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Paradoxes of inter-municipal public consortia in Brazil: do state capacities and social accountability in municipalities influence their decisions to cooperate?

Paradoxos dos consórcios públicos intermunicipais no Brasil: as capacidades estatais e a responsabilidade social nos municípios influenciam suas decisões de cooperação?

Eduardo José Grin[1]
Gustavo A. A. L. Fernandes[2]

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Abstract

Brazilian literature on intergovernmental cooperation to formulate and deliver public policies (referred here as "inter-municipal public consortia"), suggests a lack of managerial quality and social accountability in these arrangements. The studies, however, do not explore the context of management and social accountability in the municipalities that participate in these consortia, observing whether these elements influence the decision of local governments to engage in intergovernmental cooperation. The research addresses this issue by analyzing inter-municipal consortia in health, education, and sanitation policies in Brazil. It uses a Probit model where there are four independent variables: state capacities (existence of municipal plan and funds and single command of the sector) and social accountability (municipal councils with representatives of the government and civil society). When controlled by other demographic, socioeconomic, political, and financial variables, the results do not provide empirical support for the hypotheses about the influence of local management and social accountability in the municipalities' decision to cooperate. The study concludes that there is a paradox when expecting managerial quality and more social accountability in inter-municipal consortia. At the same time, these elements are not observed as crucial in the municipality's decisions to participate in these cooperative arrangements.

1 Fundação Getulio Vargas-FGV/EAESP, São Paulo. Contacto: eduardo.grin@fgv.br.
2 Fundação Getulio Vargas-FGV/EAESP, São Paulo. Contacto:gustavo.fernandes@fgv.br.

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Resumo

A literatura brasileira sobre cooperação intergovernamental para formular e implementar políticas públicas (aqui referida como "consórcios públicos intermunicipais") sugere uma falta de qualidade gerencial e de responsabilidade social nesses arranjos. Os estudos, porém, não exploram o contexto de gestão e responsabilização social nos municípios que participam desses consórcios, observando se esses elementos influenciam a decisão dos governos locais de se engajarem na cooperação intergovernamental. A pesquisa aborda essa questão analisando consórcios intermunicipais nas políticas de saúde, educação e saneamento no Brasil. Utiliza um modelo Probit onde existem quatro variáveis independentes: capacidades estaduais (existência de plano e recursos municipais e comando único do setor) e responsabilidade social (conselhos municipais com representantes do governo e da sociedade civil). Quando controlados por outras variáveis demográficas, socioeconômicas, políticas e financeiras, os resultados não fornecem suporte empírico para as hipóteses sobre a influência da gestão local e da responsabilização social na decisão de cooperação dos municípios. O estudo conclui que há um paradoxo quando se espera qualidade gerencial e mais responsabilização social nos consórcios intermunicipais. Ao mesmo tempo, estes elementos não são considerados cruciais nas decisões do município de participar nestes acordos cooperativos.

Palavras-chave: cooperação intermunicipal; capacidade estatal; responsabilidade social; saúde; Educação; saneamento.

Introduction

Inter-municipal public consortia are inter-jurisdictional agreements or intergovernmental cooperation to formulate and deliver public policies in a territory. This type of arrangement has expanded both in number and variety in federative Brazil, reinforcing its importance in policy elaboration and implementation. Although consortium is an arrangement observed in Brazil for a long time, the *public consortia* were allowed in the country through federal law only in 2005, regulated in 2007. However, the legislation framework was not the only drive for the expansion of public consortia as a demonstration of inter-municipal federative cooperation. According to national literature, these arrangements increased in number and variety also because of the emphasis on economies of scale, service delivery, greater financial stability, and resource sharing.

The Brazilian literature on this issue assumes that municipalities are willing to qualify the regional management of public services. However, studies do not evaluate whether the existing managerial instruments in the municipalities are aligned with this apparent intention. The national literature points to the importance of qualifying inter-municipal public management, but there is no indication of whether the existence of local instruments of public policy management are elements that influence a municipality's decision-making process toward engaging in consortia. Therefore, the first objective of this research is to discuss if the existence of management instruments in

municipalities is a factor that influences its decision to participate in consortia, which would contribute to qualifying the municipality's public management by adopting a territorial perspective.

Many studies highlight the importance of social accountability mechanisms to improve consortium management, including the interests of different political actors in decision making. One of the starting points of this argument lies in the shortcomings of the Brazilian "Consortium Law," which defines rules for inter-municipal associations, but is vague regarding the participation of civil society. The literature assumes that consortia should strengthen this process in the initiatives in decision-making instances. However, studies do not assess whether the existence of social accountability instruments in municipalities are factors that influence their decision to engage in inter-municipal cooperative arrangements.

Public policies in Brazil count, since 1988, on municipal councils that bring together representatives of civil society and local government to discuss strategies and implementation. These collective bodies are formed by governmental and social representatives empowered by federal and municipal laws or constitutional rules to exert social control over the local government. The municipal councils are not what the literature recognizes as the legislative branch of local government. They are a sort of advisory council with the presence of multiple actors from each policy community, and the council will be empirically used to test the theoretical argument on social accountability. Therefore, it is a paradox that studies on consortia have not observed if these councils influence a municipality's decision to engage in inter-municipal cooperation. Thus, the second objective of this research is to fill this gap, analyzing whether the existence of social accountability mechanisms in municipalities influences the participation of them in regional consortia.

Both objectives are grounded on the same premise: it would be contradictory to ask state capacity and social accountability from inter-municipal consortia if municipalities are not influenced by these aspects when deciding to engage in these arrangements. In other words, are the status of municipal state capacity and councils of social control relevant for the municipal decision to participate in an inter-municipal consortium? To respond this question, the research analyzes inter-municipal consortia focused on public health, education, and sanitation created and existing between 2005 and 2015, a period that captures the effects of the new federal legislation. The study assesses whether the existence of state capacity and social accountability instruments in a municipality influences its decision to engage in inter-municipal consortia.

This paper is organized into five sections in addition to this introduction and the conclusion. The first section below reviews the main arguments presented in the literature regarding the reasons leading municipalities to seek consortia to deliver public policies. Specifically, the section presents the academic production that indicates the need for these arrangements to qualify management and increase social accountability. The second part describes the reality of consortia in the areas of health, education, and sanitation, observing the federative rules that organize them in terms of institutional design and intergovernmental transfers. The third section presents the methodological procedures used in this quantitative research and the description of the variables used. The subsequent section presents the results, followed by the fifth section that discusses them in light of the literature.

Finally, the article concludes by offering suggestions to further analyze the findings in the areas of health, education, and sanitation.

1. Management and social accountability: assumptions to build and maintain consortia

Brazilian literature on the establishment and sustainability of consortia stresses the importance of management and social accountability, particularly in qualitative studies. This section reviews the main arguments discussed by scholars on the topic.

As for the issue of managerial quality, international literature accepts that municipal institutional capacities matter (Wolman, 2008; Andrew, 2009; Bel and Warner, 2016). Despite the economic advantages of associations, localities with low institutional capacities are less likely to cooperate since lack of managerial skills increases transaction costs (Lubell et al. 2002). Studies have shown that fiscal resources and managerial skills are important drivers of inter-municipal consortium in Argentina (Cravacuore and Chacon, 2016), Mexico (Rodríguez-Oreggia and Tuirán, 2006) and Brazil (Grin, 2021).

Building technical and financial capacity for local governments to respond to new responsibilities is a significant challenge (Lackey, Freshwater, and Rupasingha, 2002; Teles, 2016). In this sense, state capacity instruments such as planning, organizational structure and financial resources is an important factor to foster cooperation (Bel and Warner, 2016; Brown and Potoski, 2003; Hefetz, Warner, and Vigoda-Gadot, 2012), helping to overcome technical challenges (Hefetz, Warner, and Vigoda-Gadot, 2012; 2015; Nelson and Svara, 2012). In addition, characteristics of public management (Stoker 2009) and organizational culture may affect the likelihood of municipalities to engage in consortia (Bryson et al. 2014; Teles 2016).

In Brazil, the Law on Public Consortia is vague. It mentions the management contract between the public administration and the local authority that formalizes inter-municipal consortia (known as "*autarquia*" in Brazil). These local authorities may define objectives, goals, and performance indicators, as well as the necessary resources, criteria, and instruments for evaluating the activities. However, there are few legal incentives to promote managerial modernization of public consortia. For Caldas and Cherubine (2013), management capacity and permanent resource flow for the activities planned are crucial in this kind of endeavor because they are a synthesis of municipal political wills for more territorially cooperative action in which:

> The management capacity of the inter-municipal consortium can be translated into the capacity of its technical staff – based on the perception that trained and continuously trained human resources promote institutional advances; ability to systematize data and information – for decision making and project design; capacity to elaborate projects – to improve the activities carried out in cooperation and potential to raise public funds; medium and long term planning – to maintain the focus and continuity of actions [...] (Caldas and Cherubine, 2013:66, our translation).

Therefore, cooperative action serves an agenda of achieving higher quality public management, training civil servants, and changing institutional culture (Laczynski and Abrucio, 2013). Inter-

municipal cooperation seeks to expand the supply of services, aiming to overcome existing managerial and financial needs in local governments (Silvestre et al., 2019; Grin, Bergues, and Abrucio, 2017). Many consortia do not develop properly due to the fragility of the technical instruments available. In these cases, a professional bureaucracy that supports the regional activities related to the collective public policies is crucial, together with professional bases in each of the participant municipalities (Meza et al., 2019).

Whatever the model of territorial coordination, intergovernmental relations between local and supra-municipal bureaucracies are the most important connections observed. An essential aspect in consortia is to consider the inequalities of administrative and financial capacities of participant municipalities since their managerial and fiscal possibilities represent the support for collective management of inter-municipal public services, or "inter-jurisdictional governance" (Spink, 2011; Grin, 2021; Ferracini, 2013).

