees, since established by municipal laws, can only be modified with the approval of the local legislative council. Local tax authorities may also charge betterment contributions wherever there is an increase in the value of a real estate property that can be attributed to the public investment (limited to the investment cost of the executed project). Collection of betterment contributions is, however, a revenue source seldom used by Brazilian mayors, for it is characterized by a system of complex evaluations and judicial interpretation. Municipalities' budgets may also rely on capital revenues, derived from credit operations or assets selling, such as land owned by the municipality. The relationship between revenues and expenditures in Brazilian municipalities, however, became strongly controlled after the Fiscal Responsibility Law (LRF), ensued in 2000. The two main

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constraints included in the LRF are borrowing and debt restrictions, and limits for personnel expenditures.

Most of the Brazilian municipalities are, important to note, dependent on constitutional upper-level transfers, especially the fund called "*fundo de participação dos municípios*" (FPM). The FPM is funded by federal taxes (the income tax and the tax on industrialized products) and is redistributed to municipalities according to sharing rules determined by population parameters. The Federal Government also transfers to some Brazilian municipalities a percentage of the *royalties* collected, in order to compensate negative externalities derived from petroleum and minerals production. State governments are likewise obliged to share revenues – from the state value-added tax (ICMS) and the vehicle tax – with their municipalities. Regarding the ICMS, the states should transfer 25% of its collection to municipalities, the so-called Cota-part of the ICMS. 75% of the Cota-part, however, must be transferred proportionally to the municipal VAF, which is the value added in the transactions regarding the circulation of goods and the rendering of services carried out in their territories. Since the municipal VAF is closely related to local economy dynamic, the Cota-part of the ICMS can be used as a proxy of local economic strengthen.

As said before, Brazilian municipalities also receive voluntary transfers from higher level governments, the federal or state governments. The distribution of such revenues by the uplevel governments is discretionarily allocated to subnational governments, and political factors' influence on this allocation, such as the mayors' partisanship is considered decisive (see Bueno, 2018, and Meireles, 2019, to the federal government case). Even so, a mayor, to have access to a discretionary federal or state grants, ought to formally request the resources using specific systems. In other words, a local administration must have technological structure and civil servants able to elaborate projects fitted to these systems. Several studies have analyzed the fiscal and administrative situation of the Brazilian municipalities, and their dependency on federal and state funds. The general conclusion is that most of Brazilian municipalities are suffering from fiscal stress or serious administrative difficulties in delivering public services. This is even more serious in the municipalities in poorer regions of Brazil. But even though there are several case studies, only few scholars tried to formulate and operationalize multidimensional concepts of state capacity applied to the Brazilian municipalities, as did Grin et al. (2018). In the next section, we explain the strategy used to measure our concept of local government capacity.

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4. Local Government Capacity Index: Methodological Procedures

Our local government capacity index, thereafter LGC, was constructed for the year 2012. The primary research source is the MUNIC database, from the Brazilian Institute of Geography and Statistics (IBGE). The MUNIC offers a comprehensive profile of Brazil's municipalities and their public administrations. The MUNIC historical datasets comprise, however, a set of informational gaps. This problem was faced by combining data from the 2011 and 2012 editions. The second source is the National Treasury Secretariat (STN). The indicators selected are described next.

4.1. LGC Indicators: Operationalization and Aggregation Formulas

Using a sample of 5,565 Brazilian municipalities, we employed exploratory factor analysis (EFA) to measure the LGC Index. Since the EFA allows the indicators to be grouped according to the degree of correlation between them, the procedure offers a robust alternative to test the multidimensionality of the LGC dimensions, in correspondence with our conceptual framework. The EFA is a statistical method that also increases the reliability of the scale by identifying unfitting items that can be removed.

4.1.1. Fiscal Management Capacity Indicators

Table 1 shows the fiscal management capacity indicators.

