



THE UNIVERSITY *of* EDINBURGH

## Edinburgh Research Explorer

# The myth of mayoral leadership in local government resource allocation

### Citation for published version:

Corrêa Gomes, R, Osborne, SP & Lisboa, E 2022, 'The myth of mayoral leadership in local government resource allocation: A multilevel analysis with Brazilian municipalities', *Journal of public administration research and theory*, vol. 32, no. 3, pp. 561-575. <https://doi.org/10.1093/jopart/muab049>

### Digital Object Identifier (DOI):

[10.1093/jopart/muab049](https://doi.org/10.1093/jopart/muab049)

### Link:

[Link to publication record in Edinburgh Research Explorer](#)

### Document Version:

Peer reviewed version

### Published In:

Journal of public administration research and theory

### Publisher Rights Statement:

This is a pre-copyedited, author-produced version of an article accepted for publication in Journal of Public Administration Research and Theory following peer review. The version of record Ricardo Corrêa Gomes, Stephen P Osborne, Erika Lisboa, The Myth of Mayoral Leadership in Local Government Resource Allocation: A Multilevel Analysis with Brazilian Municipalities, Journal of Public Administration Research and Theory, 2021;, muab049, <https://doi.org/10.1093/jopart/muab049> is available online at: <https://academic.oup.com/jpart/advance-article/doi/10.1093/jopart/muab049/6448439?searchresult=1>

### General rights

Copyright for the publications made accessible via the Edinburgh Research Explorer is retained by the author(s) and / or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights.

### Take down policy

The University of Edinburgh has made every reasonable effort to ensure that Edinburgh Research Explorer content complies with UK legislation. If you believe that the public display of this file breaches copyright please contact [openaccess@ed.ac.uk](mailto:openaccess@ed.ac.uk) providing details, and we will remove access to the work immediately and investigate your claim.



# **The Myth of Mayoral Leadership in Local Government Resource Allocation: a Multilevel Analysis with Brazilian Municipalities**

## **Abstract**

Resource allocation is paramount to local government strategic planning. There is, however, a gap in studies examining the determining factors of resource allocation decisions in the public sector. This study contributes to the public management literature by providing additional theories for explaining local government resource allocation in a very important sector in the local government context: educational services. Stakeholder theory provides insights into external influences as economic, political, and managerial types. Evidence comes from a panel dataset of large Brazilian municipalities (over 100,000 inhabitants) for the 2009-2016 period. Regression analysis provides empirical evidence that stakeholders can influence decisions about expenditure and investments in infrastructure. The findings challenge the assumption that mayors are at the apex of the local government hierarchy and make solitary decisions. The paper also contributes to strategic management theory, indicating that stakeholders are likely to shape local government resource allocation decisions, something that had not been considered as likely hitherto.

**Keywords:** stakeholder influences; resource allocation; multilevel regression analysis; local government; Brazil

## **1. Introduction**

The debate over the role of mayors and their responsibility for promoting progress and welfare in municipalities worldwide has been on the agenda for some time (Morgan & Watson, 1995; Salanick & Pfeffer, 1977). In some cases, mayors are the top protagonists and have the right to put his/her signature on laws that can change the lives of local people. In other cases, mayors do not have this power and assume a rather symbolic position, as seems to be the case in parliamentary countries. Mouritzen and Svara (2002) labeled a strong-mayor system as one in which mayors take primary responsibility for political and administrative decisions at the local level; Brazil, France, Italy, and Portugal are examples of such systems. Another structure is labeled the council-manager system, where the mayor assumes a more symbolic position that is in no way executive, leaving major political decisions to the council, and administrative decisions to the Chief Executive; such is the case in Sweden, Denmark, and Great Britain (Mouritzen & Svara, 2002). In strong-mayor systems,

the mayor is the protagonist who changes the city's destiny, is supported by secretariats, and is supervised by the legislature. Executive decisions, therefore, are the responsibility of just one person – the mayor, which indicates the leadership of this actor vis-à-vis other political figures. But is this so?

The literature on strategic planning in public organizations has emphasized resource allocation as being essential to performance (Bryson, 2018; Joyce, 2015). Due to the importance of resources, the literature has searched for explanations of how policymakers decide on resource allocation in government organizations (Holm, 2018; Salas-Velasco, 2020). Gallagher (1993) contributed to this idea by pointing out the asymmetric distance between politicians and society with regard to ideas of welfare. Since politicians are elected to make decisions on behalf of their constituents, some power asymmetry is to be expected. This situation occurs in those countries where mayors manage the whole of local government and are in charge of the most important decisions for the municipality. He or she is regarded as the most powerful person in the municipality. They believe they are charged with making the most important decisions in the municipality on behalf of their constituents. By looking at resource allocation, this article tries to shed light on how municipalities make decisions. We focus on decisions that are taken with regard to educational services, particularly those involving annual expenditure and infrastructure. We assume that besides the limitations of the legal framework and mayoral discretion, decisions on resource allocation are also shaped by stakeholder influences.

Stakeholder theory has been used to examine aspects of strategic management, and it started by focusing on business organizations (see Freeman, 1984). It has also been used by public management scholars, such as Bryson (1995) and Rainey and Steinbauer (1999), to examine elements of the strategic planning process (the former authors) and to explain the effectiveness of public agencies (the latter authors). Stakeholder influence has been used in

several local government situations (e.g., Godenhjelm & Johanson, 2018; Uddin *et al.*, 2019). In a systematic literature review of stakeholder influence and local government, Gomes *et al.* (2020) demonstrated the scarcity of studies on this subject. According to them, only one paper has dealt with this subject to date. The paper was a study of local fiscal distress in Israel where the author found empirical evidence of central government as a relevant stakeholder able to influence the allocation of financial resources (Carmeli, 2008). This fact is evidence of the novelty and relevance of our own study. We use stakeholder theory to challenge the idea that mayors have the leadership status required for taking the most important decisions. Our thesis is that mayors are responsible for putting their signature to laws (budgetary law, for instance), but that they are influenced by several external actors, other than central and regional governments.

In view of the theoretical context presented in the previous paragraph, this paper aims to shed light on our understanding of how local governments make decisions about resource allocation. Mayors are elected to take decisions for their constituencies, but there are conditions under which these decisions are taken (Simonsen, 2018). Another issue on which the mayor can use their discretion is the legal framework that guides the decisions they take (Minge, 1977). The management process in public organizations is limited by legal issues, which reduces the discretion mayors have for making decisions. Our thesis is that the a mayor's power to make decisions about resource allocation is shaped by other forces besides the legal framework and their own management discretion (O'Toole & Meier, 1999). These forces originate from stakeholder influences, and come from voters, other spheres of government, market forces, and other stakeholders (George *et al.*, 2019; Gomes *et al.*, 2010a). Therefore, our research question is, “What influence do external stakeholders have on resource allocation in local governments?”

We chose Brazil's elementary education services, for which municipalities are responsible according to the 1988 Federal Constitution, as the focus of our research. Brazil has the world's sixth largest population (212 million), located in 5,570 municipalities<sup>1</sup>, and with about 88% of Brazil's population living in urban and metropolitan areas. Brazil adopts what Mouritzen and Svara (2002) called a "strong mayor" system in its administrative structure. Mayors are elected for a four-year term, and have the right to be consecutively reelected once. According to the 1988 Federal Constitution, municipalities are autonomous when it comes to administering municipal services and making the most appropriate decisions, such as creating regulatory bodies to supervise the spending of money and establishing the rules for regulating service provision by public and private schools. We also chose educational services because local authorities have less discretion over resource allocation and service delivery in other services, such as health, which is controlled by the federal and state governments (Brasil, 1992). Because of this situation, we chose elementary education, which is regarded in the literature as leverage for economic development (Yin, 2021).

We collected data from two consecutive political mandates (2009-2016) and in municipalities with more than 100,000 inhabitants. Their political and economic power explains why we chose large municipalities. Large municipalities are more likely to raise revenue because of economies of scale (Andrews & Boyne, 2009). They also have the political power to pressure stakeholders to access better legislative conditions and obtain better agreements with upper-tier governments (Van Houwelingen, 2018). Data come from the official agencies that control education, elections and finance, and that tabulate sociodemographic data. We used the dependent variable of resource allocation in terms of expenditure on education and its infrastructure. The independent variables are derived from

---

<sup>1</sup> The municipality is the local administrative unit in Brazil.

Freeman's (1984) economic, political, and managerial dimensions of stakeholder influences upon organizations. We examined the data using multivariate analysis.

This paper is divided into six sections. In this section we present the scope, relevance, and context of the investigation. The second section discusses the theoretical framework that deals with the importance of the allocation of resources to public services and stakeholder influences in shaping decisions. The third section presents the data collection and analysis methods we used. The fourth section presents our findings. In the fifth section we discuss these findings using a theoretical lens in order to assess their contribution to knowledge. The final section concludes by considering the implications of these findings for theory and practice, and the research limitations.

## **2. Theoretical framework and hypotheses**

To explain the theoretical lens we adopted in the investigation, we start by presenting the main theme, namely resource allocation and its explanatory variables. We assume that factors other than mayoral leadership (Pressman, 1972) and the legal framework (Minge, 1977) are likely to have an influence on resource allocation.

### ***2.1. Resource allocation in the public sector***

Resource allocation explains how the resources an organization needs to achieve its aims are apportioned. According to Vinzant and Vinzant (1996, p. 140), "Resource allocation processes provide the staffing, financial, and capital requirements necessary to implement the strategic plan." But resource allocation is problematic due to resource limitations in the public sector and the nature of public services (Fisher, 1998). It is also problematic because it involves individual needs, stakeholder interests, and personal gain by policymakers (Fisher, 1998). In this line of thinking, resource allocation in the public sector is a set of decisions that are limited by the economic, legal, and political restrictions by which policymakers are

constrained. For example, one of the severe limitations of resource allocation is budget cuts, which are likely to happen because of political choices (Meier & O'Toole (2009). Other sources may also influence resource allocation, such as political pressure (Desmidt & Meyfroidt, 2020) and citizen participation (Simonsen, 2018). An attempt to provide a framework for summarizing resource allocation decisions was proposed by Zhuang and Collier (2010). This is based on four approaches: rational (budget), non-rational (models of decision-making, such as garbage cans), expectation, and heuristics (which are based on experience and value). Our thesis is that the resource allocation processes of local government are largely shaped by the influence exerted by the stakeholders on whom government depends for its resources and legitimacy (Oliver, 1991).