It would be paradoxical to create a new quality of inter-municipal bureaucracy disregarding the status of municipal technical bodies. This is a central issue, as the consortium technical teams could be tempted by a super autonomy that may jeopardize transparency and responsiveness. When keeping this factor under control, public consortia allow territorial decentralization of technical and financial resources, strengthening the municipalities' managerial and administrative capacities (Losada, 2010).

Legislation governing public consortia induces local governments to improve planning and management. From the protocol of intent between the municipalities to form a consortium, the process demands in-depth studies. Planning carefully before forming a public consortium is essential to avoid damage to the participants and ineffectiveness in implementing the activities (Coutinho, 2006; Strelec and Fonseca, 2011). Moreover, the agreed goals need to be adequately monitored and evaluated, even though it is a challenge for most municipalities to implement such instruments (Cruz, Araújo, and Batista, 2011).

Similarly, Laczynski and Teixeira (2011) emphasize the local governments' shortage of professionals able to produce diagnoses and elaborate projects to respond to territorial socio-economic challenges. The integration of policies promoted by the consortia would generate broader territorial perspectives. In the analysis of the metropolitan public transport consortium in Recife (State of Pernambuco, Brazil) and neighboring municipalities, Best (2011) highlights the production of shared objectives to solve common problems involving public services and integrated regional planning.

The *Guia de Consórcios Públicos* (2011) (Public Consortium Guidelines) also emphasizes the importance of regional planning, integrating the existing municipal plans such as master plans, sector plans in health, tourism, sanitation, housing, registrations, and mapping. In addition, it is necessary to set goals that are subject to monitoring and evaluation and improve the consortium's management tools, as well as its physical structure, and human resources. To implement this integrated and cooperative planning, the consortia should establish councils or thematic committees, with the participation of municipal technicians and other players involved in the initiative.

Bresciani (2011) analyzes the *Consórcio Intermunicipal do Grande ABC*, a consortium in the metropolitan region of São Paulo, Brazil. The author found that such a multi-purpose consortium seeking local development needs to improve the transversality of its activities and align them with regional strategic priorities. The management model was supported by Working Groups (WGs) coordinated based on sectoral and integrated actions. However, the WGs were informal and with high member turnover. More importantly, there was a reduction in the participation of local political leaders with decision-making powers, consequently diminishing the consortium political and technical capacity to formulate regional policies.

Two relevant issues stand out from Bresciani's study (2011). First, regarding the managerial culture, the consortium management was expanded beyond its management team, including WGs and managing committees for programs funded by municipalities. Second, the Brazilian law on public consortia has broadened organizational requirements, requesting standards of work and control, especially in terms of administration (hiring, for example) and legal processes (such as laws and regulations on public procurement).

For Dieguez (2011), the operational autonomy of consortia is a dimension of their institutional strength, which includes the existence of a bureaucratic body to formulate and implement projects. The main aspect is to build organizational stability to offer support for decision making and solve municipalities' problems that demand integrated solutions. Another aspect concerns administrative autonomy and staffing rules, as this interferes with the sustainability of the consortium through time. This autonomy helps to reduce the impact of electoral cycles or personal relationships between the staff and local political leaders. Finally, financial autonomy with the guarantee of sustainable sources of funds is required to allow planning and implementing activities.

The international literature on consortia does not often refer to the issue of social accountability. Therefore, this study essentially discusses the Brazilian academic production. The Brazilian legislation on public consortia also does not explore social accountability in these arrangements, except by the provisions on the consortia's general board formed by the participant municipalities' mayors, and the contribution of civil society in collegiate bodies. The vagueness of the law does not make it clear whether such participation could influence consortium decisions or be restricted to having a say in debates. If deliberations are regional in scope and involve several actors, increasing transparency and making room for the supervision of civil society would be desirable (Prates, 2010; Abrucio, Sano, and Sydow, 2010; Abers and Jorge, 2005).

Society participation can be organized through public events such as hearings and discussion forums to engage, account, and discuss the direction of the public consortium. The little concern with this issue in the legislation has affected institutionalized experiences, such as the *Grande ABC* consortium in São Paulo. Although the initiative exists since 1990, changes occurred when the consortium became a public consortium according to the 2005 legislation. In this case, the previous practice counted on WG meetings open to civil society participation, but this participatory opportunity changed when the initiative started to observe the new legislation. As the law allowed to interpret that consortia are formed only by municipal entities (Bresciani, 2011) and omits the issue of social

accountability, the now public consortium of *Grande ABC* stopped opening opportunities for civil society participation.

In this sense, one of the most significant weaknesses of consortia is their limited access for social participation in decision making (Laczynski, 2012; Machado apud Coutinho, 2006). The Brazilian law on consortia does not include the participation of non-governmental actors, and it is up to each intergovernmental cooperation whether they create these channels. Thus, if public consortia are an innovation as federative cooperation, "their essentially monothematic character and the non-participation of the community make them limited as an effectively cooperative and widely democratic management alternative" (Rolnik and Somekh, 2000: 84).

It is necessary to mobilize society to engage in territorial associations and disseminate information that broadens the awareness of the territorial dynamics of public policies. These are relevant issues to increase the accountability, transparency in the decision-making processes, and responsiveness of consortia, as they involve various social actors and produce impacts on the territory, requiring greater supervision (Vaz, 1997). The relationship between government and society in the management of inter-municipal consortia is searching for means that produce greater synergy.

This process also depends on regional social capital, the establishment of municipal administrative institutions, and depends on the way cities implement public policies (Abrucio, Filippim, and Dieguez, 2013). Democratizing consortium management should include social actors and deliberative regional arenas supported by participatory mechanisms. In addition, it is important to assess whether the relationship between consortia and other channels of social participation, such as municipal councils for public policy, may interfere with the decisions a municipality makes regarding engaging or not in inter-municipal cooperation (Dieguez, 2011).

After the general review of the literature on the issues that affect the process of forming and maintaining inter-municipal consortia, it is possible to observe the relevance of state capacity and social accountability in such initiatives. These two aspects are relevant indirectly, for example, by emphasizing aspects such as efficiency and economy, or directly when viewed as constraints affecting their association. Political will for these collaborative arrangements is not enough to guarantee a successful endeavor. It is necessary to count on managerial tools and resources, particularly if there is little mobilization of society to act beyond municipal jurisdiction, i.e., as part of a region with common interests (Grin, 2021; Tapia, 2005). Thus, it is reasonable to state that inputs on managerial quality and social accountability are central to the success of a public consortium.

However, the literature has not evaluated how management and social participation in municipalities can be associated with the participation of a municipality in this intergovernmental cooperation in the form of a public consortium. If the support of supra-municipal entities is relevant to foster public action in the territories, it is fair to assume that state capacity and social accountability elements influence a municipality's decisions to join these actions at the regional level, evaluating this influence. Even when accepting the argument that consortia produce "synergy" of municipalities that are poorly prepared to deal alone with the challenges of regional public management, it is not appropriate to conclude that local governments do not have planning or use social accountability

instruments. If so, consortia could not be considered standing organizations with decision-making authority involved in the planning and coordination of local policies (Hulst and Monfort, 2007) whose decisions impact the associated municipalities.

In this context, it is necessary to understand whether management and social accountability instruments at the local level are associated with the constitution of inter-municipal public consortia in Brazil. As this specific issue has not yet been addressed in the Brazilian literature, this article seeks to contribute by analyzing the cases of intergovernmental cooperation through consortia, as understood by Brazilian legislation, in the areas of health, education, and sanitation. Along these lines, there are two hypotheses to be discussed:

H1: Municipal state capacities in education, health, and sanitation policies are associated with the municipality's decision to participate in inter-municipal consortia.

H2: Municipal social accountability instruments in education, health, and sanitation policies are associated with the municipality's decision to participate in inter-municipal consortia.

2. Federalism and intermunicipal cooperation in health, education and sanitation

Brazil is a federative republic made up of 27 states and 5570 municipalities, which are not only autonomous entities but constitutionally full members of the federation, with rights equated with states and the Union. The municipalities' basic structure is defined in the Brazilian constitution, regardless of the number of inhabitants or the state in which it is located, so that the principle of federative symmetry applies to all subnational entities.

Table 1. shows the evolution of consortia in education, health, and sanitation in Brazil.
Table 1 – Evolution of inter-municipal public consortia in health, education, sanitation (2005-2015)

Public policies	Period			Variation in 10 years (%)
	2005	2011	2015	
Education	248	280	352	+42.0
Health	1906	2288	2672	+40.1
Sanitation	343	426	667	+94.4
Total	2497	2994	3691	+47.8

Source: Elaborated by the author based on Munic IBGE (2005), Munic IBGE (2011), and Munic IBGE (2015).

Health policy is at the top: more than half of the municipalities participate in consortia, and in ten years, this number has increased by 40.1%. The sanitation sector presented fewer cases than the number observed in health, but it had the highest rate of expansion: 94.5% more municipalities in ten years. Finally, the area of education is the one with fewer consortia and expansion similar to the variation observed in the area of health.

The Brazilian Unified Health System (SUS) was created in 1990 as a nationally hierarchized, integrated, and decentralized arrangement. The voluntary adhesion of the municipalities depends on the fulfillment of three rules: implement the municipal plan, the local fund, and the municipal council – explained below. These are prerequisites that authorize continuous intergovernmental transfers from the National Health Fund as a stable source of funds. Municipal adhesion was successfully achieved and reached almost all municipalities (Arretche, 2003; Frutuoso, 2010).

The national sanitation policy has the weakest institutional arrangement compared to health (stronger) and education (intermediate) as it is not organized with mandatory rules for municipalities. The National Sanitation Plan states that after 2018, the absence of municipal plans will prevent cities from receiving federal funding. However, there are no national rules regarding municipal funds and councils, as their implementation depends solely on the local decision. Therefore, the capacity of the federal government to induce cities to organize a local sanitation fund and council is weak.