Table 1. Fiscal Management Capacity: Extractive Capacity Indicators

Description	Indicator	
Extractive Capacity		
Per capita Revenues from IPTU (Source: STN/2012)	LGC_F1	In Brazilian Reais
Per capita Revenues from ITBI (Source: STN/2012)	LGC_F2	In Brazilian Reais
Per capita Revenues from ISSQN (Source: STN/2012)	LGC_F3	In Brazilian Reais
Per capita Revenues from municipal fees and betterment levy (STN/2012)	LGC_F4	In Brazilian Reais
Municipal Own Revenues (Source: STN/2012)	LGC_F5	% of total revenues
2009-2012 Variation Between Municipal Own Revenues and ICMS Cota-part $\left(\frac{2009-2012\ \Delta \text{Own Revenues}}{2009-2012\ \Delta \text{Personnel Expenses and social security expenditures} + \text{Debt services expenditures}}\right)$	LGC_F6	%
Fixed Expenses Management Capacity		
Reserve of contingency (Source: STN/2012)	LGC_F7	% of total municipal revenues
Per capita Municipal Investment Expenses (Source: STN/2012)	LGC_F8	% of total revenues
2009-2012 Variation on the Per capita Municipal Investment Expenses (Source: STN)	LGC_F9	%
2009-2012 Variation Between Investment and Personnel and social security expenditures $\left(\frac{2009-2012\ \Delta \text{Investment Expenses}}{2009-2012\ \Delta \text{Personnel and social security expenditures}}\right)$	LGC_F10	%
2009-2012 Variation Between Investment and Personnel Expenses& Debt services expenditures $\left(\frac{2009-2012\ \Delta \text{Investment Expenses}}{2009-2012\ \Delta \text{Personnel Expenses and social security expenditures} + \text{Debt services expenditures}}\right)$	LGC_F11	%

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The first fiscal subdimension relates to the municipal extractive capacity, that is, the local capacity to collect revenues under municipal jurisdiction. Besides the per capita local taxes, we create an indicator that compares the growth in the local revenues collection with the growth in the local economy, measured by the ICMS Cota-part variation. Our second fiscal dimension captures the capacity to manage expenses in order to create room to investment expenditures. An exploratory factor analysis using principal component extraction with varimax rotation was conducted for the fiscal capacity indicators. Table 2 shows the EFA results.

Table 2. Exploratory Factor Analysis: Fiscal Management Capacity

Variable	Factor 1	Factor 2	Factor 3	Uniqueness
LGC_F1		0.8212		0.3058
LGC_F2		0.7190		0.4810
LGC_F3		0.5298	0.6398	0.3092
LGC_F4		0.7629		0.3899
LGC_F5		0.8653		0.1833
LGC_F7				0.9934
LGC_F8	0.3197		0.4343	0.6665
LGC_F9	0.9733			0.0504
LGC_F10	0.9896			0.0191
LGC_F11	0.9896			0.0191
LGC_F6			0.7427	0.4454
Eigenvalues	3.01266	2.85293	1.27140	
Cumulative	0.2739	0.5332	0.6488	

blanks represent abs(loading) < .3
Rotation: orthogonal varimax
Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) = 0.6839

Using the Kaiser Guttman retention criterion for eigenvalues greater than 1, three factors were obtained. Together, they account for 64.88% of the variance extracted. The KMO test for sampling adequacy measure was 0.684, indicating that data were suitable for principal component analysis. Similarly, Bartlett's test was significant and Cronbach's alpha equals 0.684. The result, however, do not corroborates the expected two fiscal capacity factors. The indicator related to ISSQN collection was also grouped with the indicator that captures the relation between local own revenues and the ICMS Cota-part, what makes perfect sense, given the ISSQN nature, and with the per capita municipal investment expense. A possible explanation may be related with the higher influence of business and entrepreneurs demands on the local investments' decisions. Another interesting point is that almost all municipalities, contrary to obliged by law, do not comply with the reserve of contingency requirement. This fact was captured by the EFA analysis, given the indicator exclusion on the final model.

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4.1.2. Political Capacity Indicators

Table 3 shows the political capacity indicators.