In a democracy, politicians are always looking for the "right decision" to keep them in power (Mueller, 2008). Politicians have their own agendas and interests, which are not always aligned with society's expectations. The literature also suggests that expenditure decisions are limited by legislation (Minge, 1977). An example of such is that municipalities have to draft the budget law in accordance with a legal framework. They also have to observe procurement laws before starting a public procurement process. In a nutshell, resource allocation is shaped by political interests and by legal restrictions. Our thesis is that other sources of influence also shape mayors' decisions with regard to resource allocation. As actors who have an interest in, and power over decision-making processes, stakeholders are likely to have an agenda with regard to these decisions. This argument is entirely new in stakeholder theory, in Freeman et al's own words (2020) when asking for the inclusion of stakeholders in government issues: "What would a stakeholder-oriented public policy look like?" We now set out the theoretical framework for the explanatory variables.

## ***2.2. Stakeholders influences as an explanation for resource allocation decisions***

Since Freeman's landmark book (1984), stakeholder influences have been used to explain several aspects of the behavior and performance of organizations. Brower and Mahajan (2013) used stakeholder influence to explain the corporate social responsibility of private organizations. Piening (2013, p. 233) mentioned the importance of considering stakeholders' demands for the dynamic capabilities of public organizations. According to him, "...improved capabilities are initiated when decision-makers find that performance is below their [stakeholders] aspiration level." Stakeholder influences have also been used to assess the performance of nonprofit organizations (MacIndoe & Barman, 2013) and to examine corporate philanthropy (MacIndoe & Barman, 2013). There seem to be few studies, however, on the influences of stakeholders on resource allocation; to date, we have been unable to find any. We used Freeman's model of stakeholder relationship with a given organization to depict the set of external variables likely to shape resource allocation decisions in local government. According to Freeman (1984), an organization engages with stakeholders by way of economic, political, and managerial relationships. These relationships are dealt with below.

### ***2.2.1. Economic influences***

According to Freeman (1984), economic influences derive from stakeholders' power and interest. Interest means that stakeholders have a stake in what an organization does. Power relates to the stakeholder's ability to shape an organization's behavior, because stakeholders have economic, political, or voting power (Freeman, 1984). In the local-federal government relationship, economic power is likely to come in the form of transfers (see the effects of intergovernmental transfers on municipality's performance in Suhyanto et al., 2021).

Therefore, economic power is likely to come in the shape of revenue transfers from one level of government to another.



In the case of local governments, net revenue is generated from two sources: taxes and transfers (Touchton *et al.*, 2019). Tax revenues (TR) come from locally collected taxes (e.g., property, land sale, and service taxes) and from services provided by the municipality, for which local residents are charged in order to access and use them. Transfers are of two types: constitutional and voluntary. Constitutional transfers (CT) refer to the percentage of revenue collected by the federal government from local residents and enterprises, which is then transferred back to states and municipalities. This revenue is established by law and municipalities have the right to receive it on a monthly basis. Voluntary transfers (VT) are those the federal and state governments transfer to municipalities in the form of cooperation, aid, or financial assistance agreements (Boadway & Dougherty, 2018). Such transfers are usually granted in order to ensure the implementation of certain public policies. While municipalities have discretion as to what they do with TRs, CTs are defined by law, and VTs are the result of intergovernmental agreements.

In federal countries, municipal expenditures are controlled by legislation, which allows little discretion in terms of how the funds are allocated. These restrictions indicate the level of freedom that mayors have to make expenses beyond those defined by legislation. In Brazil, a minimum of 40% should be spent on education and health (25 and 15%, respectively). The remaining 60% will be dedicated to operational activities. It is important to remember the Fiscal Responsibility Law was issued to limit personnel expenditures up to 60% of the revenue (De Mello, 2006). This shortage of resources for investments may indicate a window of opportunity through which federal and state governments could exert economic influence over local governments.

We assume that central government has the power and interest to influence local government investments in education by providing additional money in the form of VTs. The literature provides empirical evidence corroborating this idea. For example, Suhyanto *et al.*

(2021, p. 22) studied intergovernmental transfers in West Java province. They found that the “greatest impact on the performance of regional development, while in terms of expenditure, which has the most significant effect on the performance of regional development is education spending followed by spending on goods and services.” Another example is Aritenang (2020), who found evidence that intergovernmental transfers have an impact on infrastructure spending in Indonesia. Litschig and Morrison (2013) found the impacts of intergovernmental transfers on Brazil's educational services and on reducing poverty. According to them, “Schooling *per capita* increased by about 7 percentage points and literacy rates by about 4 percentage points. In line with the effect on human capital, the poverty rate was reduced by about 4 percentage points” (Litschig & Morrison, 2013, p. 206). In the USA, Nicholson-Crotty (2004, p. 120) found evidence that grants from federal and state governments have an impact on policy implementation in health and law enforcement depending on the level of congruence between the states and grant programs. According to them, “Medicaid and Byrne antinarcotics funds were more effective in stimulating targeted jurisdictional spending in states that share the grant programs.” Other than this evidence taken from the literature, intergovernmental transfers have not yet been dealt with in terms of stakeholder influence, which would provide insights for the mayoral discretion theory and for strategic planning.

Analyzing VTs as a source of revenue in Brazil, Moutinho and Kniess (2017) argued that they are characterized by discretion on both sides: those who make the transfer, and those who receive it. VTs involve spontaneous cooperation between two public agents, and are defined in accordance with two generating factors: the nominal form (the municipality has a credit that is to be applied in a given public policy, a member of parliament's amendment to the budget law), and the program form (a given public policy, education, for

instance, has a budget and municipalities can benefit from it by signing an agreement) (Brasil, 2013).

Studies have used intergovernmental transfers by way of grants to assess the sources of influence on local governments in federal systems (Avellaneda, 2016; Lewis & Smoke, 2017; Masaki, 2018). In the specific case of education services, Fisher and Papke (2000, p. 157) found evidence “that general state education grants, whether of the traditional foundation or power-equalizing type, can boost local spending.” From these ideas, we devised the first hypothesis:

*H1: Voluntary transfers from federal government have a positive influence on the allocation of resources for educational services in local government.*

A different economic effect that stakeholders have on local governments is the relationship that is formed with stakeholders for providing public services using a concession, partnership, or competition. Since our focus is on education, and depending on the country, this type of service can be provided either in a partnership, or in competition with other entities. These partners/competitors are likely to have an effect on resource allocation in some way. If a private partner stops providing the service, the authority will need to increase expenditure to meet the demands created by those students who are not being served. On the other hand, the municipality might be tempted to reduce investments if others provide the service in full.

There are few studies assessing competitor stakeholder influences over public organizations. One such example is Arum (1996, p. 29), who by studying the effect that private schools have on public schools concluded that “public school students in states with large private school sectors have improved educational outcomes”. He also found that “...after controlling for income per student, federal support, percent metropolitan, and average teacher salary, per-student expenditures increase significantly with the size of the

private school sector in the state” (Arum, 1996, p. 40). Another example is Cook (2018), who studied the effect of the charter school movement on traditional public school districts using data from the State of Ohio (USA). He found that school districts “respond to competition by allocating resources away from instructional and other expenditures toward new capital construction” (Cook, 2018, p. 49). McEwan and Carnoy (2000) conducted a study on private school vouchers in Chile. They found evidence of students abandoning public schools if they have the opportunity to attend a private school. In this case, we might expect a reduction in investments in education, such as in the number of school places, and in infrastructure (Buchanan & Tollison, 1984). In this sense, the larger the percentage of private-school enrolments, the less the local authority is likely to be pressed into investing in educational services. Hence,

*H2: The number of private competitors providing educational services has a negative influence on the allocation of resources to educational services by local governments.*

### *2.2.2. Political influences*

Since stakeholders are likely to affect local governments’ decision-making through political influence, we chose support from the legislature as a stakeholder influence of this type. We found support in the literature that partisanship is an important factor in government decisions. For instance, Ritchie and You (2019) found empirical evidence to corroborate the influence that members of Congress working as lobbyists have over the US Department of Labor. According to these authors, “the agency is more likely to reverse previous decisions when requested to do so by legislators” (Ritchie & You, 2019, p. 65). Bertholini *et al.* (2018, p. 701) analyzed the “role of the legislative branch in reducing inequality and poverty through budget amendments...” Their study indicates how the legislative branch can influence local development through these policies. Gerber and Hopkins (2011, p. 326) found empirical

evidence of the effects of partisanship on budget management; “cities that elect a democratic mayor spend a smaller share of their budget on public security...”

Legislator influence relates to their job, as they can vote on the budget before it is sanctioned by the executive branch (Lienert, 2010; Rubin, 2019). Due to their function of controlling and supervising the executive branch’s decisions and actions, legislators are regarded as stakeholders with a lot of power, as noted in several studies. For instance, interviewing chief executives and councilors in the UK, Gomes (2003, p. 282) found evidence for including councilors as relevant and powerful stakeholders in the local government decision-making process as they can approve policies, delegate responsibilities, monitor performance, lead the council, make decisions, and represent the community. These arguments pave the way for legislators to be regarded as relevant influencers over resource allocation decisions.