As for federal financial support for sanitation, voluntary transfers are sparse and do not serve all municipalities in need of resources (Grin, 2021). The model offers little encouragement to municipalities. However, it is the area with the highest relative growth of inter-municipal consortia, although without the same systemic framework as observed in healthcare. In addition, since 2010, the national solid waste legislation has induced to work through consortia, providing that cities seeking to receive voluntary federal transfers are required to organize or participate in such arrangements.

The educational policy in Brazil does not have a unified or integrated system similar to SUS: the federal constitution defines a model in which the three levels of government manage their own programs. Municipalities focus on basic education, the federal level on higher education, and states on high school. In the absence of unified national policies, the supervision of higher levels of government over municipalities is less intense than in health. Therefore, the scope of municipal funds and councils is smaller since there is a greater local discretion to implement them (Abrucio, 2010). At the municipal level, there are school councils and municipal councils that oversee the use of funds received from the federal government. As for the municipal plan, since 2014, the rules of the National Education Plan have been reinforcing its implementation.

Regarding the financial dimension, intergovernmental transfers are organized under a system of direct, continuous, and monthly federal transfers. As for SUS, there is no formally organized federative arena that exercises unified control over education. In managerial terms, education was the first of the three areas to be organized in the municipalities, as health was essentially federal until 1988, while state governments usually manage sanitation.

As for legal inductions, the SUS, since its inception in 1990, encourages and supports inter-municipal consortia. This became a reality for sanitation when the legislation passed in 2007. Education is the most fragile in this sense: given the historical duplicity of municipal and state education networks, there are little legal stimuli for inter-municipal cooperation.

Health is the only area with a national and articulated system that transfers resources to municipalities. Education also has regular funding bases: the funds the constitution states must be invested, and the resources from the Fund for the Maintenance and Development of Basic Education and the Recognition of Education Professionals[3], as well as the transfers from the National Education Development Fund for school meals and transportation. In the area of sanitation, there is no intergovernmental transfer or legal obligation of spending by the municipalities.

3. Methodology

This study discusses the national literature on intergovernmental cooperation or inter-jurisdiction agreements to elaborate and implement public policies in territories, adopting the form of inter-municipal consortia, observing the Brazilian legislation on public consortia. The literature analysis emphasizes the aspects of management and social accountability. The research question is: to what extent do state capacities and social accountability instruments in municipalities influence their decisions to participate in inter-municipal public consortia? The unit of analysis is the inter-municipal public consortia in health, education, and sanitation, created and existing between 2005 and 2014.

Three sectors that have data on their municipal management and social accountability instruments (public policy councils) are analyzed. The policies selected for this work vary both in the dependent variable (number of consortia) and independent variable (Table 3) that discusses whether management and social accountability influence the decision of a municipality to participate in an inter-municipal consortium.

The analysis includes the years 2011 and 2014 to test the dependent variable: the probability of municipalities participating in inter-municipal consortia in health, education, and sanitation. Data from the cross-section model was retrieved from the MUNIC IBGE 2011 and 2014, as it is not possible to use panel data models since the information is not repeated annually. Financial variables were obtained from FINBRA, a data system managed by the Brazilian Federal Treasury to oversee public spending. The variables of a political nature derive from the website of the Supreme Electoral Court and the socio-economic variables from DataSus, the UNDP Development Atlas, and INEP. A Probit model was used to discuss both theoretical and empirical arguments (Cameron and Trivedi, 2005). This type of econometric model is suitable for the case of dependent variables that are dichotomous and offers probabilistic answers such as those that this article seeks to obtain to assess whether state capabilities and social control instruments influence the decision of municipalities to participate in a consortium.

The dependent dummy variable is the decision of the municipalities to engage in a consortium in health, education, or sanitation: 1 = yes and 0 = no. As the numbers of inter-municipal consortia differ in the three areas (in 2015, more than half of the 5570 municipalities participated in

3 Accounting funds of Brazilian states, formed mainly by tax and transfer funds from the states, Federal District and municipalities, and the disbursement is constitutionally linked to basic education. The Union complements the amount per student to be mandatorily disbursed when the resources collected do not match the minimum required.

consortia in health, 6.7% in consortia in education, and 12.4% in such arrangements in the area of sanitation). Therefore, differences should be found between the cases in the three areas regarding the arguments presented in the literature.

Based on the literature used for this article, independent variables are organized into two dimensions, according to data from MUNIC IBGE (2011; 2014): a) three variables of state capacity and municipal management dummies (existence of: single command over policy, a Municipal Plan, and a Municipal Fund); b) social accountability (a dummy variable over the existence of Municipal Council). The study aims to evaluate if the arguments observed in Brazilian literature stating that inter-municipal consortia need to improve their management and social accountability are considered in the municipalities' decision making about their participation in these arrangements.

Table 2 – Dimensions of the government capacity and definition

Structure	Definition
Single command	A single body exercises policy management. Education and health are policies whose federal rules require single municipal command, with no division of responsibilities with other policies. Sanitation has no rules in this regard.
Municipal plan	. An organized set of goals that municipalities establish, taking into consideration national and state norms, but keeping administrative and political autonomy to adjust such norms to local particularities. Plans are formal documents and must express actions and expected outcomes from the implementation of public policies.
Municipal fund	An organizational structure that has administrative and financial autonomy to manage the public policy budget formed by voluntary or conditional transfers from the Union and the States. Funds are regulated in different ways in each area (education, health, and sanitation).
Municipal council	Structures recognized in some cases by the Brazilian Federal Constitution or by federal, state, and municipal laws. Councils are participatory instances that involve governmental actors and civil society organizations. They have deliberative, advisory, supervisory, and regulatory roles, working as a mechanism of social accountability toward the actions of local governments.

Source: Elaborated by the authors.

The literature on state capacities agrees that this is a polysemic concept (Aguiar e Lima, 2019; Grin, 2012), and it can be understood through four dimensions: a) administrative capacity, i.e., organizational structure to perform essential functions and provide public services; b) technical capacity, or skills to formulate and manage policies; c) institutional capacity, which is the definition of "rules of the game" related to economic regulation and behavior of social actors; and d) political capacity, or the establishment of legitimate and effective channels to deal with social demands (Grindle, 1996). Putnam (2006) uses the concept in a multidimensional way when proposing 12 indicators to assess "institutional capacities," because "an institution's effectiveness depends on its ability to properly conduct internal business" (p. 79, our translation). The four independent

variables operationalize the theoretical concept that synthesizes the two issues discussed in Brazilian literature: management and social accountability as factors that influence the municipalities' decision to engage in consortia.

Table 3. shows the variation of the four independent variables to assess their effect on the likelihood of municipalities participating in public consortia.

Table 3 – Plans, councils, funds and single command in health, education, and sanitation in municipalities (%)

	Plans	Funds	Councils	Single command
Education	43.1	41.7	87.6	59
Health	97.5	99.9	99.5	97.5
Sanitation	28.2	3.9	3.6	30.3

Source: MUNIC IBGE 2011; 2014.

Control variables are organized in four dimensions, according to the literature that analyzes the factors that induce municipalities to collaborate in integrated public policy provision. The first considers demographic and socioeconomic factors (Feiock, Krause, and Hawkins, 2017; Bae and Feiock, 2012). The main question is to control whether local population, economic, and social heterogeneity influences the propensity to collaborate (Bel and Warner 2016; Feiock 2007; Frug 2001; Lowery 2000; Warner and Hefetz 2002). The following socioeconomic variables are used: a) health (infant mortality and percentage of access to basic health); b) education (Basic Education Development Index – IDEB[4]); c) Gini index; d) population log.

The second dimension is the municipal financial management, and two approaches are emphasized. The first is the degree of municipal dependence on federal transfers, as this relationship influences local public policies and inter-municipal cooperation (Agranoff and Radin, 2014; Feiock and Scholz, 2009; Kübler & Pagano, 2012; Miller and Lee, 2011; Rodríguez-Oreggia and Tuirán, 2006). The literature suggests that municipalities are more likely to cooperate when higher levels of government are absent or do not exercise their competences locally (Hulst and Van Montfort, 2012).

The other approach refers to the municipal's own revenue, which is a factor that usually reduces dependency on higher levels of government and can be associated with more engagement in inter-municipal consortia. However, studies suggest that higher rates of own revenue may inhibit the likelihood of cooperation among municipalities (Bel and Warner, 2016; Feiock, 2007; Feiock and Scholz, 2009; Rodríguez-Oreggia and Tuirán, 2006; Wolman 2012).

There are two variables for assessing the impacts of federal dependency in Brazil. First, the participation of the values transferred from the federal government to municipalities through the

4 Created in 2007 by the Brazilian Ministry of Education to assess the quality of students learning nationwide and to establish goals to improve teaching. As in Brazil the municipalities are responsible for elementary education (five first years), the numbers represent the IDEB in the so called "early years."

Fundo de Participação dos Municípios[5] (FPM) (Municipal Participation Fund) on the gross municipal revenue. This constitutional and continuous transfer ensures some financial stability, and the use of this variable helps to control the level of local autonomy in fiscal management. The other variable is the amount received from the federal government to finance local policies on education, health, and sanitation. In addition to these two variables related to federal dependency, there is a third one used in the research, which refers to the percentage of own revenues in the total municipality's revenues.

The third dimension is the administrative configuration of the municipalities, for which the log of civil servants and the percentage of appointed positions in public service were used. Technical and financial capacity is a factor that influences local decisions to participate in intergovernmental cooperation (Lackey, Freshwater, and Rupasingha, 2002). More professionally qualified public administration influences such partnerships (Bel and Warner, 2016; Brown and Potoski, 2003; Hefetz, Warner, and Vigoda-Gadot, 2012) as it helps to overcome technical challenges (Hefetz, Warner and Vigoda-Gadot 2012; Nelson and Svara 2012). As these data per area was available only for the public bureaucracy in health and education, the study used the numbers referring to the entire personnel in the municipalities.