Table 3. Political Capacity: Civil Society Engagement Indicators

Description		Indicator/Formula
Civil Society Engagement		
Existence of projects in association with the private sector in the following policy areas: 1) Urban Development; 2) Employment/labor Market; 3) Education; 4) Culture; 5) Tourism; 6) Housing; 7) Transport; 8) Health; 9) Environment; 10) Sanitation; and 11) Social Assistance. (MUNIC 2011)		
Based on private sector and communities support	LGC_POL1	Sum of existing agreements per policy area *Ranging from 0 to 11*
Based on formal agreements/agreements for partnership	LGC_POL2	Sum of existing agreements per policy area *Ranging from 0 to 11*
Existence of municipal councils with normative, deliberative or supervisory functions - with meetings in the last 12 months - in the following policy areas: (MUNIC 2012)		
Education	LGC_POL3	*Ranging from 0 to 3*
Health	LGC_POL4	
Social Assistance	LGC_POL5	
Housing	LGC_POL6	
Sanitation	LGC_POL7	
Urban Policy	LGC_POL8	
Transport	LGC_POL9	
Environment	LGC_POL10	
Culture	LGC_POL11	
Cultural heritage	LGC_POL12	
Food and nutrition security	LGC_POL13	
Public Security	LGC_POL14	
Interinstitutional Relational Capacity Indicators		
Public Consortium in the following policy areas: 1) Urban Development; 2) Employment/labor Market; 3) Education; 4) Culture; 5) Tourism; 6) Housing; 7) Transport; 8) Health; 9) Environment; 10) Sanitation; and 11) Social Assistance. (MUNIC 2011)		
Existence of Public and Administrative Consortia between municipalities	LGC_POL15	*Ranging from 0 to 22*
Existence of Public and Administrative Consortia with the State Government	LGC_POL16	*Ranging from 0 to 22*
Existence of Public and Administrative Consortia with the Federal Government	LGC_POL17	*Ranging from 0 to 22*
Does the municipality provide some international cooperation & receive some international cooperation with: another government; international body; non-governmental body; private initiative; Others. (MUNIC 2012)	LGC_POL18	
It is part of the river basin committee and cooperates with the State Government on environmental policies (MUNIC 2012)	LGC_POL19	Sum of economic sectors affected by incentives or restriction *Ranging from 0 to 2*

The first political capacity subdimension captures the civil society engagement. Its first two indicators relate to agreements for partnership with the private sector and programs and projects with support from the private sector and communities. A second set of indicators is based on the existence of municipal city councils in 12 policy areas. Municipal councils may be consultative, deliberative, normative, or supervisory, and these competencies are not mutually exclusive. The indicator used is based on the number of existing councils, with normative, deliberative and supervisory functions in

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each policy area. The more councils operating in the municipality, the higher, *ceteris paribus*, the importance of this subdimension. The second subdimension relates to interinstitutional articulations. It is based on the existence of consortia in 11 policy areas. The consortia can involve the federal government, the state government, or other municipalities. For each government sphere, the indicator was based on the existence, in each policy area, of a public or administrative consortium. In other words, if a municipality formed public and administrative consortia with the federal government in all 11 policy areas, for instance, the indicator of consortia with the federal government would equal to 22. If a municipality formed only public consortia with the federal government in all 11 policy areas, the indicator would equal to 11. If no consortium were established, the same indicator would be zero. All indicators calculated in this capacity dimension were standardized. Table 4 shows the items loadings.

Table 4. Exploratory Factor Analysis: Political Capacity

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Uniqueness
zLGC_POL15	0.7579					0.4041
zLGC_POL16	0.7488					0.4364
zLGC_POL17	0.9093					0.1704
zLGC_POL2	0.3936				0.3633	0.5988
zLGC_POL3				0.5942		0.6199
zLGC_POL4				0.6690		0.5059
zLGC_POL5				0.4452	-0.3242	0.6222
zLGC_POL6				0.4556	0.3951	0.6205
zLGC_POL7					0.6280	0.5792
zLGC_POL8			0.4942		0.3757	0.6057
zLGC_POL9			0.5502			0.6836
zLGC_POL11		0.6976				0.4973
zLGC_POL12		0.7770				0.3723
zLGC_POL10		0.3601	0.3414			0.6991
zLGC_POL19		0.3632				0.8033
zLGC_POL13			0.4863			0.6601
zLGC_POL14			0.5535			0.6859
zLGC_POL18					0.4978	0.6675
Eigenvalues	2.19143	1.53376	1.40927	1.36586	1.26750	
(%) Cumulative	0.1217	0.2070	0.2852	0.3611	0.4315	

blanks represent abs(loading) < .3
Rotation: orthogonal varimax
Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) = 0.6627