We also used the argument of partisanship, which is defined as “the routinized practices and discourses of the supporters, members, and leaders of a particular party in support of a shared conception of the public good” (Herman, 2017, p. 739). Partisan theory is based on the idea that policies are implemented according to the dominant political party's aims and ideals (Hibbs, 1992). In the same vein, Schmidt (1996, p. 155) elaborated upon the effects of partisanship on public policies, suggesting that “differences in party composition of the government, in general, matter in public policy in a constitutional democracy.” From these ideas, we can assume that the mayor is very likely to make decisions that are influenced by the number of partisans he/she has in the legislature.

On the other hand, if the mayor has the support of the majority of the legislature, one would expect that he/she will have more discretion for deciding upon policies. Benedictis-Kessner and Warshaw (2020, p. 460) carried out recent research into the policy effects of partisan composition in medium-sized and large counties in the US, and found that “the

partisan selection of county legislators has important policy effects in county governments.” In the same vein, Allers *et al.* (2001, p. 360) found that “municipalities with a council dominated by left-wing parties have a higher tax burden.” In the specific case of education, Kleider *et al.* (2018) found evidence that subnational governments that are ideologically aligned with central government increase their expenditure on education. Ortega (2020) provides an example of partisanship’s influence over expenditure on education, but in this case the focus is on higher education. According to Ortega, there is an association between the Democratic Party’s power and increased state revenue being appropriated for higher education. Therefore, the higher the number of partisans a mayor has in the legislature, the more power (willingness) he/she will have to invest in a certain political decision. This idea leads us to our third hypothesis:

*H3: The number of partisans a mayor has in the local legislature has a positive influence on the allocation of resources for educational services in local government.*

### *2.2.3. Managerial influences*

According to Freeman (1984), the managerial relationship between stakeholders and a given organization is characterized by the former forcing the latter to change its management systems and processes and even its management style and values. In this context, we have included regulatory agencies as a stakeholder in the model because of their power to shape managerial behavior (Baldwin *et al.*, 2012). Regulation can be seen as “activity that restricts behaviour and prevents the occurrence of certain undesirable activities (a ‘red light’ concept). The broader view, however, is that the influence of regulations may also be *enabling or facilitative* (‘green light’)...” (Baldwin *et al.*, 2012, p. 3 - italic emphasis and single inverted commas in the original). In this vein, decisions about resource allocation are subject to supervision by regulatory bodies to ensure “that money would be spent wisely and citizen’s needs included in the decision-making portfolio” (Berner *et al.*, 2011).

'Red light' type rules impose compliance with regulatory rules, which ensures decisions are made in accordance with the law. Some authors see this as a burden on public organizations (see for instance Bozeman, 1993; Brewer & Walker, 2009). Regulation is also likely to be positive for resource allocation decisions. Wang *et al.* (2021, p. 611), for instance, studied ecological efficiency in China, and found that "...regulation could relieve resource misallocation somewhat and improve ecological efficiency." We assume 'green light' regulations have the power to enforce decisions on which there is no consensus among constituencies at that moment in time.

An example of a regulatory body is the municipal council of education (MCE), which regulates educational activities at the municipal level (Bosco de Lima, 2020). These councils are created by municipal law and have consultative, normative, supervisory, and deliberative functions (Bosco de Lima, 2020). The MCE is composed of "government representatives, educational entities and members of civil society" (De Almeida, 2021, p. 5), which characterize its role as a stakeholder with a clear stake in the provision of educational services (Sliwka & Istance, 2006). The functions of the MCE are: consultative, because they can make recommendations about several aspects of the education service; normative, because they create rules to align the municipal education policy with federal and state policies; supervisory, because they have the power to oversee expenditure, education policies, and education performance indicators; and finally they are deliberative, because they have the power to authorize new public and private schools and to approve changes in the municipal education network (Cury, 2006). Looking at the nature of such a regulatory body, we assume their activities can be understood as including both 'red light' and 'green light' functions. From the arguments above, we propose the fourth and fifth hypotheses:

*H4: The presence of a regulatory body with restricting functions ('red light') has a negative influence on the allocation of resources to educational services in local government.*

*H5: The presence of regulatory bodies with endorsing functions ('green light') has a positive influence on the allocation of resources to educational services in local government.*

Figure 1 shows the theoretical model we tested in our investigation. The core is that besides mayoral discretion and the limitations of non-discretionary inputs, such as the legal framework, local government resource allocation decisions are influenced by various stakeholders, which have both the power to shape decisions, and the interest in doing so.

*Insert Figure 1 about here*

### **3. Data collection and variables**

#### *3.1. Research setting and sample.*

Brazil is a Federative Republic composed of 26 states, the Federal District, and 5,570 municipalities. This study focuses on Brazilian cities with populations of over 100,000 inhabitants. Large cities are likely to generate a greater percentage of local taxes and thus be less reliant on revenue transfers (Markusen *et al.*, 1981). They are also better able to deal with the political, economic, and managerial aspects of the external environment, and benefit from economies of scale (Boyne, 1995). We collected eight years' data from 268 municipalities. We chose eight years because this covers two consecutive political terms of office (2009-2016). Mayors in Brazil are elected to serve four-year terms, and possibly serve no more than two consecutive terms. Municipal councilors, who are elected at the same time as mayors, also serve four-year terms but with no term limits.

Data were collected from official databases, such as the Superior Electoral Tribunal (*TSE*) (number of partisans), the Brazilian Institute of Geography and Statistics (*IBGE*) (population, GDP, and information about MCEs), the National Institute of Educational Research (*INEP*) (number of student enrolments), and the National Treasury Department (*STN*) (public expenditure and grants). Educational policies are established by the federal and state governments based upon information from the National Elementary Education Census,



which is collected annually by *INEP* and by the national census carried out by the *IBGE*. The *TSE* is the primary provider of electoral data, while the *STN* is in charge of government accounting and financial administration.

### **3.2. Variables**

Table 1 describes the variables. We used two sets of variables to demonstrate resource allocation in terms of expenditure on education and investments in infrastructure. Fully describing the theories behind the variables is important when looking at the causal relationships between variables. For example, the presence of possibly correlated variables – for example, a person’s level of education and his/her salary – is likely to indicate the presence of endogeneity, which is a problem in regression analysis. These variables can induce the simultaneity phenomenon, in which it is not clear if X influences Y, or vice versa (Wooldridge, 2010). We show these variables below.

*Insert Table 1 about here*

#### **3.2.1. Dependent variables**

We have two dependent variables: total expenditure *per capita*, and classroom environment. The former assesses resource allocation as a whole (current and capital expenditures), while the latter assesses investments in buildings and infrastructure. Educational expenditure is a good dependent variable as it assesses how important the service is to the local government’s strategic plan (Perez & Socias, 2008). Educational expenditure (EEpc) is taken as a ratio of its global (current and capital) value to the number of students. Due to discrepancies in municipality sizes, the value is logged to ensure normality and avoid outliers. Data available at the National Treasury Secretariat website<sup>2</sup>.

---

<sup>2</sup> <https://siconfi.tesouro.gov.br/siconfi/index.jsf>

The other dependent variable relates to investments in educational services in the form of classroom facilities. We operationalized the variable as classroom size, which is calculated by the number of students per classroom (CR). This variable is important because of how important classroom environments are in the education process (Smallwood *et al.*, 2007). Several studies have used classroom size to predict student achievement (Bosworth, 2014; Pate-Bain *et al.*, 1992). Education services need to ensure the right environment for students in order for them to perform to the best of their ability (Borland *et al.*, 2005). The variable is also logged to ensure normality and to avoid outliers. Data available at the Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira<sup>3</sup>.

### 3.2.2. *Independent variables*

*Central government's influence* – To assess the influence of central government, we used the grants that are annually transferred to municipal education services (VTpc). This variable is found in the Brazilian government's budget labeled as “Transfers earmarked for Educational Services”. As it is a global amount, we have no means of specifying if such transfers are earmarked for recurrent or capital expenditure, and, therefore, if they are likely to influence educational expenditure and investments for constructing new classrooms. The variable is operationalized in *per capita* terms and logged to mitigate the presence of outliers. Data is available at a system known as SICONF at the National Treasury Secretariat website<sup>4</sup>.

*Measuring legislative support.* Legislative support (LS) is measured as the ratio of the number of councilors who are aligned with the mayors' political party to all local legislators. This variable includes councilors from the mayor's political party and those belonging to the coalition. As clarification, the size of the legislature in Brazil is defined by the 1988 Federal Constitution (Art. 29). The smallest number of legislators is nine in municipalities with up to

---

<sup>3</sup> <https://www.gov.br/inep/pt-br/aceso-a-informacao/dados-abertos/microdados/censo-escolar>

<sup>4</sup> <https://siconfi.tesouro.gov.br/siconfi/index.jsf;jsessionid=Fcnemf8L6Fx1RxsiXCZP5zDN.node1>

15,000 inhabitants, while there are 55 legislators in municipalities with more than eight million inhabitants. As this investigation focuses on municipalities larger than 100,000 inhabitants, the number of legislators can range from 17 to 55.

An idiosyncrasy of the Brazilian electoral process relates to the number of political parties. According to the Superior Electoral Tribunal's webpage<sup>5</sup>, there are 33 registered parties able to run for election in Brazil. Because of this, winning an election can be the result of political alliances that are formed between two or more parties. This does not affect how the mayor leads the municipality, because if it did it would be a parliamentary system. It certainly has an impact, however, on the number of seats a political party has in the legislature and, therefore, the power it has to influence policy decisions. This situation is called coalition presidentialism. The elected executive needs to form coalitions with other political parties to ensure governability (Chaisty *et al.*, 2018). The Superior Electoral Tribunal provides these data<sup>6</sup>.

*Measuring regulatory influence.* Municipal Councils of Education (MCE) are regulatory bodies created to perform four types of function, namely supervisory (SF), consultative (CF), deliberative (DF), and normative (NF) (Bosco de Lima, 2020). If some functions are likely to restrict resource allocation decisions, which appears to be the case with the supervisory function due to its red tape mechanisms, then others provide the conditions necessary for increasing expenditure, which seems to be the case with the consultative function. Inspired by Touchton *et al.* (2017), we use dummy variables to assess the presence of an MCE and the type of function it exerts upon educational services. Data come from a survey that is carried out annually by the *IBGE*<sup>7</sup> - the Municipal Basic Information Survey (*MUNIC*).