The fourth dimension is political institutions (Feiock 2007; Brown and Potoski 2003; Hefetz, Warner, and Vigoda-Gadot, 2012; Hawkins, 2017). The research used the dummy variable – IM (the ideology of the mayor). In this categorical variable '1' indicates right-wing parties, '2' center parties, and '3' left-wing political parties. Center parties have been omitted from the model[6]. The second variable is the electoral competition measured by the difference between the winner and the runner-up in the mayoral election in 2016.Table 4 presents the descriptive statistics on this matter.

5 Constitutional transfer from the Federal Government to states and Federal District, composed of 24.5% of the income tax and tax on industrialized products collected nationwide. The funds are then distributed to municipalities according to the number of inhabitants.

6 According to Carreirão (2014): leftist parties (Communist Party of Brazil - PCdoB, Democratic Labor Party - PDT, Humanist Solidarity Party - PHS, National Municipalist Party - PMN, Popular Socialist Party - PPS, Workers' Party - PT, and Green Party - PV). Right-wing parties (Democrats - DEM, Brazilian Labor Party - PTB, Popular Party - PP, Republican Party - PR, Brazilian Renewal Party, Social Christian Party - PSC, Progressive Republican Party - PRP, Brazilian Labor Renewal Party - PRTB, Christian Democratic Social Party - PSDC, Liberal Social Party - PSL, Christian Labor Party – PTC, and National Labor Party - PTN) and center parties (Brazilian Democratic Movement Party - PMDB and Brazilian Social Democracy Party - PSDB).

Table 4 – Descriptive statistics for education, health, and sanitation

	Obs.	Mean	Standard Deviation	Min	Max
Consortium Educ	5567	0.07	0.25	0.00	1.00
Single command Educ	5570	0.59	0.49	0.00	1.00
MPlanEduc	5566	0.44	0.50	0.00	1.00
MCouncilEduc	5566	0.88	0.33	0.00	1.00
Consortium Health	5567	0.50	0.50	0.00	1.00
Single command Health	5570	0.89	0.31	0.00	1.00
MPlanHealth	5566	0.98	0.15	0.00	1.00
MCouncilHealth	5567	1.00	0.04	0.00	1.00
Consortium Sanitation	5567	0.12	0.33	0.00	1.00
Single command Sanit	5565	0.02	0.13	0.00	1.00
MPlanSanit	5570	0.25	0.44	0.00	1.00
MCouncilSanit	5570	0.13	0.34	0.00	1.00
Log(Population2014)	5570	8.27	3.33	0.00	16.29
Log(Totalrevenues2014)	5570	15.18	5.86	0.00	24.49
Log(FPM2014)	5570	14.09	5.47	0.00	20.33
Log(Total Transf Educ)	5570	1.14	3.63	0.00	19.65
Log(civil servants)	5567	88.18	19.99	0.00	100.00
Perc. of appointed positions	5567	6.99	37.69	0.00	1938.00
Primary Health Care	5304	5.03	1.07	2.3	8.3
Infant Mortality	5551	6.38	0.94	1.95	12.01
IDEB	5535	-2.52	0.72	-5.75	-0.27
Political Competition	5358	1.87	7.36	1.00	439.20
DEM	5565	0.59	0.92	0.00	7.00
PC do B	5565	0.18	0.52	0.00	6.00
PDT	5565	0.66	0.97	0.00	7.00
PMDB	5565	1.43	1.40	0.00	13.00
PPS	5565	0.33	0.66	0.00	6.00
PSB	5565	0.64	1.00	0.00	8.00
PSDB	5565	0.94	1.11	0.00	9.00
PSOL	5565	0.01	0.13	0.00	4.00
PT	5565	0.93	1.11	0.00	11.00
PTB	5565	0.64	0.93	0.00	7.00
PV	5565	0.28	0.63	0.00	5.00
Gini2010	5565	0,50	0,07	0,28	0,81
Var.Gini (2000-10)	5507	-0,05	0,07	-0,38	0,23

Source: Elaborated by the authors.

4. Results

The following tables present the results in the three areas. In education, none of the variables of interest had statistical significance. Thus, it cannot be assumed that state capacity and social accountability at the municipal level are relevant to the decision of a municipality to cooperate through public consortia. The population was significant in two models (p. <0.01 and p. <0.1) when considering the other controls studied. This variable is a proxy for economies of scale, so the larger, the less likely to merge, due to increased local autonomy. However, the association was positive, which contradicts assumptions found in the literature (Bel and Warner 2016; Hulst and van Montfort).

The variable FPM, except in model 6, was statistically significant and in line with the literature: the larger the amounts of transfer and dependency from higher levels of government, the lower the likelihood of participating in inter-municipal consortia. However, education transfers had no statistical effect.

The variable own revenue had no statistical significance, and the fact that it was negative was in line with the literature in two models, i.e., higher tax collection reduces the incentives to participate in consortia (Cravacuore and Chacon, 2016; Rodríguez-Oreggia and Tuirán, 2006; Grin, 2021).

Regarding socioeconomic variables, the result of IDEB indicates that municipalities with better performance have lower chances of collaborating through consortia to meet local needs. Infant mortality, Gini Index, and access to primary health care were not relevant. Variables on local bureaucracy presented two findings: more discretionary appointments decreased the likelihood that the municipality would establish intergovernmental partnerships (p<0.1 in two models). The number of civil servants – a proxy for bureaucratic capacity – was not statistically significant but revealed to have a positive relation. This result differs from the literature's suggestion (Hefetz, Warner, and Vigoda-Gadot, 2012) that more civil servants encourage local autonomy rather than collaboration.

Table 5 – Probability of influence from social accountability and local government capacity in deciding to participate in education consortia

	1	2	3	4	5	6
Municipal Fund	-0,032	-0,035	-0,07	-0,077	-0,079	-0.081
	[-0.606]	[-0.660]	[-1.273]	[-1.396]	[-1.432]	[-1.461]
Single Command	-0,012	-0,026	-0,036	-0,036	-0,038	-0.035
	[-0.222]	[-0.468]	[-0.637]	[-0.627]	[-0.650]	[-0.602]
MunPlanEduc	0,038	0,029	0,088	0,073	0,076	0.073
	[0.717]	[0.544]	[1.601]	[1.298]	[1.346]	[1.311]
MunCouncilEduc	0,010	0,003	0,047	0,061	0,058	0.063
	[0.119]	[0.038]	[0.557]	[0.699]	[0.666]	
Log(Population2014)	0,133	0,057	0,095	0,030	0,030	
	[3.860]***	[1.069]	[2.418]*	[0.492]	[0.491]	
Log(totalrevenues2014)	-0,034	0,000	-0,016	0,016	0,019	
	[-1.521]	[0.004]	[-0.683]	[0.478]	[0.561]	
Log(FPM2014)	-0,044	-0,036	-0,050	-0,044	-0,049	-0.013
	[-2.575]*	[-1.845]	[-2.866]**	[-2.272]*	[-2.418]*	[-1.281]
Log(TotalTransfer Educ)	0,002	0,002	0,006	0,004	0,004	0.005
	[0.626]	[0.477]	[1.409]	[1.023]	[1.068]	[1.313]
Log(civil servants)		0,065		0,010	0,007	0.03
		[1.493]		[0.186]	[0.128]	[0.787]
Perc. of appointed positions		-0,050		-0,077	-0,078	-0.076
		[-1.390]		[-1.972]*	[-2.012]*	[-1.952]
Primary Health Care			-0,003	-0,002	-0,002	-0.002
			[-1.971]*	[-1.703]	[-1.649]	[-1.678]
Infant Mortality			0,000	0,000	0,000	0
			[0.088]	[-0.339]	[-0.472]	[-0.419]
IDEB			-0,109	-0,108	-0,097	-0.096
			[-4.157]***	[-3.951]***	[-3.235]**	[-3.194]**
Political Competition				0,000	0,000	0
				[-0.026]	[-0.043]	[-0.025]
Left				0,034	0,035	0.036
				[2.381]*	[2.400]*	[2.463]*
Right				-0,065	-0,065	-0.064
				[-2.757]**	[-2.741]**	[-2.668]**
Gini2010					0,061	0.07
					[0.108]	[0.125]
Var.Gini (2000-10)					0,766	0.769
					[1.510]	
Constant	-1,544	-2,055	-0,794	-1,075	-1,108	-1.252
	[-15.090]***	[-7.360]***	[-4.033]***	[-2.696]**	[-2.121]*	[-2.697]**
Number of Observations	5557	5524	5293	5084	5049	5049

*Source: Elaborated by the authors. *** p<0.01, ** p<0.05, * p<0.1.*

As for the political variables, findings were in line with the literature: right-wing governments were less likely to engage in collaboration through consortia (p<0.05), while left-wing governments were

more likely to participate (p<0.1) (Bel, Fageda, and Mur 2014). Political competition, measured by the difference between the winner and the runner-up, had no statistical effect.

In the case of health, only in one model, one of the variables of interest – single command – had statistical significance (p<0.1). However, it was not possible to show that local managerial capacity and social accountability influenced the municipalities' decision to participate in inter-municipal consortia. As for the variable population, its statistical significance (p<0.01) in a single model was consistent with the literature: the larger, the lower the chances of collaborating.

The financial variables show contradictory results: higher own revenues reduce local interest in consortia (p<0.1), corroborating the literature. However, the findings with respect to FPM transfers were different, being positive in two models (p<0.1). As in education, specific constitutional transfers to health had no statistical effect on the decision to cooperate.