The EFA result does not validates the expected two factors of the political capacity dimension. The indicators related to public and administrative consortia grouped (factor 1) with the indicator related to existence of projects in association with the private sector civil society in several policy areas, what makes sense. The existence of councils with several functions in education, health and social assistance grouped in one factor (factor 4), together with existence of housing council. Given

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the strengthen of these areas (specially the SUAS), one could suggest that the civil society engagement in these areas may led to a higher participation in housing councils also. As Factor 2 shows, civil society engagement in culture and environment grouped together and also relates to river basin committees. As Factor 3 shows, urban policy, transport and public security are also related. Considering that most of the Brazilian cities have less than 25 thousand inhabitants, it is reasonable to expect that these policy areas are more present at big cities. Therefore, in cities where public transport is a major issue, also security and urbanization will demand more policies and civil society participation. Finally, as Factor 5 shows, the civil society engagement in infrastructure areas – housing, sanitation, urbanizations - grouped with the indicator that capture the government cooperation with international agencies and institutions. This evidence may suggest an interesting line of research.

4.1.3. Administrative Capacity Indicators

Table 5 shows the administrative capacity indicators.

Table 5. Administrative Capacity Indicators

Description	Indicator/Formula	
Bureaucratic Capacity (source: MUNIC 2011)		
Per capita number of total public employees and servants from the Direct Administration	LGC_BUR1	
Per capita number of total public employees and servants from the Direct Administration with college degree	LGC_BUR2	
Per capita number of public servants from the Direct Administration	LGC_BUR3	
Per capita number of public servants from the Direct Administration with college degree	LGC_BUR4	
Per capita number of CLT public servants from the Direct Administration	LGC_BUR5	
Per capita number of CLT public servants from the Direct Administration with college degree	LGC_BUR6	
Per capita number of public employees from the Indirect Administration	LGC_BUR7	
Per capita number of public employees from the Indirect Administration with college degree	LGC_BUR8	
Technological Capacity (Source: MUNIC 2012)		
Sum Existence of Electronic Registers: 1) Real Estate Values Register; 2) Services Business Tax Register; 3) IPTU cadastre.	LGC_TECH1	*Ranging from 0 to 3*
Online services: 1) access to documents and forms; 2) scheduling of consultation in the public health system; 3) ombudsman, citizen service; 4) information and news services; 5) process consultation; 6) official gazette, municipal legislation and public finances; 7) public procurement for personnel recruitment; 8) school enrollment; 9) issuance of negative certificate of debit and license; 10) electronic bidding; 11) online procurement; 12) others.		
Online services available:	LGC_TECH2	*Ranging from 0 to 12*
The city government guarantees public access to the services available on its website through: 1) computerized counter in places of great public circulation; 2) government public facilities.	LGC_TECH3	*Ranging from 0 to 2*
Legal Capacity		
It has a register of families interested in popular housing programs (source: MUNIC 2012)	LGC_LEG1	Dummy
Basic Sanitation Plan covering "Water Supply", "Sewage", "Garbage and Waste Management" and "Rainwater Drainage" (source: MUNIC 2011)	LGC_LEG2	*Ranging from 0 to 4*
Education levels and modalities covered by the Education Strategic Plan (source: MUNIC 2011)	LGC_LEG3	*Ranging from 0 to 10*
Sum of Urban Policy instruments and laws. (source: MUNIC 2012)	LGC_LEG4	*Ranging from 0 to 15*
Sum of Municipal Planning instruments and laws. (source: MUNIC 2012)	LGC_LEG5	*Ranging from 0 to 8*
Average year of publication of urban policy laws (source: MUNIC 2012)	LGC_LEG6	*Average Year*
Existence of Sectoral Strategic Plans in 9 Policy Areas (source: MUNIC 2011)	LGC_LEG7	*Ranging from 0 to 9*
Existence of Sectoral Funds in 9 Policy Areas (source: MUNIC 2012)	LGC_LEG8	*Ranging from 0 to 8*

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The administrative capacity dimension first subdimension, the bureaucratic capacity, comprises several indicators related to the per capita number of public employees and civil servants, both in the direct and indirect administration, such as foundations and state-owned companies. Besides, as proxies of the bureaucratic quality, we used the data about the number of employees and civil servants with college degree. The technological capacity is based on the technological tools available to the local administration and to the local society. Features such as online services offered to citizens or businesses, such as online procurement, denotes higher levels of technological capacities, therefore, ceteris paribus, higher levels of local administrative capacity. The legal capacity relates to institutionalized tools utilized to regulate local development and growth, especially the existence of sectoral funds and strategic plans.