---

<sup>5</sup> [www.tse.jus.br/Partidos/Partidos-Politicos](http://www.tse.jus.br/Partidos/Partidos-Politicos)

<sup>6</sup> <https://www.tse.jus.br/eleicoes/estatisticas/repositorio-de-dados-eleitorais-1>

<sup>7</sup> [https://ww2.ibge.gov.br/home/estatistica/pesquisas/pesquisa\\_resultados.php?id\\_pesquisa=89](https://ww2.ibge.gov.br/home/estatistica/pesquisas/pesquisa_resultados.php?id_pesquisa=89).

*Measuring the influence of private service providers.* This type of stakeholder influence is measured by the competition local authorities face from private schools in providing education services. We operationalize this variable by assessing private enrolments as a percentage of total enrolments in the municipality at the elementary education level (PPE). We assume that the higher the number of places provided by private schools the less pressure there is on local government to invest in educational services in the municipality. We collected these data from *INEP*<sup>8</sup>.

### 3.2.3. Control variables

We use two variables to control municipality size and economic factors: population size and GDP *per capita*<sup>9</sup>. Park (2019) used population size to explain the relationship between public participation and local government performance. Rivenbark *et al.* (2019) also used population size to explain the same phenomenon in Italy. In our investigation, population size makes sense due to demand, because large municipalities are expected to invest more in infrastructure and staff. Park and Liang (forthcoming) use GDP to control for economic differences between countries. Both variables are logged to mitigate differences between observations. We collected these data from the *IBGE* database.

### 3.3. Regression Model Estimation

Our panel data is strongly balanced and composed of 2,144 observations (268 municipalities times eight years). The municipalities are scattered across five regions (north, northeast, center, south, and southeast) and 26 states. As a result, the statistical analysis needs to consider the fact that data are simultaneously longitudinal and hierarchical. This structure is an important parameter for this analysis due to the peculiarities of the regions. The North has a low population density and economic activity that focuses on agriculture, while the

---

<sup>8</sup> <https://www.gov.br/inep/pt-br/aceso-a-informacao/dados-abertos/microdados/censo-escolar>

<sup>9</sup> <https://www.ibge.gov.br/en/cities-and-states.html>

Southeast is more industrial and with a higher population density and greater GDP *per capita*. The Northeast has a low GDP *per capita* when compared with the others. There are also fundamental differences between the states in terms of their population density and GDP *per capita*. These facts suggest differences in stakeholder influences when it comes to resource allocation for educational services at the local government level, which can vary according to the state and the region. This situation indicates the need for a multilevel, mixed-effects regression analysis (Asseburg et al., 2019; Keulemans & Groeneveld, 2019).

One issue in regression analysis is endogeneity, in which case scholars often disregard the problem of simultaneity. To address this concern, we carefully developed variables in an attempt to avoid simultaneity, when the X variable influences the Y variable, and the reverse situation is likely to happen. Unfortunately, the only variable in our model likely to represent this situation is logVTpc, which is weakly correlated with both logEEpc (.2396) and with logCR (-.2859).

The Breusch-Pagan/Cook-Weisberg test is a means of ensuring the best option between fixed and random effects. We also need to control multicollinearity and autocorrelation issues as we observe the same municipality for eight years. In panel data, we need to choose between fixed and random effects in order to avoid autocorrelation. Boyne and Chen (2007b) suggested that the F-test would indicate whether fixed effects analysis represents a better choice than pooled regression. The literature recommends the Hausman test to choose between fixed and random effects (Hamilton, 2012). Boyne and Chen (2007a) also recommend the Newey-West test as a means of removing heteroscedasticity and autocorrelation from panel data regression analysis.

Another important characteristic of our panel is that data are very likely to be nested. Our unit of analysis is municipalities located in states that, in their turn, are situated in regions. We assume that municipalities replicate the behavior of others in the same state, and

the same is very likely when comparing states in the same region (Table 5 in the appendices illustrates the number of regions and states). For this reason, we developed predictors for the model using mixed-effects multilevel analysis for controlling hierarchical and longitudinal aspects of the data (Hox, 1998).

#### 4. Results

Table 2 presents the descriptive statistical analysis of the variables in their original form. This procedure is important for depicting the nature of the data before adjusting them to fit the normal distribution form. It is worth mentioning that although data are available from 2017 to 2020, we decided not to include them in the panel because of distortions in resource allocation decisions that may have been caused by the Covid-19 pandemic in 2020. The average population is around 390,000 inhabitants (the city of São Paulo is the largest, and Breves<sup>10</sup> is the smallest). GDP *per capita* is Br\$ 27,000 (US\$ 5,000) on average. The lowest GDP was in Breves in 2009 (in the State of Pará in the North ) with Br\$ 3,348.60 (US\$613), and the highest was Barueri (State of São Paulo in the Southeast ) in 2015 with Br\$ 182,102 (US\$ 33,340).

In terms of the dependent variables, educational expenditure is Br\$ 1,610.00 (US\$ 306 ) on average. In terms of buildings, students need to share space with 63 colleagues in the same classroom. There is no consensus as to the maximum number of students per classroom, since federal legislation does not supply this parameter (Brasil, 1996). Some states, however, have a recommended maximum of 25 students in the first segment of the elementary education system (6 to 9 years old). Over 96% of the municipalities have an MCE. Several municipalities did not receive any grants in the period, which would be seen as important for investing in infrastructure. Private schools are responsible for 65% of the elementary education places, with the rest in public schools. In terms of political support for the

---

<sup>10</sup> When we started the investigation, this municipality had a population of 100,000 inhabitants.

legislature, mayors can be elected without any support, but, on average, mayors are elected with the support of 32% of the council members.

*Insert Table 2 about here*

#### **4.1. Inferential Analysis**

As we have two distinct dependent variables, we carried out separate statistical tests to ensure the best fit for the regression analysis, as indicated in Section 3.3.

##### *4.1.1. The case of educational expenditure per capita*

We aim to investigate the impact of stakeholder influence on expenditure on education *per capita* over the years (EEpc). We use the variable in its logged form to ensure the normality condition for regression analysis (Jarque & Bera, 1980). The first analysis was conducted using OLS regression, indicating a good fit for the model (Test F 23.39\*\*\*) and an R-squared of 0.2121. The OLS model disregards time and space in the panel data. In order to ensure the best analysis, we carried out panel data analysis, which is achieved by running the function xtreg fixed and random effects in STATA. Looking at the Chow test t, Prob > F = 0.3255 does not recommend using fixed effects as an analytical tool.

The Breusch-Pagan / Cook-Weisberg test for heteroscedasticity returned in  $\chi^2(1) = 0.88$  Prob >  $\chi^2 = 0.3495$  allows us to reject the hypothesis of heteroscedasticity in the model. Therefore, a suitable regression analysis seems to be OLS regression. The VIF test results in 1.33, which indicates the absence of multicollinearity. We also assessed multilevel analysis due to the presence of hierarchical variables. The likelihood-ratio test result and the interclass correlation demonstrated that this type of analysis is not the best option for the model where influences from the regions and states are not statistically significant. As a matter of robustness, we compared the estimators using three different models, namely OLS, Newey-West standard errors, and an Areg equation.

*Insert Table 3 about here*

We found strong empirical evidence indicating that stakeholders influence the total money municipalities allocate to the education budget. The first stakeholder influence derives from grants transferred from the federal government. They impact the budget by .05 points (due to the log procedure, we avoided interpreting the results using a percentage or other unit for the dependent variable). The statistical significance is not robust, but it is relevant ( $p < .10$ ). This evidence indicates the type of influence exerted by the federal government over resource allocation. Another influence is exerted by private schools delivering elementary education services in the municipality, for which we have strong statistical evidence. Data indicate that a one percentage point increase in the number of private schools has a big influence on expenditure, which rises. This is possibly due to the scholarships that municipal governments provide to private schools to allow them to offer places to deprived students. This result, however, deserves further explanation. Besides stakeholder influences, Table 3 demonstrates the influence of scale effects (Andrews & Boyne, 2009), as larger municipalities tend to spend less on education.

#### *4.1.2. The case of the number of students per classroom (CR)*

In the case of investments in classrooms, we found a completely different situation. The CR variable measures the number of students per classroom. The higher the number of students per classroom, the less money the municipality has spent on constructing/renting spaces to improve conditions in the classroom. In order to ensure normality, the variable is also logged. The first test was done to compare the panel data effect over the dependent variable. The Breusch-Pagan / Cook-Weisberg test recommended not using OLS regression. The Hausman test indicated that fixed-effects regressors are a suitable analysis tool for this situation. Table 4 shows the analysis for the classroom model. As a comparison, we ran three different tests to ensure the best-case scenario for the hypothesis testing process. The basic assumption is that multilevel analysis includes variations between observations and hierarchical levels,



fixed-effects remove variations from higher levels of the estimators, and Newey-West is a good remedy for autocorrelation and heteroscedasticity. The middle column shows the test assuming the data to be longitudinal and hierarchical, where Level 1 represents municipalities, Level 2 the states, and Level 3 the regions. As the literature suggests we do, we ran the model without using any predictor variables to assess the interferences of hierarchical levels L1 and L2, as L3 proved not to be statistically significant. Both Wald and LR tests ensured the robustness of the model. The interclass correlation indicates that differences between states explain around 57% of the variation in the number of students per classroom. The same is not true for the regions (L3 interclass correlation). The coefficient is still relevant but not statistically significant.

*Insert Table 4 about here*

Looking at Table 4, we perceive the differences in the methods. The first is the influence of population on the dependent variable. On the one hand, and depending on the state, an increase in one point in logPop is likely to increase the number of students by at least .28 points. The Newey-West test corroborates the multilevel coefficient and its level of statistical significance. Therefore, we can assume that larger states tend to have more students per classroom. On the other hand, by removing the variance between states (fixed-effects) completely, states with larger populations tend to have smaller numbers of students in the classroom.