Table 6 – Probability of influence from social accountability and local government capacity in deciding to participate in health consortia

	1	2	3	4	5	6
MFundHealth	-0.191	-0.2	0.377	-0.483	-0.447	-0.466
	[-0.283]	[-0.308]	[0.459]	[-0.634]	[-0.598]	[-0.630]
Single Command	-0.135	-0.075	0.047	0.066	0.063	0.064
	[-2.475]*	[-1.336]	[0.761]	[1.013]	[0.965]	[0.978]
MPlanHealth	0.214	0.195	0.039	-0.012	-0.014	-0.014
	[1.931]	[1.766]	[0.319]	[-0.093]	[-0.106]	[-0.106]
MCouncilHealth	0.576	0.612	0.350	0.527	0.485	0.485
	[1.461]	[1.595]	[0.900]	[1.367]	[1.258]	[1.260]
Log(Population2014)	-0.168	-0.016	0.034	0.066	0.059	
	[-5.807]***	[-0.381]	[0.970]	[1.341]	[1.186]	
Log(totalrevenues2014)	0.046	-0.002	-0.077	-0.080	-0.080	
	[1.710]	[-0.060]	[-2.500]*	[-2.507]*	[-2.416]*	
Log(FPM2014)	0.040	0.005	0.060	0.044	0.049	-0.001
	[2.032]*	[0.293]	[2.311]*	[1.763]	[1.728]	[-0.195]
Log(Transfer Total Health)	0.003	0.002	-0.003	-0.003	-0.003	-0.003
	[1.009]	[0.908]	[-0.975]	[-0.915]	[-0.865]	[-1.006]
Log(civil servants)		-0.237		-0.092	-0.092	-0.078
		[-7.442]***		[-2.378]*	[-2.336]*	[-2.688]**
Perc. of appointed positions		-0.340		-0.236	-0.238	-0.245
		[-13.051]***		[-8.313]***	[-8.332]***	[-8.595]***
Primary Health Care			0.004	0.004	0.004	0.004
			[3.627]***	[3.357]***	[3.554]***	[3.469]***
Infant Mortality			-0.003	-0.002	-0.002	-0.002
			[-2.581]**	[-1.801]	[-1.780]	[-1.816]
IDEB			0.529	0.512	0.513	0.508
			[27.265]***	[25.394]***	[23.259]***	[23.301]***
Political Competition				0.003	0.003	0.003
				[1.368]	[1.468]	[1.442]
Left				-0.011	-0.008	-0.008
				[-1.030]	[-0.786]	[-0.786]

Right				-0.049	-0.048	-0.05
				[-3.223]**	[-3.169]**	[-3.256]**
Gini2010					0.677	0.71
					[1.775]	[1.866]
Var.Gini (2000-10)					-1.601	-1.616
					[-4.778]***	[-4.820]***
Constant	-0.388	0.173	-3.689	-2.811	-3.277	-3.369
	[-0.516]	[0.234]	[-4.091]***	[-3.450]***	[-3.903]***	[-4.132]***
Number of Observations	5563	5529	5297	5088	5050	5050

*Source: Elaborated by the authors. *** p<0.01, ** p<0.05, * p<0.1.*

The reality of the local bureaucracy matters, because the larger the number of civil servants, the less likely to collaborate was the municipality, which was statistically valid in three models. The same was observed in the percentage of appointed positions, i.e., more autonomy to appoint positions decreased the likelihood of the municipality to decide to participate in inter-municipal consortia.

Socioeconomic variables presented results that deserve a more detailed analysis. They showed that it would make more sense that the increase in infant mortality (negative relation) would generate more interest in collaborating than the expansion of primary health care (positive relation), considering that federal transfers guarantee the latter. Primary health care was statistically significant (p<0.01) in all models. A possible explanation lies in the federative design of the policy since the adherence to SUS requires participation in vertical arrangements of federative cooperation that, in turn, may influence inter-municipal and horizontal collaborative processes.

The same logic is applied to IDEB since a higher performance of this indicator is usually associated with municipalities with more technical capacity, which tends to reduce the interest for cooperation. However, the relation was positive and statistically significant (p<0.01) in all models. The variation of the Gini Index matters because the more income inequality has grown, the greater its influence on engaging in an inter-municipal consortium, corroborating the literature (Hawkins, 2017; Lubell, Schneider, Scholtz, and Mete 2002).

As for the political variables, political competition and government led by left-wing parties do not explain the decision to engage in consortia. The association with this ideology is negative. However, right-wing parties are less aligned with the practice of consortia (p<0.05), because municipalities led by those parties presented less likely to choose such collaboration.

In sanitation, state capacity (municipal plan) and social accountability (municipal council) were statistically significant and positive (p<0.01) in all models. The variable MPlanSanitation may expand its explanatory potential because from 2018 on, municipalities were required to produce their plans in order to receive federal resources. The existence of the municipal fund and single command did not explain the decision to cooperate. The population is positively associated in all models, and statistically significant in two, which contradicts literature that argues that population growth inhibits participation in intergovernmental partnerships.

Table 7 – Probability of social accountability and local government capacity of influence in deciding to participate in sanitation consortia

	1	2	3	4	5	6
MFundSanitation	0.003	0.009	-0.005	-0.022	-0.007	-0.009
	[0.029]	[0.088]	[-0.042]	[-0.204]	[-0.063]	[-0.083]
Single Command	-0.129	-0.129	-0.183	-0.223	-0.226	-0.227
	[-0.746]	[-0.746]	[-1.025]	[-1.196]	[-1.209]	[-1.214]
MPlanSanitation	0.189	0.191	0.214	0.210	0.201	0.196
	[3.686]***	[3.696]***	[3.959]***	[3.802]***	[3.636]***	[3.538]***
MCouncilSanitation	0.320	0.324	0.348	0.346	0.327	0.330
	[5.146]***	[5.196]***	[5.427]***	[5.298]***	[4.988]***	[5.043]***
Log(Population2014)	0.084	0.085	0.076	0.081	0.070	
	[2.780]**	[1.722]	[1.979]*	[1.557]	[1.345]	
Log(totalrevenues2014)	-0.061	-0.062	-0.054	-0.056	-0.064	
	[-2.427]*	[-2.119]*	[-2.099]*	[-1.896]	[-2.102]*	
Log(FPM2014)	0.017	0.017	0.013	0.012	0.028	0.000
	[0.837]	[0.819]	[0.682]	[0.632]	[1.503]	[0.111]
Log(Transfer Total Sanitation)	0.003	0.003	0.006	0.005	0.006	0.006
	[0.529]	[0.497]	[0.989]	[0.879]	[0.928]	[0.980]
Log(civil servants)		0.000		-0.020	0.011	0.037
		[0.010]		[-0.473]	[0.245]	[1.104]
Percentage of appointed positions		0.006		-0.011	-0.010	-0.015
		[0.200]		[-0.322]	[-0.308]	[-0.446]
Primary Health Care			0.000	0.000	0.000	0.000
			[-0.007]	[-0.018]	[-0.219]	[-0.349]
Infant Mortality			-0.001	-0.001	-0.001	-0.001
			[-0.784]	[-0.444]	[-0.407]	[-0.413]
IDEB			-0.043	-0.041	-0.066	-0.069
			[-1.970]*	[-1.783]	[-2.631]**	[-2.746]**
Political Competition				-0.001	-0.001	-0.001
				[-0.419]	[-0.377]	[-0.420]
Left				0.006	0.005	0.006
				[0.455]	[0.452]	[0.497]
Right				-0.036	-0.036	-0.037
				[-1.891]	[-1.930]	[-1.956]
Gini2010					-1.594	-1.569
					[-3.507]***	[-3.464]***
Var.Gini (2000-10)					1.058	1.036
					[2.525]*	[2.485]*
Constant	-1.260	-1.258	-1.035	-0.922	-0.105	-0.278
	[-20.041]***	[-5.197]***	[-6.288]***	[-2.705]**	[-0.248]	[-0.720]
Number of Observations	5561	5527	5297	5087	5052	

*Source: Elaborated by the authors. *** p<0.01, ** p<0.05, * p<0.1.*

In the variable own revenue, it was possible to observe that higher levels of tax collection reduced the likelihood to collaborate ($p<0.1$ in four models). Intergovernmental transfers (FPM and other agreements between government levels) were not statistically relevant. The results were similar for municipal bureaucracy (server log and percentage of appointed positions in the total personnel). As for socioeconomic indicators, primary health care and infant mortality are not associated with the decision to participate in inter-municipal consortia. IDEB performance is associated in two models ($p<0.05$ and $p<0.1$), and showed a negative relation, i.e., lower performance induces municipalities to search for inter-municipal collaboration. Gini index showed a coherent association: the greater the income inequality, the greater the chance of seeking consortium. Finally, none of the political variables were able to explain the likelihood of inter-municipal consortia in the area of sanitation.

5. Discussion

There was a robust evolution of inter-municipal consortia in Brazil since 2005, when the law on public consortia was enacted. In addition, the subsequent regulations and complementary legislation encouraged this type of collaboration as a mechanism for planning, providing, and monitoring public services. This is the case with the National Sanitation Plan (2007), the National Solid Waste Policy (2010), and the National Urban Mobility Policy (2012). As observed with Law 8080/1990 that created SUS, the opportunities created by the Brazilian law on consortia resulted in adaptive measures in each area of public policies.

The argument put forward in this article is that if consortia produce economic, administrative, and managerial gains for the municipalities, these factors individually should be considered to influence the decision to engage in these cooperative arrangements. The municipality's decision to seek partnerships to gain scale in providing services or compensate administrative needs would be – not surprisingly – associated with the reality of its management capabilities. This expectation is reinforced by the expressive number of municipal plans, councils, funds, and single command of the sector, in the three policy areas analyzed. Indeed, the literature shows that these elements are not secondary (Wolman, 2008; Andrew, 2009; Bel and Warner, 2016).

For scholars, municipalities with greater institutional capacity are less likely to seek cooperation, as transaction costs tend to increase (Lubell et al. 2002; Cravacuore and Chacon, 2016; Rodríguez-Oreggia and Tuirán, 2006; Grin, 2021). Building state capacity to support municipal obligations is crucial (Lackey, Freshwater, and Rupasingha, 2002; Teles, 2016). Technical management matters as a factor of cooperation (Bel and Warner, 2016; Brown and Potoski, 2003; Hefetz, Warner and Vigoda-Gadot, 2012), as it helps to overcome difficulties (Hefetz, Warner, and Vigoda-Gadot 2012, 2015; Nelson and Svara, 2012; Stoker 2009; Bryson et al. 2014; Teles 2016).