Table 6. Exploratory Factor Analysis: Administrative Capacity

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Uniqueness
LGC_BUR1	0.7737						0.2889
LGC_BUR2	0.8892						0.1614
LGC_BUR3	0.7626		-0.4495				0.1774
LGC_BUR4	0.8471		-0.3285				0.1725
LGC_BUR5			0.9580				0.0755
LGC_BUR6			0.9601				0.0745
LGC_BUR7					0.8225		0.3192
LGC_BUR8					0.7915		0.3590
LGC_TECH1		0.5858					0.6317
LGC_TECH2		0.5705				0.4080	0.4368
LGC_TECH3						0.6861	0.4921
LGC_LEG5		0.4504				0.3276	0.5807
LGC_LEG4		0.7780					0.3592
LGC_LEG6		0.6803				-0.3211	0.4230
LGC_LEG7				0.8444			0.2343
LGC_LEG8		0.4188		0.3354			0.6131
LGC_LEG3				0.7023			0.4214
LGC_LEG2				0.5794			0.5871
LGC_LEG1						0.4019	0.7772
Eigenvalues	2.77735	2.30968	2.27828	1.80659	1.40553	1.23753	
(%) Cumulative	0.1462	0.2677	0.3876	0.4827	0.5567	0.6218	

blanks represent abs(loading) < .3
Rotation: orthogonal varimax
Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) = 0.5606

Table 6 shows the EFA items loads. The EFA results does not validates the expected three factors. The six factors, nonetheless, show interesting evidences. Regarding bureaucratic capacity, it seems to have a trade-off between the direct administration per capita number of civil servants and the direct administration per capita number of CLT employees. Furthermore, the indirect administration number of employees indicators fall in a unique factor. Considering all administrative capacity indicators, the bureaucratic subdimension seems to have a specific dynamic, not tangling with other indicators. This

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behavior is not witnessed in the technological capacity indicators, since they clustered, in two factor, with several legal capacity indicators. Factor 4 presents an interesting evidence, that is, the availability of strategic plans, including more complex sanitation and education plans, is closely related with the existence of sectoral funds.

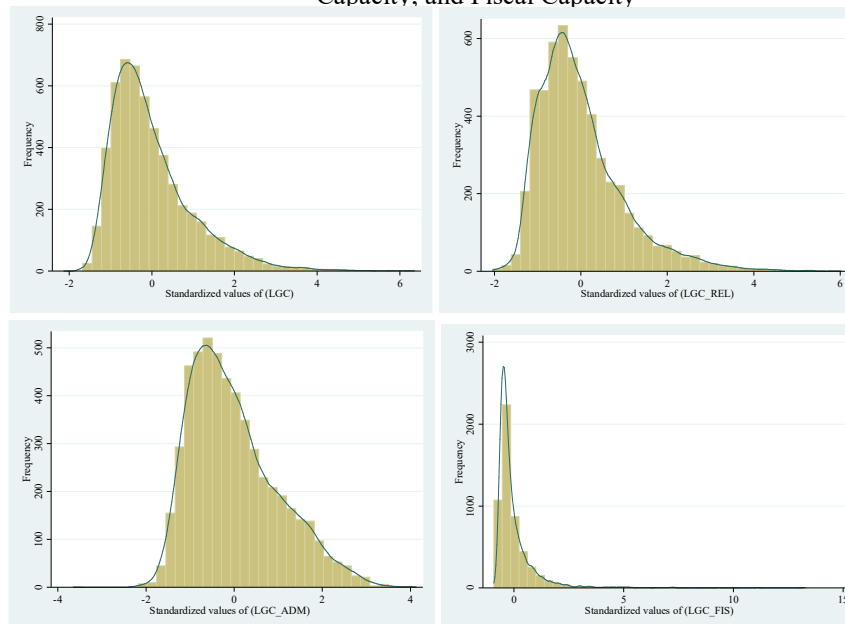### 4.1.4. Local Government Capacity Indexes

Figure 2 displays the final LGC indexes histograms. The LGC three dimensions' scores were calculated based on the post-estimation regression method, computed subsequently to the exploratory factor analyses. The final LGC Index was calculated averaging its three dimensions scores.