Looking at the independent variables, we can see empirical evidence for the stakeholder influences over this variable. First, the federal government influences resource allocation by transferring grants. This variable is statistically significant, though close to zero in the multilevel analysis and the Newey-West test. This result is likely to be the result of the economic differences between the states. The second stakeholder influence is the presence of private schools that provide education services (PPE). The three models converge with regard

to this estimator in terms of their direction and level of statistical significance. One additional comment is needed here as the variable works in reverse. By increasing the number of enrollments in private schools, we observe a reduction in CR. There is no clear evidence that municipalities are reducing their investments in infrastructure, although there is no reason to build new classrooms if demand for places falls short of expectations. The third stakeholder influence is support from the legislature. This is only observed, however, when the differences between states are removed, which is not corroborated by the Newey-West test. The fourth stakeholder influence is the presence of the MCE. Here, we can see clear evidence of such by observing that the presence of the regulatory body increases the number of student per classroom in .22 ( $p < .001$ ) points and the presence of a deliberative function reduces this number in .06 points ( $p < .10$ ). The relationship between the other variables and CR is not statically significant.

#### ***4.2. Hypotheses Testing Process***

We tested the hypotheses using statistical analysis to control differences between states and regions. We chose to build hypotheses based on the nature of stakeholder influences on resource allocation. We tested these influences by looking at two types of resource allocation: educational expenditure and the number of students per classroom. We assume mayors do not act alone when making decisions about resource allocation, because external forces are likely to influence them.

In the first hypothesis to test stakeholder influence, we assumed that resource allocation is shaped by the amount of money the federal government transfers to local government by way of agreements. As transfers are voluntary, the federal government has the freedom to send the money wherever it wants to ensure public policies are implemented. The coefficients for grants transferred are statistically significant in the case of the number of students per classroom (.0106  $p < 0.05$ ) and expenditure on education *per capita* (0.051  $p$

<.10). Thus, evidence indicates that the federal government is more likely to influence the budget as a whole rather than improve conditions in the classroom. This situation is probably related to the way in which the federal government transfers money to the municipalities, which has an influence on recurrent expenditure rather than on capital expenditure, although we do not have the means to corroborate this assumption. Therefore, empirical evidence recommends rejecting the null hypothesis, that the federal government does not have a positive influence on resource allocation in local government.

In the second hypothesis, we assumed that the participation of private partners in providing education services would negatively influence resource allocation. Statistical analysis indicates that increases in private school enrolments reduce the number of students per classroom, indicating stakeholder influence. It has a reverse effect, however, causing an increase in the education budget per student. In this case, we have no empirical support for assuming that the influence is negative, but we do not have the means to fully reject the null hypothesis, that stakeholder private schools do not have an influence on resource allocation. One feasible explanation for increases in the budget is likely to be the municipality having to invest, for instance, in transporting pupils to other schools.

The thesis deals with support from the legislature. The only indication of such is observed in fixed-effects, but this contradicts the mixed-effects and Newey-Test. Therefore, we have no empirical evidence to accept the hypothesis that support from the legislature affects resource allocation in local government.

The fourth hypothesis deals with the influence of regulatory bodies that have 'red light' functions, which we have assumed to be negative. The results indicate that deliberative functions reduce the number of students per classroom by .06 points ( $p < .1$ ), which is an indication of increases in the number of classrooms, assuming that the number of students has remained steady in the period. However, the presence of an MCE is likely to increase the

number of students per classroom by .22 points ( $p < .001$ ), which is an indication that municipalities are not investing in new classrooms. It is worth mentioning that we do not have statistical significance for these variables in the educational expenditure model; evidence is contradictory in this analysis. At the same time that the presence of an MCE influences CR in one direction, the presence of the deliberative function has an influence in opposite direction. Therefore, we have no empirical evidence to reject the null hypothesis that ‘red light’ regulatory bodies negatively influence resource allocation in local government.

The fifth hypothesis relates to influences from ‘green light’ regulatory bodies. Using the same rationale as above, the deliberative function and the simple presence of one MCE in the municipality, we found that while the former indicates municipalities are making some effort to reduce the number of students, the latter suggests a reverse situation. This indicates there is a controversy surrounding the effects of endorsing functions that are not conclusively affecting resource allocation. For this reason, we have empirical evidence to reject the null hypothesis that ‘green light’ influences affect resource allocation. We do, however, have evidence about the influence of these ‘red’ and ‘green light’ stakeholders, which recommends further investigations.

## **5. Discussion**

This paper addresses stakeholder influences as a factor that may explain the decision-making process in public sector organizations. Our investigation aimed to contribute to this area by providing empirical evidence of stakeholders’ influence on decision-making at the local government level.

To this end, the investigation addressed the following question: “What influence do external stakeholders have on resource allocation in local governments?”. The problem is based on the gap in the literature, since stakeholder theory has rarely been used to predict the behavior and performance of public sector organizations (Freeman *et al.*, 2020). It is worth

mentioning that some results confirm acknowledged theories, while others challenge them. Our conceptual framework and estimation model are structured on three assumptions, that stakeholder influences occur in the form of economic, political, and managerial effects.

For the economic effect, we have empirical evidence of the influence of federal government being a stakeholder that has an influence on resource allocation by providing grants. It does not, however, affect the investment in infrastructure (0.01 point<sup>11</sup>) to any great extent, but it does affect the budget more (0.05 points). We also have evidence that private service providers are also stakeholders because they are able to influence resource allocation. The higher the number of enrolments in private schools, the lower the number of students per classroom in public schools, and the higher the total expenditure per student. One explanation for this situation is that the municipality provides vouchers for students to attend private schools. The evidence indicates that municipalities invest less in building new classrooms, but that budgets increase because of rises in other types of expenditure, e.g., recurrent expenditure. Therefore, the influence is established and warrants further investigation.

For the political effect, politicians at the three levels of government have to liaise with other political parties to form government coalitions. In this study, however, we found no empirical evidence to warrant accepting the legislature as a stakeholder. Therefore, based on the literature (Gomes *et al.*, 2010b; Velasquez, 2019), this fact deserves further analysis using a different dependent variable, and a different type of public service, and, perhaps, expanding the sample to include small and medium-sized municipalities.

Finally, for the managerial effect, regulatory bodies influence resource allocation decisions in two ways: by endorsing functions or restricting them. The regulation theory suggests that greater bureaucracy (“red tape”) detracts from government performance

---

<sup>11</sup> We need to bear in mind that the variables are taken in their logged form. Therefore, we did not assume the relationship in percentage terms.

(Bozeman, 1993). Although we agree with this theory, our findings indicate that regulation can also have a positive effect by increasing investments (0.22 points). Therefore, we have empirical evidence to recommend an MCE as an effective stakeholder that is able to influence local government resource allocation. The literature up to this point in time confirms that regulatory bodies can affect an organization's behavior and performance, mainly by way of its 'red light' activities (Bozeman, 1993). This study contributes by demonstrating that an MCE, as a body in charge of regulating educational activities, must be regarded as a stakeholder that is able to shape decisions.

Our investigation demonstrates that stakeholder influences need to be considered as relevant factors in resource allocation decisions. To this end, we found evidence that mayors are shielded to some extent from making decisions about educational expenditure, which we can assume by comparing the results for the two dependent variables. They do, however, receive pressure from stakeholders when deciding about important assets, such as public buildings, so local government organizations can benefit from paying more attention to their relations with stakeholders. This investigation has the merit of providing empirical evidence of the strength and direction of these influences, and its contribution is relevant for policymaking in the extent that stakeholder influences must be taken into account in the process. Recalling Freeman (1984) dimensions of stakeholders identification and management, they have the power to impose their wills, as well as the interest to ensure the results for the policymaking process.

Finally, it is important to mention the contextual aspects of stakeholder influences in resource allocation. The observations included municipalities from a variety of social, economic, and demographic states and regions, and some interesting conclusions can be drawn from this. Our findings are not statistically significant with regard to the differences between regions, but they are for states. Brazil has five regions, and they are very different in

terms of population size, population density, and revenue *per capita*. This finding indicates that some states merit more attention from the federal government in terms of grants. This study demonstrated that as several states have more students per classroom than the country average, they certainly need help in reaching a feasible situation. The same rationale can be used in educational expenditure *per capita*, as in several states this indicator is below the national average.

## **6. Conclusions**

Our investigation aimed to fill a gap in the literature on stakeholder influences as a determining factor able to impact resource allocation in the context of local government. We assume that this is an important contribution to strategic management to the extent that it posits stakeholder analysis as a relevant activity carried out by mayors and their managerial team when developing the municipality's strategic plan. Another relevant contribution of the investigation are the factors for predicting public increases in resource allocation related to the number of students per classroom and educational expenditure *per capita*. This conclusion means that mayors' decisions are also shaped by stakeholders' demands and influences as well as by their agendas.

The theoretical results corroborate what other authors have claimed about including stakeholders in the strategic plans of public sector organizations (Freeman *et al.*, 2020). Another important contribution relates to managerial discretion. Although the stakeholder theory has been covered in various books and articles, this investigation is the first to attempt to put numbers to the stakeholder-organization relationship. We challenge the idea that mayors are at the apex of local government decision-making, and solely responsible for the major decisions and policies. Mayors need to set the conditions required for liaising and negotiating with other spheres of government. Municipalities need to provide more room for the Municipal Council of Education in their strategic plan to help implement policies. Mayors

also need to take a closer look at educational service providers. Although some of the findings are not novel, they are boundaries for explaining the limits of mayors' leadership in strong-mayor systems.