According to Meza et al. (2019), poorly qualified public management, especially in small municipalities, is both an "invitation" and an obstacle to establish consortia. The lack of "managerial capital" humpers the development of these arrangements, considering that political will is not sufficient when these resources are not in place. Coutinho (2006) highlights that the establishment and preparation of technical personnel to work in partnerships such as inter-municipal consortia are vital measures to strengthen planning, regulating, and monitoring within these initiatives, as well as

expand the effectiveness of policies implemented in cooperation. Inter-municipal cooperation seeks to expand the supply of services to overcome managerial and financial needs (Silvestre et al. 2019; Grin, Bergues, and Abrucio, 2017).

Caldas and Cherubine (2013) advocate the importance of resource management and flow to guarantee the implementation of planned activities. The quest for improvement in public management is one of the drivers for municipal efforts toward cooperation and makes of managerial quality an important agenda for public consortia (Laczyinski and Abrucio, 2013; Laczyinski and Teixeira, 2011). Many consortia do not manage to develop due to administrative weaknesses.

For Meza et al. (2019), the reciprocity between the existence of a professional bureaucracy that supports this process regionally and the technical support in the municipalities is essential. In other words, it would be a paradox to assume the possibility of creating high-quality inter-municipal bureaucracies if there is no state capacity in the municipalities participating in the consortia. Planning before drafting an agreement for a partnership such as a public consortium avoids ineffectiveness of future arrangements, but this process is still a challenge for most municipal managers (Cruz, Araújo and Batista, 2011; Dieguez, 2011; Coutinho, 2006).

However, of the three policies analyzed in this study, only the municipal plan of sanitation showed relevant to influence municipalities to engage in consortia. In the areas of education and health, none of the variables of interest of state capacity – single command, municipal plan, and fund – had an effect in stimulating the participation in these collaborative arrangements. The findings suggest little empirical evidence for the first hypothesis connecting state capacity to the participation in inter-municipal consortia. In other words, it is unlikely that inter-municipal cooperation is stimulated by factors that are not needed locally, which reinforces the notion of managerial fragility in municipalities.

The findings of this research indicate that the suggestions found in the literature about the potential of cooperation to produce higher-quality public management have a weak side. The research showed that management in municipalities has little relevance as a factor associated with local decision to participate in inter-municipal consortia. Except for the variable related to the municipal plan of sanitation, there is a paradox in the relationship between seeking better inter-municipal management and support managerial excellence of local bureaucracies, at least in the policy areas studied. It was possible to observe that municipal plans and funds, as well as single command over public policy, do not sufficiently explain the local decision to be part of inter-municipal consortia.

As for the second issue observed in the literature, it explores the challenge of broadening civil society's participation in intergovernmental collaborations. The second research hypothesis stated that municipal social accountability instruments in education, health, and sanitation policies are associated with the municipality's decision to participate in inter-municipal consortia. The rationale around the hypothesis is that it would be inconsistent to ask that these arrangements regionally stimulate social accountability if this issue is not an equally important factor in municipal decision-making.

The 2005 Brazilian legislation broadens the publicity of actions taken within these collaborative arrangements, which gives society greater control, and leaders are more responsive and accountable, which increases transparency and oversight over their decisions (IPEA, 2010). Therefore, there is room for greater scrutiny from society toward the activities in these collaborative mechanisms (Prates, 2010). However, one of the major weaknesses of consortia is that they are not open to social participation (Laczynski, 2012; Machado apud Coutinho (2006).

The law on public consortia in Brazil does not define formal spaces for civil society to participate, and it is the responsibility of each initiative as to whether to create these channels. Public consortia are an innovation in horizontal cooperation, but "their essentially monothematic character and the absence of community participation limit them as an alternative to effectively cooperative and broadly democratic management" (Rolnik and Somekh, 2000: 84).

It is necessary to mobilize society for territorial associations and disseminate information that broadens the awareness of territorial dynamics on public policies. Democratizing management in consortia requires the inclusion of social actors and evaluating whether there are opportunities for deliberation and social accountability. In addition, it is crucial to verify if the relationship between consortia and other means of social participation, such as the Municipal Councils of public policies, exercise influence in municipalities' decisions (Dieguez, 2011; Grin and Fernandes, 2022).

Except for sanitation, where policy councils proved to be relevant, the importance of these councils in influencing municipal decisions cannot be generalized. The literature emphasizes the need to improve social accountability in these collaborative experiences but does not consider whether this factor pushes municipalities to engage in inter-municipal consortia. The law provides that social accountability mechanisms should be implemented as one of its bases. Among the legal conditions to validate contracts to provide basic sanitation services in a consortium, there is one regarding social accountability instruments in planning, regulating, and monitoring services. In addition, social accountability may include collegiate advisory bodies in subnational entities.

Indeed, the literature states that inter-municipal management should value social participation, but in the analyzed policies, except for sanitation, this factor is not associated with local decisions. This is the second paradox: management at the regional level is asked to value social accountability, but this variable at the local level is little considered when a municipality decides to engage in a public consortium. That is not to say that social accountability through policy advice is not a reality at the municipal level, but rather that it does not explain the decision to participate in consortia.

This research showed the need to understand better the local effect of social accountability in the process of creating and implementing inter-municipal consortia. Without this analysis, the arguments suggested in literature may seem like good prescriptions. However, they are not robustly grounded in the reality of local public policies, at least in the areas of health, sanitation, and education analyzed. There is a paradox related to defending the need to improve accountability and social participation in consortia. In contrast, the same issue at the local level is not a relevant factor influencing municipalities to engage in this type of association.

As already discussed, the local factors that affect the decision to collaborate with others. In the analyzed policies, although with different sectoral impacts, demographic and socioeconomic factors were the most relevant (Feiock and Scholtz, 2009; Bae and Feiock, 2012). Indeed, population, economic and social heterogeneity among municipalities, are factors that affect the propensity for inter-municipal collaboration (Bel and Warner 2016; Feiock 2007; Frug 2001; Lowery 2000; Warner and Hefetz 2002).

With different weights in the three areas, municipal financial management matters in choosing to be part of a consortium. Municipal dependency on federal transfers measured by the FPM, although not always in line with literature arguments, influences the formation of consortia (Agranoff and Radin, 2014; Feiock and Scholz, 2009; Kübler & Pagano, 2012; Nascimento, Alex Bruno Ferreira Marques et al., 2021; Miller and Lee, 2011; Rodríguez-Oreggia and Tuirán, 2006; Hulst and Van Montfort, 2012). Own revenue generation is also an influence on municipal engagement in consortia. However, it is important to consider that higher rates of own revenue in the three areas tend to reduce the likelihood that municipalities will work in partnership (Bel and Warner, 2016; Feiock, 2007; Feiock and Scholz, 2009; Rodríguez-Oreggia and Tuirán, 2006; Wolman 2012).

Regarding political institutions (Feiock 2007; Brown and Potoski 2003; Hefetz, Warner, and Vigoda-Gadot, 2012; Hawkins, 2017), the main finding is the importance of the mayor's party-political ideology. Left-wing parties are more likely to collaborate in consortia than right-wing parties, as evidenced in the data analysis.

Conclusion

This article analyzed two theoretical arguments that the Brazilian literature presents as basic in the creation and operation of inter-municipal consortia. The two hypotheses presented were not supported, especially in the cases of health and education policies. The rationale of the arguments analyzed in this study is that, if the literature emphasizes that consortia should improve their technical capacities and social accountability, it would be reasonable to assume that these same aspects were central when a municipality decides to engage in inter-municipal consortia. It would be illogical to defend the importance of management and social accountability at the regional level if they have no influence in the municipality's decision-making process regarding entering regional collaboration.

The hypotheses tested in this research were based on the arguments retrieved from the Brazilian literature on inter-municipal consortia and, at least for the policy areas discussed, they were not supported empirically. The variables that explain the search for inter-municipal cooperation come from demographic, socioeconomic, financial, or political dimensions, except for basic sanitation, where one variable of state capacity (municipal plans) and a variable regarding social accountability, were considered relevant.

Considering the areas analyzed, the variables that stimulate consortia differ, so that sectoral dynamics in each policy could help explain this phenomenon. It would be necessary to investigate further

why in sanitation, the less nationally regulated of the three policy areas researched, planning and city council explain the choice for entering a consortium. One clue to this may be in the sectoral legislation, the National Sanitation Policy (2007) and the National Solid Waste Law (2010), which defined the transfer of voluntary federal transfers only to municipalities that are working in this type of cooperation.

In health, probably its institutional design and the Organic Law of 1990, which provide for forms of federative cooperation at various levels, are more important than local variables of state capacity and social accountability. This argument deserves further investigation since, in SUS, the municipal councils are mandatory for the municipalities to be able to receive federal funds. However, SUS legislation is silent regarding regionalized and out-of-municipal-territory social accountability strategies. In education, the historical duplicity of networks throughout the different levels of government, as well as the greater autonomy for municipal spending, appear to be more significant in inhibiting the establishment of cooperative arrangements. In any case, the institutional design of public policies can work as an alternative analytical lens to understand if they induce the formation of inter-municipal consortia. Sectoral policy design can explain local choices more than state capacities and social accountability (Grin and Fernandes, 2022).

In the cases of health and education, it is possible that municipal plans, funds, and councils are relevant for compliance with federal policy rules, but have less weight as inducers of horizontal cooperation. Sanitation is the area with the greatest need for public investment. Sector policies have not kept pace with population growth in urban areas. The lack of sewage systems reached 44.8% of the municipalities and was treated in only 28.5% of the municipalities (Atlas do Desenvolvimento, 2013). This reality may have stimulated municipal planning to seek cooperative solutions through consortia.

As for social accountability, an alternative hypothesis to consider is that public policy councils matter more where their operation has less impact on local power dynamics. Less divergence between government and participatory instances can increase the chances of the establishment of such councils, not without the cost of reducing their effectiveness. Therefore, rather than a paradox, it would be the lack of political density of the councils that would explain its low effect on the municipal decision to engage in a public consortium.