Figure 2. 2012 Local Government Capacity Indexes Histograms: Final LGC; LGC_POL; LGC_ADM; and LGC_FIS
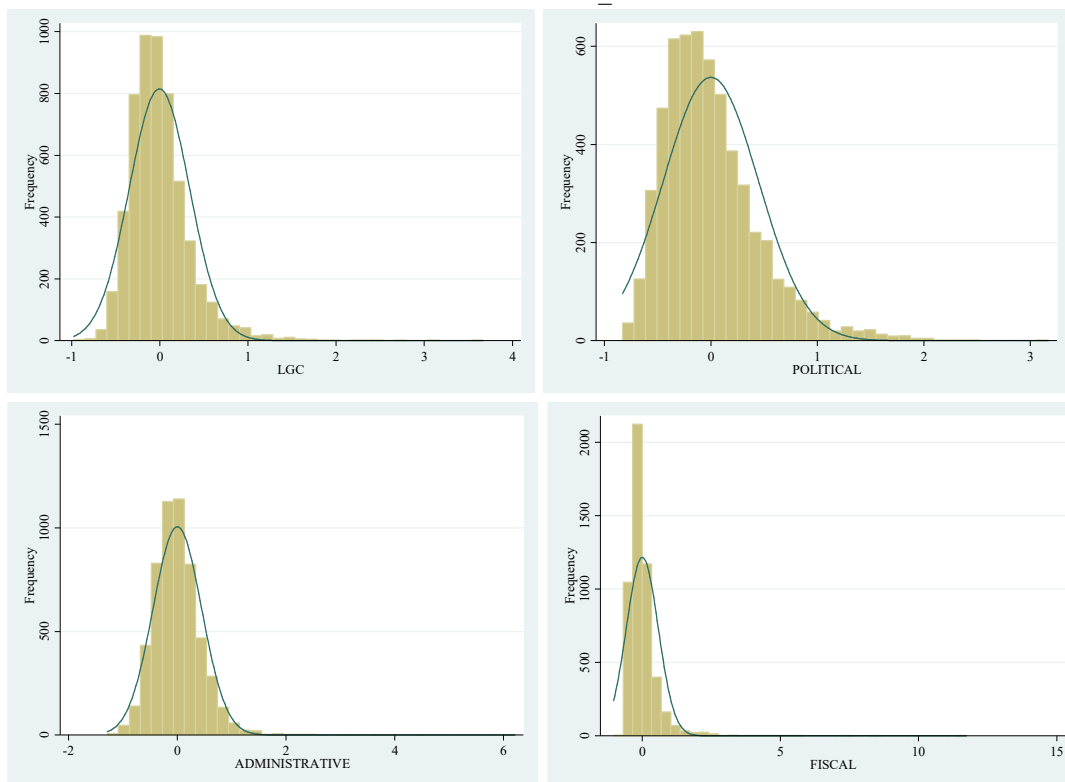
As we can see from the figure above, the calculated capacity indexes capture the Brazilian context of heterogeneity. Our results corroborate, in this direction, Fontanelli (2020) findings, especially regarding the fiscal capacities, as we can see at the figure 3.

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Figure 3. Fontanelli's 2010 Indexes: Average Local Government Capacity; Relational Capacity; Administrative Capacity; and Fiscal Capacity

Source: Fontanelli (2020)

5.   Conclusion

This article assesses government capacities of the Brazilian municipalities by measuring a multilevel and a multidimensional concept of local government capacity. Two contributions were achieved with the present work. Firstly, a replicable concept of local government capacity was proposed and measured and empirically tested. Secondly, we corroborate one of the most important claims of the field, that is that state capacity varies within governments. As suggested before, there is a common belief that local governments are better located to deliver public goods and services to the citizens, especially because of their proximity to the local communities and problems. However, as an important line of the literature argues, decentralization may aggravate inter-regional inequalities. In this way, further theoretical and empirical studies must associate indexes and measurement of local government capacity in order to capture the influence of governance in the socio-economic performance of the Brazilian municipalities.

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