Further analysis could shed more light on stakeholder influences over resource allocation in infrastructure. We also think future research would profit from making more cross-cultural comparisons. For example, we studied a federative country whose local government is based on the strong-mayor system. Therefore, it would be useful to compare it with other forms of administration, such as committee-leader, collective, and council-manager forms of government (Mouritzen & Svara, 2002). The investigation could also be carried out using different epistemological approaches that focus on different public services. Mayors might have more discretion when it comes to deciding on resource allocation in another service, such as environmental protection, health, and social welfare. In this investigation we aimed to pave the way for further research to improve knowledge of the strategic planning of local governments. We believe further studies in this area are needed.

### **Data Availability**

The data underlying this article are available in Dryad Digital Repository at <https://doi.org/10.5061/dryad.c59zw3r8h>

### **References**

- Allers, M., de Haan, J., & Sterks, C. (2001). Partisan Influence on the Local Tax Burden in the Netherlands. *Public Choice*, 106(3), 351-363. <https://doi.org/10.1023/A:1005123208352>
- Andrews, R., & Boyne, G. A. (2009). Size, Structure and Administrative Overheads: An Empirical Analysis of English Local Authorities [Article]. *Urban Studies*, 46(4), 739-759. <https://doi.org/10.1177/0042098009102127>
- Aritenang, A. F. (2020). The effect of intergovernmental transfers on infrastructure spending in Indonesia. *Journal of the Asia Pacific Economy*, 25(3), 571-590. <https://doi.org/10.1080/13547860.2019.1675352>
- Arum, R. (1996). Do Private Schools Force Public Schools to Compete? *American Sociological Review*, 61(1), 29. <https://doi.org/10.2307/2096405>
- Asseburg, J., Hattke, J., Hensel, D., Homberg, F., & Vogel, R. (2019). The Tacit Dimension of Public Sector Attraction in Multi-Incentive Settings. *Journal of Public*



- Administration Research and Theory*, 30(1), 41-59.  
<https://doi.org/10.1093/jopart/muz004>
- Avellaneda, C. N. (2016). Government Performance and Chief Executives' Intangible Assets: Motives, Networking, and/or Capacity? *Public Management Review*, 18(6), 918-947.  
<https://doi.org/10.1080/14719037.2015.1051574>
- Baldwin, R., Cave, M., & Lodge, M. (2012). *Understanding regulation: theory, strategy, and practice*. Oxford University Press on Demand.
- Benedictis-Kessner, J. d., & Warshaw, C. (2020). Politics in Forgotten Governments: The Partisan Composition of County Legislatures and County Fiscal Policies. *The Journal of Politics*, 82(2), 460-475. <https://doi.org/10.1086/706458>
- Berner, M. M., Amos, J. M., & Morse, R. S. (2011). What constitutes effective citizen participation in local government? Views from city stakeholders. *Public Administration Quarterly*, 35(1), 128-163. [www.jstor.org/stable/41804544](http://www.jstor.org/stable/41804544)
- Bertholini, F., Pereira, C., & Renno, L. (2018). Pork is policy: Dissipative inclusion at the local level. *Governance*, 31(4), 701-720. <https://doi.org/10.1111/gove.12331>
- Boadway, R., & Dougherty, S. (2018). Decentralisation in a Globalised World. <https://doi.org/doi:https://doi.org/10.1787/ceaaa9b0-en>
- Borland, M. V., Howsen, R. M., & Trawick, M. W. (2005). An investigation of the effect of class size on student academic achievement. *Education Economics*, 13(1), 73-83.  
<https://doi.org/10.1080/0964529042000325216>
- Bosco de Lima, A. (2020). Theses on municipal education and the municipal council of education in Brazil [Teses sobre a educação municipal e o conselho municipal de educação no Brasil. Tesis sobre educación municipal y el consejo municipal de educación en Brasil]. *Revista Ibero-Americana de Estudos em Educação*, 15(esp 1), 825-839. <https://doi.org/http://dx.doi.org/10.21723/riace.v15iesp.1.13352>
- Bosworth, R. (2014). Class size, class composition, and the distribution of student achievement. *Education Economics*, 22(2), 141-165.  
<https://doi.org/10.1080/09645292.2011.568698>
- Boyne, G. (1995). Population Size and Economies of Scale in Local Government. *Policy and Politics*, 23(3), 213-222.
- Boyne, G. A., & Chen, A. A. (2007a). Performance Targets and Public Service Improvement. *Journal of Public Administration Research and Theory: J-PART*, 17(3), 455-477.  
[www.jstor.org/stable/25096331](http://www.jstor.org/stable/25096331)
- Boyne, G. A., & Chen, A. A. (2007b). Performance Targets and Public Service Improvement. *Journal of Public Administration Research and Theory*, 17(3), 455-477.  
<https://doi.org/10.1093/jopart/mul007>
- Bozeman, B. (1993). A Theory Of Government "Red Tape". *Journal of Public Administration Research and Theory*, 3(3), 273-304.  
<http://jpart.oxfordjournals.org/content/3/3/273.abstract>
- Brasil. (1992). *Constituição da Republica Federativa do Brasil: promulgada em 5 de outubro de 1988*. Saraiva.
- Lei de Diretrizes e Bases da Educação, (1996).
- Brasil. (2013). *Cartilha TCU Convênios e outros Repasses*. Brasília: Tribunal de Contas da União
- Brewer, G. A., & Walker, R. M. (2009). The Impact of Red Tape on Governmental Performance: An Empirical Analysis. *Journal of Public Administration Research and Theory*, 20(1), 233-257. <https://doi.org/10.1093/jopart/mun040>
- Brower, J., & Mahajan, V. (2013). Driven to Be Good: A Stakeholder Theory Perspective on the Drivers of Corporate Social Performance. *Journal of Business Ethics*, 117(2), 313-331. <https://doi.org/10.1007/s10551-012-1523-z>

- Bryson, J. M. (1995). *Strategic Planning For Public and Non-Profit Organization*. Jossey-Bass Publishers.
- Bryson, J. M. (2018). *Strategic planning for public and nonprofit organizations: A guide to strengthening and sustaining organizational achievement*. John Wiley & Sons.
- Buchanan, J. M., & Tollison, R. D. (1984). *The Theory of public choice--II* (Vol. 2). University of Michigan Press.
- Carmeli, A. (2008). The Fiscal Distress of Local Governments in Israel: Sources and Coping Strategies. *Administration & Society*, 39(8), 984-1007.  
<https://doi.org/10.1177/0095399707309358>
- Chaisty, P., Cheeseman, N., & Power, T. J. (2018). *Coalitional presidentialism in comparative perspective: Minority presidents in multiparty systems*. Oxford University Press.
- Cook, J. B. (2018). The effect of charter competition on unionized district revenues and resource allocation. *Journal of Public Economics*, 158, 48-62.  
<https://doi.org/https://doi.org/10.1016/j.jpubeco.2017.12.003>
- Cury, C. R. J. (2006). Conselhos de Educação: fundamentos e funções. *Revista Brasileira de Política e Administração da Educação-Periódico científico editado pela ANPAE*, 22(1), 41-67.
- De Almeida, J. A. T. (2021). The Best Public Education in Brazil: Considerations From Behavior Analysis of Culture in the Educational System of Sobral. *Behavior and Social Issues*, Forthcoming. <https://doi.org/10.1007/s42822-020-00042-y>
- De Mello, L. (2006). *Fiscal responsibility legislation and fiscal adjustment: the case of Brazilian local governments* (Vol. 3812). World Bank Publications.
- Desmidt, S., & Meyfrootd, K. (2020). How Does Public Disclosure of Performance Information Affect Politicians' Attitudes towards Effort Allocation? Evidence from a Survey Experiment. *Journal of Public Administration Research and Theory*, 31(4), 756-772. <https://doi.org/10.1093/jopart/muaa054>
- Fisher, C. M. (1998). *Resource allocation in the public sector: values, priorities, and markets in the management of public services*. Routledge.
- Fisher, R. C., & Papke, L. E. (2000). Local Government Responses to Education Grants. *National Tax Journal*, 53(1), 153-168. <http://www.jstor.org/stable/41789446>
- Freeman, R. E. (1984). *Strategic Management: A Stakeholder Approach*. Pitman.
- Freeman, R. E., Phillips, R., & Sisodia, R. (2020). Tensions in Stakeholder Theory. *Business & Society*, 59(2), 213-231. <https://doi.org/10.1177/0007650318773750>
- Gallagher, M. (1993). *A Public Choice Theory of Budgets: Implications for Education in Less Developed Countries* (0010-4086). (Comparative Education Review, Issue. <https://search.ebscohost.com.sbxproxy.fgv.br/login.aspx?direct=true&db=eric&AN=EJ467621&lang=pt-br&site=eds-live>
- George, B., Walker, R. M., & Monster, J. (2019). Does Strategic Planning Improve Organizational Performance? A Meta-Analysis. *Public Administration Review*, 79(6), 810-819. <https://doi.org/10.1111/puar.13104>
- Gerber, E. R., & Hopkins, D. J. (2011). When Mayors Matter: Estimating the Impact of Mayoral Partisanship on City Policy. *American Journal of Political Science*, 55(2), 326-339. <https://doi.org/10.1111/j.1540-5907.2010.00499.x>
- Godenhjelm, S., & Johanson, J. E. (2018). The effect of stakeholder inclusion on public sector project innovation [Article]. *International Review of Administrative Sciences*, 84(1), 42-62. <https://doi.org/10.1177/0020852315620291>
- Gomes, R. C. (2003). *Does stakeholder orientation matter?: empirical evidence about power and influence in local government decision-making* [Aston University]. Birmingham.