In short, it is a paradox not to consider how municipal management and social accountability operate and influence locally while demanding higher administrative quality and more social accountability in inter-municipal consortia. This research poses the problem and raises hypotheses for further studies. Scientific knowledge is produced by proposing new approaches or by indicating the limits of previous explanations. The paradox analyzed in this study may be a good starting point to understand better if Brazilian inter-municipal consortia are influenced by state capacities and social accountability in the municipalities. New research could expand the arguments proposed here to other public policy sectors, as well as expand studies compared with other countries, whether they are federations or not. On the other hand, this research has limits such as the non-application of an econometric panel model, which could generate more robust results to analyze the question and the proposed hypotheses.

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Appendix A

VIF Analysis

In this paper, we delve into the intricacies of inter-municipal public consortia in Brazil, specifically exploring the paradoxes that arise in their functioning. As a crucial step in ensuring the robustness of our statistical models, we employ Variance Inflation Factor (VIF) analysis to examine and address the issue of multicollinearity. By employing this method, we aim to enhance the precision of our findings, providing a more nuanced understanding of the complex dynamics surrounding inter-municipal cooperation in the Brazilian context.

Multicollinearity Analysis.

- In the first step, we test for multicollinearity regarding the education sector regression.

Linear regression

educ	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
feduc	-.009	.007	-1.28	.2	-.023	.005	
comandoeduc	-.005	.007	-0.67	.501	-.019	.01	
PME	.009	.007	1.18	.239	-.006	.023	
CME	.006	.01	0.58	.56	-.014	.027	
lpop2014	.004	.008	0.54	.59	-.011	.019	
ltotalreceitas2014	.004	.004	0.92	.357	-.004	.012	
lFPM2014	-.008	.004	-1.79	.073	-.016	.001	*
lneductotal	.001	0	1.08	.282	0	.002	
lfuncionario	0	.007	0.02	.987	-.014	.014	
fcomissionado	-.01	.005	-1.95	.051	-.02	0	*
atencaobasica	0	0	-1.48	.138	-.001	0	
obitosinfant	0	0	-0.11	.91	0	0	
ideb	-.013	.004	-3.24	.001	-.02	-.005	***
competicaopolitica	0	0	-0.16	.876	-.001	.001	
esquerda	.005	.002	2.27	.023	.001	.009	**
direita	-.008	.003	-2.68	.007	-.013	-.002	***
gini2010	.001	.074	0.02	.988	-.143	.146	
difgini	.094	.063	1.49	.136	-.029	.218	
Constant	.13	.071	1.83	.068	-.01	.269	*

Mean dependent var	0.068	SD dependent var	0.252
R-squared	0.012	Number of obs	5049.000
F-test	3.301	Prob > F	0.000
Akaike crit. (AIC)	370.084	Bayesian crit. (BIC)	494.095

*** p<.01, ** p<.05, * p<.1

Variance inflation factor

	VIF	1/VIF
ltotalreceitas2014	73.734	.014
lpop2014	69.449	.014
lFPM2014	30.126	.033
lneductotal	4.33	.231
lfuncionario	3.431	.291
gini2010	1.733	.577
ideb	1.428	.7
obitosinfant	1.406	.711
esquerda	1.367	.732
difgini	1.315	.761
atencaobasica	1.294	.773
fcomissionado	1.116	.896
comandoeduc	1.084	.923
PME	1.083	.923
CME	1.053	.95
feduc	1.052	.95
direita	1.042	.96
competicaopolitica	1.033	.968
Mean VIF	10.949	.

- Multicollinearity tests indicate that the variables ltotalreceitas2014, lpop2014, and lFPM2014 cannot be dismissed as exhibiting multicollinearity. Consequently, we proceed to conduct regression analyses to discern which among these variables should be retained in the regression models, facilitating the identification of the most influential factors in our analysis.

Linear regression

ltotalreceitas2014	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
lpop2014	1.338	.073	18.24	0	1.195	1.482	***
lFPM2014	.269	.043	6.24	0	.184	.353	***
feduc	-.047	.021	-2.23	.025	-.089	-.006	**
comandoeduc	.008	.019	0.40	.689	-.029	.044	
PME	-.017	.019	-0.87	.383	-.054	.021	
CME	.05	.02	2.54	.011	.011	.088	**
lneductotal	.004	.001	2.65	.008	.001	.006	***
lfuncionario	-.578	.051	-11.26	0	-.679	-.478	***
fcomissionado	.081	.014	5.89	0	.054	.107	***
atencaobasica	.003	.001	5.30	0	.002	.004	***
obitosinfant	0	0	0.37	.711	-.001	.001	
ideb	.032	.01	3.27	.001	.013	.05	***
competicaopolitica	.001	.001	1.33	.185	-.001	.003	

esquerda	-.012	.005	-2.43	.015	-.021	-.002	**
direita	.003	.007	0.42	.671	-.011	.017	
gini2010	-.575	.206	-2.79	.005	-.979	-.171	***
difgini	.281	.15	1.87	.062	-.014	.575	*
Constant	3.967	.374	10.60	0	3.233	4.7	***

Mean dependent var	15.217	SD dependent var	5.894
R-squared	0.986	Number of obs	5052.000
F-test	26569.091	Prob > F	0.000
Akaike crit. (AIC)	10568.984	Bayesian crit. (BIC)	10686.480

*** p<.01, ** p<.05, * p<.1

Linear regression

lpop2014	**Coef.**	**St.Err.**	**t-value**	**p-value**	**[95% Conf**	**Interval]**	**Sig**
lFPM2014	.547	.008	65.97	0	.53	.563	***
feduc	-.018	.019	-0.95	.343	-.056	.02	
comandoeduc	.024	.018	1.32	.185	-.012	.06	
PME	-.011	.018	-0.62	.533	-.047	.024	
CME	.039	.02	1.92	.055	-.001	.079	*
lneductotal	.012	.003	4.96	0	.008	.017	***
lfuncionario	.645	.015	41.96	0	.614	.675	***
fcomissionado	.011	.015	0.76	.446	-.018	.041	
atencaobasica	-.002	.001	-3.83	0	-.003	-.001	***
obitosinfant	.001	0	2.18	.03	0	.001	**
ideb	.016	.01	1.60	.111	-.004	.036	
competicaopolitica	0	0	0.14	.888	-.001	.001	
esquerda	.015	.005	2.87	.004	.005	.025	***
direita	.006	.009	0.65	.519	-.012	.023	
gini2010	.452	.215	2.11	.035	.031	.872	**
difgini	-.266	.191	-1.39	.165	-.641	.109	
Constant	-4.143	.182	-22.71	0	-4.5	-3.785	***

Mean dependent var	8.346	SD dependent var	3.354
R-squared	0.963	Number of obs	5052.000
F-test	6552.004	Prob > F	0.000
Akaike crit. (AIC)	10002.381	Bayesian crit. (BIC)	10113.349

*** p<.01, ** p<.05, * p<.1

Linear regression

lFPM2014	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
feduc	.001	.081	0.01	.99	-.158	.16	
comandoeduc	.081	.079	1.03	.304	-.073	.235	
PME	-.153	.078	-1.97	.049	-.306	-.001	**
CME	.146	.123	1.19	.234	-.094	.387	
lneductotal	.333	.004	78.57	0	.324	.341	***
lfuncionario	-.086	.059	-1.45	.146	-.201	.03	
fcomissionado	.202	.058	3.48	.001	.088	.316	***
atencaobasica	.007	.002	3.51	0	.003	.012	***
obitosinfant	.002	.002	1.15	.25	-.001	.005	
ideb	-.402	.045	-8.98	0	-.49	-.314	***
competicaopolitica	.008	.003	3.20	.001	.003	.013	***
esquerda	-.025	.021	-1.20	.229	-.065	.016	
direita	-.025	.03	-0.84	.402	-.083	.033	
gini2010	-.928	.754	-1.23	.219	-2.406	.55	
difgini	.417	.725	0.57	.566	-1.005	1.838	
Constant	6.24	.634	9.84	0	4.997	7.484	***

Mean dependent var	14.105	SD dependent var	5.491
R-squared	0.758	Number of obs	5052.000
F-test	474.216	Prob > F	0.000
Akaike crit. (AIC)	24413.278	Bayesian crit. (BIC)	24517.719

*** p<.01, ** p<.05, * p<.1

- The outcomes of our regression analyses distinctly highlight that among the variables under consideration—ltotalreceitas2014, lpop2014, and lFPM2014—lFPM2014 emerges as a notably influential factor. We rerun the analysis only with lFPM2014 as independent variable. VIF results reject multicollinearity.

Linear regression

educ	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
lFPM2014	-.002	.001	-1.25	.21	-.004	.001	
feduc	-.009	.007	-1.34	.181	-.023	.004	
comandoeduc	-.005	.007	-0.64	.523	-.019	.01	
PME	.008	.007	1.15	.249	-.006	.023	
CME	.007	.01	0.64	.525	-.014	.027	
lneductotal	.001	0	1.34	.182	0	.002	
lfuncionario	.004	.005	0.76	.45	-.006	.014	
fcomissionado	-.01	.005	-1.88	.06	-.02	0	*

atencaobasica	0	0	-1.52	.13	-.001	0	
obitosinfant	0	0	-0.07	.944	0	0	
ideb	-.012	.004	-3.17	.002	-.02	-.005	***
competicaopolitica	0	0	-0.14	.89	-.001	.001	
esquerda	.005	.002	2.31	.021	.001	.009	**
direita	-.007	.003	-2.65	.008	-.013	-.002	***
gini2010	.003	.074	0.04	.966	-.141	.147	
difgini	.093	.063	1.47	.14	-.031	.216	
Constant	.107	.062	1.72	.085	-.015	.228	*

Mean dependent var	0.068	SD dependent var	0.252
R-squared	0.012	Number of obs	5049.000
F-test	3.585	Prob > F	0.000
Akaike crit. (AIC)	369.596	Bayesian crit. (BIC)	480.554

*** p<.01, ** p<.05, * p<.1

Variance inflation factor

	VIF	**1/VIF**
lneductotal	4.246	.236
lFPM2014	4.128	.242
lfuncionario	1.988	.503
gini2010	1.728	.579
ideb	1.425	.702
obitosinfant	1.405	.712
esquerda	1.363	.734
difgini	1.313	.761
atencaobasica	1.283	.779
fcomissionado	1.109	.902
comandoeduc	1.083	.923
PME	1.083	.923
CME	1.052	.951
feduc	1.051	.952
direita	1.042	.96
competicaopolitica	1.033	.968
Mean VIF	1.646	.