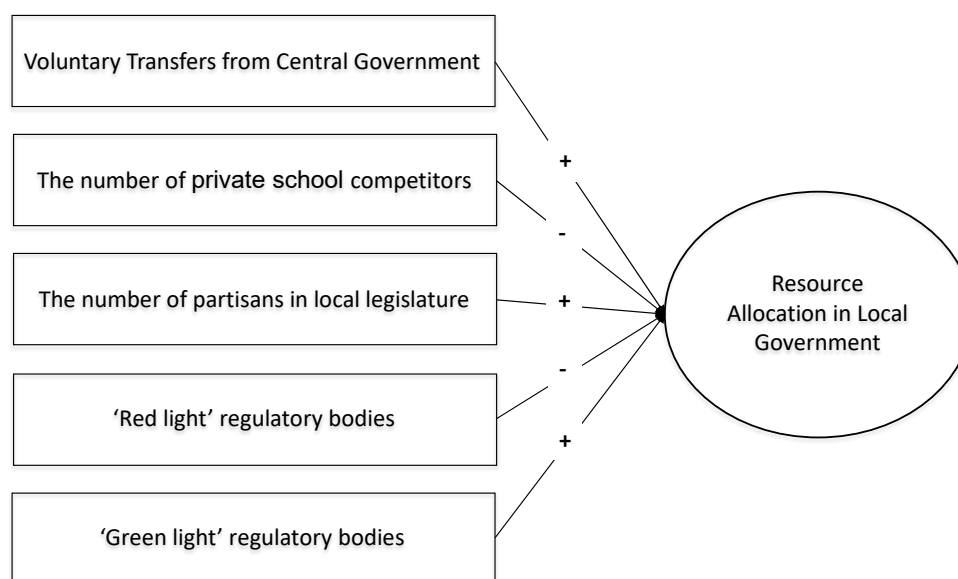
- Gomes, R. C., Liddle, J., & Gomes, L. d. O. M. (2010a). A five-sided model of stakeholder influence: a cross-national analysis of decision making in local government. *Public Management Review*, 12(5), 701-724.
- Gomes, R. C., Liddle, J., & Gomes, L. O. M. (2010b). Cross-Cultural Analysis of Stakeholder Identification in Municipal Districts. *Public Management Review*, 12(1), 53-75. <https://doi.org/10.1080/14719030902800218>
- Gomes, R. C., Osborne, S. P., & Guarnieri, P. (2020). Stakeholder influence and local government performance: a systematic literature review. *Revista de Administração Pública*, 54, 448-467. [http://www.scielo.br/scielo.php?script=sci\\_arttext&pid=S0034-76122020000300448&nrm=iso](http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0034-76122020000300448&nrm=iso)
- Hamilton, L. C. (2012). *Statistics with Stata: version 12*. Cengage Learning.
- Herman, L. E. (2017). Democratic Partisanship: From Theoretical Ideal to Empirical Standard. *American Political Science Review*, 111(4), 738-754. <https://doi.org/10.1017/S0003055417000247>
- Hibbs, D. A. (1992). Partisan theory after fifteen years. *European Journal of Political Economy*, 8(3), 361-373. [https://doi.org/https://doi.org/10.1016/0176-2680\(92\)90001-W](https://doi.org/https://doi.org/10.1016/0176-2680(92)90001-W)
- Holm, J. M. (2018). Successful Problem Solvers? Managerial Performance Information Use to Improve Low Organizational Performance. *Journal of Public Administration Research and Theory*, 28(3), 303-320. <https://doi.org/10.1093/jopart/muy017>
- Hox, J. (1998). Multilevel modeling: When and why. In *Classification, data analysis, and data highways* (pp. 147-154). Springer.
- Jarque, C. M., & Bera, A. K. (1980). Efficient tests for normality, homoscedasticity and serial independence of regression residuals. *Economics letters*, 6(3), 255-259.
- Joyce, P. (2015). *Strategic management in the public sector*. Routledge.
- Keulemans, S., & Groeneveld, S. (2019). Supervisory Leadership at the Frontlines: Street-Level Discretion, Supervisor Influence, and Street-Level Bureaucrats' Attitude Towards Clients. *Journal of Public Administration Research and Theory*, 30(2), 307-323. <https://doi.org/10.1093/jopart/muz019>
- Kleider, H., Röth, L., & Garritzmann, J. L. (2018). Ideological alignment and the distribution of public expenditures. *West European Politics*, 41(3), 779-802. <https://doi.org/10.1080/01402382.2017.1395634>
- Lewis, B. D., & Smoke, P. (2017). Intergovernmental Fiscal Transfers and Local Incentives and Responses: The Case of Indonesia. *Fiscal Studies*, 38(1), 111-139. <https://doi.org/10.1111/1475-5890.12080>
- Lienert, M. I. (2010). *Role of the legislature in budget processes*. International Monetary Fund.
- Litschig, S., & Morrison, K. M. (2013). The Impact of Intergovernmental Transfers on Education Outcomes and Poverty Reduction. *American Economic Journal: Applied Economics*, 5(4), 206-240. <https://doi.org/10.1257/app.5.4.206>
- MacIndoe, H., & Barman, E. (2013). How Organizational Stakeholders Shape Performance Measurement in Nonprofits: Exploring a Multidimensional Measure [Article]. *Nonprofit and Voluntary Sector Quarterly*, 42(4), 716-738. <https://doi.org/10.1177/0899764012444351>
- Markusen, A. R., Saxenian, A., & Weiss, M. A. (1981). Who Benefits from Intergovernmental Transfers?\*. *Publius: The Journal of Federalism*, 11(1), 5-36. <https://doi.org/10.1093/oxfordjournals.pubjof.a037350>
- Masaki, T. (2018). The impact of intergovernmental transfers on local revenue generation in Sub-Saharan Africa: Evidence from Tanzania. *World Development*, 106, 173-186. <https://doi.org/https://doi.org/10.1016/j.worlddev.2018.01.026>

- McEwan, P. J., & Carnoy, M. (2000). The Effectiveness and Efficiency of Private Schools in Chile's Voucher System. *Educational Evaluation and Policy Analysis*, 22(3), 213-239. <https://doi.org/10.3102/01623737022003213>
- Meier, K. J., & Laurence J. O'Toole, J. R. (2009). The dog that didn't bark: how public managers handle environmental shocks. *Public Administration*, 87(3), 485-502. <http://dx.doi.org/10.1111/j.1467-9299.2009.01773.x>
- Minge, D. (1977). Law as a determinant of resource allocation by local government. *National Tax Journal*, 30(4), 399-410.
- Morgan, D. R., & Watson, S. S. (1995). The effects of mayoral power on urban fiscal policy [Article]. *Policy Studies Journal*, 23, 231+. [https://link.gale.com/apps/doc/A17633250/AONE?u=fgv\\_br&sid=AONE&xid=c2e85d83](https://link.gale.com/apps/doc/A17633250/AONE?u=fgv_br&sid=AONE&xid=c2e85d83)
- Mouritzen, P. E., & Svara, J. H. (2002). *Leadership at the apex: politicians and administrators in Western local governments*. University of Pittsburgh Pre.
- Moutinho, J. A., & Kniess, C. T. (2017). Transferências voluntárias da União para Municípios Brasileiros: identificação de correlação entre variáveis. *Revista de Gestão e Projetos*, 8(1), 90-101.
- Mueller, D. C. (2008). Public Choice: An Introduction. In C. K. Rowley & F. G. Schneider (Eds.), *Readings in Public Choice and Constitutional Political Economy*. Springer.
- Nicholson-Crotty, S. (2004). Goal Conflict and Fund Diversion in Federal Grants to the States. *American Journal of Political Science*, 48(1), 110-122. <https://doi.org/https://doi.org/10.1111/j.0092-5853.2004.00059.x>
- O'Toole, L. J., Jr., & Meier, K. J. (1999). Modeling the Impact of Public Management: Implications of Structural Context. *J Public Adm Res Theory*, 9(4), 505-526. <http://jpart.oxfordjournals.org/cgi/content/abstract/9/4/505>
- Oliver, C. (1991). Strategic Responses to Institutional Processes. *Academy of Management Review*, 16(1), 145-179. <https://doi.org/10.5465/amr.1991.4279002>
- Ortega, A. (2020). State partisanship and higher education. *Economics of Education Review*, 76, 101977. <https://doi.org/https://doi.org/10.1016/j.econedurev.2020.101977>
- Park, J. H. (2019). Does Citizen Participation Matter to Performance-Based Budgeting? *Public Performance & Management Review*, 42(2), 280-304. <https://doi.org/10.1080/15309576.2018.1437050>
- Park, S., & Liang, J. (forthcoming). A Comparative Study of Gender Representation and Social Outcomes: The Effect of Political and Bureaucratic Representation. *Public Administration Review*, n/a(n/a). <https://doi.org/10.1111/puar.13092>
- Pate-Bain, H., Achilles, C. M., Boyd-Zaharias, J., & McKenna, B. (1992). Class size does make a difference. *Phi Delta Kappan*, 74, 253-253.
- Perez, M., & Socias, M. (2008). Highly successful schools: what do they do differently and at what cost? [Article]. *Education Finance and Policy*, 3(1), 109-129. <https://doi.org/10.1162/edfp.2008.3.1.109>
- Piening, E. P. (2013). Dynamic Capabilities in Public Organizations. *Public Management Review*, 15(2), 209-245. <https://doi.org/10.1080/14719037.2012.708358>
- Pressman, J. L. (1972). Preconditions of Mayoral Leadership. *American Political Science Review*, 66(2), 511-524. <https://doi.org/10.2307/1957795>
- Rainey, H. G., & Steinbauer, P. (1999). Galloping Elephants: Developing Elements of a Theory of Effective Government Organizations. *Journal of Public Administration Research and Theory*, 9(1), 1-32. <http://jpart.oxfordjournals.org/cgi/content/abstract/9/1/1>
- Ritchie, M. N., & You, H. Y. (2019). Legislators as Lobbyists. *Legislative Studies Quarterly*, 44(1), 65-95. <https://doi.org/https://doi.org/10.1111/lsq.12221>