- In a second step we redo the analysis for the health regressions. we replicate the analysis specifically for the health-related regressions. The findings mirror those from the initial analysis, reaffirming the prominence of lFPM2014.

Linear regression

saude	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
fsaude	-.154	.248	-0.62	.535	-.641	.333	
comandosaude	.02	.022	0.93	.351	-.023	.064	
PMS	-.002	.042	-0.05	.96	-.085	.08	
CMS	.161	.115	1.39	.164	-.065	.387	
lpop2014	.015	.014	1.11	.268	-.012	.043	
ltotalreceitas2014	-.024	.007	-3.30	.001	-.038	-.01	***
lFPM2014	.016	.007	2.19	.029	.002	.03	**
lntotalsaude	-.001	.001	-0.87	.386	-.003	.001	
lfuncionario	-.033	.012	-2.64	.008	-.057	-.008	***
fcomissionado	-.082	.009	-8.75	0	-.101	-.064	***
atencaobasica	.001	0	3.63	0	.001	.002	***
obitosinfant	0	0	-2.82	.005	-.001	0	***
ideb	.18	.007	27.47	0	.168	.193	***
competicaopolitica	.001	.001	1.69	.091	0	.002	*
esquerda	-.003	.004	-0.87	.385	-.01	.004	
direita	-.017	.005	-3.25	.001	-.027	-.007	***
gini2010	.203	.129	1.57	.116	-.05	.456	
difgini	-.526	.112	-4.69	0	-.745	-.306	***
Constant	-.617	.277	-2.23	.026	-1.161	-.074	**

Mean dependent var	0.496	SD dependent var	0.500
R-squared	0.194	Number of obs	5050.000
F-test	82.724	Prob > F	0.000
Akaike crit. (AIC)	6276.756	Bayesian crit. (BIC)	6400.772

*** p<.01, ** p<.05, * p<.1

Variance inflation factor

	VIF	1/VIF
ltotalreceitas2014	73.445	.014
lpop2014	69.413	.014
lFPM2014	29.425	.034
lfuncionario	3.387	.295
lntotalsaude	2.201	.454
gini2010	1.722	.581
obitosinfant	1.407	.711
esquerda	1.363	.734
ideb	1.331	.751
difgini	1.315	.761

atencaobasica	1.289	.776
fcomissionado	1.109	.902
CMS	1.064	.94
fsaude	1.062	.941
comandosaude	1.046	.956
direita	1.039	.962
competicaopolitica	1.033	.968
PMS	1.013	.987
Mean VIF	10.759	.

Linear regression

saude	**Coef.**	**St.Err.**	**t-value**	**p-value**	**[95% Conf**	**Interval]**	**Sig**
fsaude	-.16	.244	-0.66	.512	-.637	.318	
comandosaude	.021	.022	0.94	.348	-.023	.064	
PMS	-.001	.042	-0.03	.979	-.084	.081	
CMS	.16	.114	1.40	.161	-.064	.384	
lFPM2014	0	.002	-0.24	.811	-.004	.003	
lntotalsaude	-.001	.001	-1.00	.318	-.003	.001	
lfuncionario	-.03	.009	-3.19	.001	-.048	-.011	***
fcomissionado	-.084	.009	-8.99	0	-.103	-.066	***
atencaobasica	.001	0	3.55	0	.001	.002	***
obitosinfant	0	0	-2.91	.004	-.001	0	***
ideb	.179	.007	27.34	0	.166	.192	***
competicaopolitica	.001	.001	1.63	.103	0	.002	
esquerda	-.003	.004	-0.87	.382	-.01	.004	
direita	-.017	.005	-3.30	.001	-.027	-.007	***
gini2010	.21	.129	1.63	.104	-.043	.464	
difgini	-.528	.112	-4.71	0	-.748	-.308	***
Constant	-.637	.268	-2.38	.017	-1.163	-.112	**

Mean dependent var	0.496	SD dependent var	0.500
R-squared	0.193	Number of obs	5050.000
F-test	92.481	Prob > F	0.000
Akaike crit. (AIC)	6282.609	Bayesian crit. (BIC)	6393.570

*** p<.01, ** p<.05, * p<.1

Variance inflation factor

	VIF	1/VIF
lntotalsaude	2.186	.457
lFPM2014	2.133	.469
lfuncionario	1.94	.515
gini2010	1.716	.583
obitosinfant	1.406	.711
esquerda	1.359	.736
ideb	1.325	.754
difgini	1.313	.761
atencaobasica	1.277	.783
fcomissionado	1.102	.908
CMS	1.064	.94
fsaude	1.062	.941
comandosaude	1.045	.957
direita	1.039	.962
competicaopolitica	1.033	.968
PMS	1.013	.987
Mean VIF	1.376	.

- Concluding our analysis, we extend our scrutiny to the sanitation domain by subjecting it to the same tests. The results of this examination reveal a parallel pattern, affirming the persistent influence of lFPM2014 in the realm of sanitation regressions.

Linear regression

saneamento	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
fsaneamento	.002	.026	0.08	.934	-.048	.052	
comandosaneamento	-.038	.029	-1.34	.181	-.095	.018	
PMSANEAMENTO	.043	.012	3.48	0	.019	.068	***
CMSANEAMENTO	.081	.017	4.68	0	.047	.115	***
lpop2014	.02	.013	1.55	.121	-.005	.046	
ltotalreceitas2014	-.015	.008	-1.88	.061	-.032	.001	*
lFPM2014	.005	.003	1.80	.072	0	.009	*
lFSB2014	.001	.001	0.89	.372	-.001	.004	
atencaobasica	0	0	-0.17	.866	-.001	0	
obitosinfant	0	0	-0.46	.643	-.001	0	
ideb	-.013	.005	-2.64	.008	-.023	-.003	***
lfuncionario	-.002	.009	-0.25	.802	-.02	.016	
fcomissionado	-.002	.007	-0.32	.749	-.015	.011	
competicaopolitica	0	0	-0.55	.586	-.001	0	
esquerda	.001	.003	0.38	.702	-.004	.006	

direita	-.007	.004	-1.98	.047	-.014	0	**
gini2010	-.333	.091	-3.65	0	-.511	-.154	***
difgini	.218	.082	2.67	.008	.058	.379	***
Constant	.37	.091	4.09	0	.193	.548	***

Mean dependent var	0.126	SD dependent var	0.332
R-squared	0.019	Number of obs	5052.000
F-test	4.378	Prob > F	0.000
Akaike crit. (AIC)	3147.873	Bayesian crit. (BIC)	3271.896

*** p<.01, ** p<.05, * p<.1

Variance inflation factor

	VIF	**1/VIF**
ltotalreceitas2014	73.668	.014
lpop2014	69.42	.014
lFPM2014	29.053	.034
lfuncionario	3.346	.299
gini2010	1.72	.581
obitosinfant	1.409	.71
ideb	1.383	.723
esquerda	1.362	.734
difgini	1.315	.76
atencaobasica	1.288	.776
PMSANEAMENTO	1.229	.813
CMSANEAMENTO	1.201	.833
fcomissionado	1.109	.902
fsaneamento	1.051	.951
lFSB2014	1.045	.957
direita	1.045	.957
competicaopolitica	1.033	.968
comandosaneamento	1.003	.997
Mean VIF	10.704	.

Linear regression

saneamento	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
fsaneamento	.002	.026	0.06	.949	-.049	.052	
comandosaneamento	-.038	.029	-1.33	.184	-.094	.018	
PMSANEAMENTO	.042	.012	3.41	.001	.018	.067	***
CMSANEAMENTO	.082	.017	4.74	0	.048	.116	***
lFPM2014	0	.001	0.16	.872	-.002	.002	
lFSB2014	.001	.001	0.94	.347	-.001	.004	
atencaobasica	0	0	-0.34	.732	-.001	0	
obitosinfant	0	0	-0.47	.636	-.001	0	
ideb	-.014	.005	-2.75	.006	-.024	-.004	***
lfuncionario	.006	.007	0.98	.328	-.006	.019	
fcomissionado	-.003	.007	-0.51	.608	-.016	.01	
competicaopolitica	0	0	-0.60	.546	-.001	0	
esquerda	.001	.003	0.45	.656	-.004	.006	
direita	-.007	.004	-2.00	.045	-.015	0	**
gini2010	-.324	.091	-3.56	0	-.502	-.146	***
difgini	.214	.082	2.62	.009	.054	.374	***
Constant	.31	.079	3.92	0	.155	.466	***

Mean dependent var	0.126	SD dependent var	0.332
R-squared	0.018	Number of obs	5052.000
F-test	4.598	Prob > F	0.000
Akaike crit. (AIC)	3149.090	Bayesian crit. (BIC)	3260.058

*** p<.01, ** p<.05, * p<.1

Variance inflation factor

	VIF	1/VIF
lfuncionario	1.902	.526
gini2010	1.715	.583
obitosinfant	1.409	.71
ideb	1.377	.726
esquerda	1.358	.736
difgini	1.314	.761
atencaobasica	1.276	.784
PMSANEAMENTO	1.228	.815
CMSANEAMENTO	1.2	.834
fcomissionado	1.101	.908
fsaneamento	1.051	.952
direita	1.044	.958

lFSB2014	1.043	.959
competicaopolitica	1.033	.968
lFPM2014	1.033	.968
comandosaneamento	1.003	.997
Mean VIF	1.255	.