- Rivenbark, W. C., Fasiello, R., & Adamo, S. (2019). Exploring Performance Management in Italian Local Government: The Necessity of Outcome Measures and Citizen Participation. *The American Review of Public Administration*, 49(5), 545-553. <https://doi.org/10.1177/0275074018775125>
- Rubin, I. S. (2019). *The politics of public budgeting: Getting and spending, borrowing and balancing* (Ninth Edition ed.). CQ Press.
- Salanick, G. R., & Pfeffer, J. (1977). Constraints On Administrator Discretion: The Limited Influence of Mayors on City Budgets. *Urban Affairs Quarterly*, 12(4), 475-498. <https://doi.org/10.1177/107808747701200405>
- Salas-Velasco, M. (2020). Does Greater School Resource Allocation Improve Efficiency in Education Production? Performance Assessment of Spanish Public Sector-Funded Schools. *International Journal of Educational Management*, 34(5), 903-915. <https://search.ebscohost.com.sbxproxy.fgv.br/login.aspx?direct=true&db=eric&AN=EJ1250757&lang=pt-br&site=eds-live>  
<http://dx.doi.org/10.1108/IJEM-08-2019-0305>
- Schmidt, M. G. (1996). When parties matter: A review of the possibilities and limits of partisan influence on public policy. *European Journal of Political Research*, 30(2), 155-183. <https://doi.org/https://doi.org/10.1111/j.1475-6765.1996.tb00673.x>
- Simonsen, W. (2018). *Citizen participation in resource allocation*. Routledge.
- Sliwka, A., & Istance, D. (2006). Parental and Stakeholder 'Voice' in Schools and Systems. *European Journal of Education*, 41(1), 29-43. <https://doi.org/https://doi.org/10.1111/j.1465-3435.2006.00244.x>
- Smallwood, J., Fishman, D. J., & Schooler, J. W. (2007). Counting the cost of an absent mind: Mind wandering as an underrecognized influence on educational performance. *Psychonomic Bulletin & Review*, 14(2), 230-236. <https://doi.org/10.3758/bf03194057>
- Suhyanto, O., Juanda, B., Fauzi, A., & Rustiadi, E. (2021). The Effect of Transfer Funds on District/Municipality Development Performance in West Java Province Indonesia. *International Journal of Economics and Financial Issues*, 11(3), 22-27.
- Touchton, M., Sugiyama, N. B., & Wampler, B. (2017). Democracy at Work: Moving Beyond Elections to Improve Well-Being. *American Political Science Review*, 111(1), 68-82. <https://doi.org/10.1017/S000305541600068X>
- Touchton, M. R., Wampler, B., & Peixoto, T. C. (2019). Of governance and revenue: Participatory institutions and tax compliance in Brazil. *World Bank Policy Research Working Paper*(8797).
- Uddin, S., Mori, Y., & Adhikari, P. (2019). Participatory budgeting in a local government in a vertical society: A Japanese story [Article]. *International Review of Administrative Sciences*, 85(3), 490-505. <https://doi.org/10.1177/0020852317721335>
- Van Houwelingen, P. (2018). Local autonomy, municipal size and local political participation in Europe. *Policy Studies*, 39(2), 188-203. <https://doi.org/10.1080/01442872.2018.1451500>
- Velasquez, D. L. (2019). Internal and External Environments. In L. K. Hussey & D. L. Velasquez (Eds.), *Library Management 101: A Practical Guide* (pp. 163-171).
- Vinzant, D. H., & Vinzant, J. C. (1996). Strategy and organizational capacity: Finding a fit. *Public Productivity & Management Review*, 20(2), 139-157.
- Wang, S., Sun, X., & Song, M. (2021). Environmental Regulation, Resource Misallocation, and Ecological Efficiency. *Emerging Markets Finance and Trade*, 57(3), 410-429. <https://doi.org/10.1080/1540496X.2018.1529560>
- Wooldridge, J. M. (2010). *Econometric analysis of cross section and panel data*. MIT press.

- Yin, Y. (2021). Education and Economy—— In the Perspective of Human Rights and Global Economy. *Scientific and Social Research*, 3(1), 134-141.  
<https://doi.org/10.36922/ssr.v3i1.1076>
- Zhuang, Z. Y., & Collier, P. M. (2010). Resource Allocation Decisions in the Public Sector: A Model Based on a Study of Policing. *Available at SSRN 1626070*.  
<https://doi.org/http://dx.doi.org/10.2139/ssrn.1626070>

## 7. Tables and Figures



**Figure 1: Stakeholder Influences on Educational Expenditure**

Source: Authors' own analysis

**Table 1: Dependent, Control, and Independent Variables**

<i>Variables</i>		<i>Definition</i>
<i>Dependent</i>	EEpc	Log (total of educational expenditure ratio to the total number of students)
	CR	Log (number of students per classroom)
<i>Control</i>	Pop	Log (total of the population)
	GDPpc	Log (gross domestic product <i>per capita</i> )
<i>Independent</i>	LS	Log (ratio of the number of representatives from the mayor's political party to the total number of elected representatives)
	VTpc	Log (total of voluntary transfers from Federal Government <i>per capita</i> )
	PPE	Percentage of enrolments provided by private schools
	MCE	Dummy variable for the presence of MCE in the municipality (yes/no)
	DF	Dummy variable for the presence of deliberative function in the MCE (yes/no)
	SF	Dummy variable for the presence of supervisory function in the MCE (yes/no)
	NF	Dummy variable for the presence of normative function in the MCE (yes/no)
	CF	Dummy variable for the presence of consultative function in the MCE (yes/no)

**Table 2: Descriptive Analysis of the Variables before the log transformation**

<i>Variable</i>	<i>Obs</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min</i>	<i>Max</i>
<i>Population</i>	2144	388997	860766	94779	12038175
<i>Students per Classroom</i>	2144	63.58	28.56	11.58	217.14
<i>Education Expenditure per capita</i>	2144	14264858	18530476	139.45	204478807
<i>GDP per capita</i>	2144	27083.3	18925.26	3348.60	182102.80
<i>Presence of Municipal Council of Education</i>	2144	0.96	0.19	0	1
<i>Deliberative Function</i>	2144	0.88	0.33	0	1
<i>Supervisory Function</i>	2144	0.78	0.40	0	1
<i>Normative Function</i>	2144	0.83	0.38	0	1
<i>Consultative Function</i>	2144	0.86	0.35	0	1
<i>Voluntary transfer per capita</i>	2140	21.27	74.26	0	1230.50
<i>Percentage of Private Enrolments</i>	2144	0.65	0.03	0.26	0.89
<i>Legislative Support</i>	2144	0.32	0.19	0	0.94

Source: Data Analysis

**Table 3: Cross-Method Comparison Analysis For Educational Expenditure per capita**

<i>logEEpc</i>	<i>Newey-West Standard Error</i>	<i>OLS vce (cluster State)</i>	<i>Areg</i>
<i>logPop</i>	-0.8995 [0.000] (0.0701)	-0.8995 [0.000] (0.0626)	-0.9048 [0.000] (0.0726)
<i>logGDPpc</i>	0.1629 [0.094] (0.0973)	0.1629 [0.151] (0.1099)	0.1414 [0.183] (0.1061)
<i>logVTpc</i>	0.0511 [0.087] (0.0298)	0.0511 [0.069] (0.0269)	0.0556 [0.063] (0.0298)
<i>PPE</i>	4.6168 [0.003] (1.5626)	4.6168 [0.001] (1.2338)	5.1004 [0.002] (1.6752)
<i>LS</i>	-0.3700 [0.193] (0.2838)	-0.3700 [0.133] (0.2384)	-0.3469 [0.210] (0.2766)
<i>MCE</i>	0.2234 [0.521] (0.3477)	0.2234 [0.312] (0.2164)	0.0138 [0.972] (0.3888)
<i>DF</i>	0.0175 [0.927] (0.1904)	0.0175 [0.888] (0.1229)	0.0079 [0.967] (0.1909)
<i>SF</i>	0.1329 [0.326] (0.1352)	0.1329 [0.170] (0.0940)	0.0918 [0.524] (0.1440)
<i>NF</i>	-0.0282 [0.869] (0.1703)	-0.0282 [0.798] (0.1090)	-0.0182 [0.912] (0.1657)
<i>CF</i>	-0.1637 [0.317] (0.1635)	-0.1637 [0.158] (0.1126)	-0.1147 [0.478] (0.1614)
<i>Intercept</i>	12.5222 [0.000] (1.3412)	12.522 [0.000] (1.4070)	12.6624 [0.000] (1.4825)
<i>Number of obs</i>	880	880	880
<i>F(10, 869)</i>	23.41 [0.0000]		23.16 [0.000]
<i>F(25, 844)</i>			1.422 [0.083]
<i>R-squared</i>		0.2121	0.2439
<i>F(10, 25)</i>		185.09 [0.000]	

Standard errors between parentheses; Exact *p*-values in brackets

Source: Data Analysis



**Table 4: Cross-Method Comparison Analysis for Number of Students per Classroom**

<i>logCR</i>	<i>Fixed-Effects</i>	<i>MultiLevel Regression</i>	<i>Newey-West Standard Error</i>
<i>logPop</i>	-0.4115 [0.000] (0.0877)	0.2841 [0.000] (0.0123)	0.2933 [0.000] (0.017)
<i>logGDPpc</i>	-0.2387 [0.000] (0.0261)	-0.2369 [0.000] (0.0179)	-0.2210 [0.000] (0.0189)
<i>logVTpc</i>	0.0012 [0.632] (0.0025)	0.0106 [0.036] (0.0051)	0.0131 [0.026] (0.0059)
<i>PPE</i>	-2.9138 [0.000] (0.2641)	-4.1143 [0.000] (0.2825)	-3.9954 [0.000] (0.3304)
<i>LS</i>	0.0509 [0.030] (0.0234)	0.0222 [0.634] (0.0467)	0.0495 [0.354] (0.0534)
<i>MCE</i>	-0.0407 [0.387] (0.0469)	0.2244 [0.001] (0.0652)	0.3332 [0.000] (0.0691)
<i>DF</i>	-0.0530 [0.003] (0.0179)	-0.0617 [0.056] (0.0322)	-0.0552 [0.151] (0.0384)
<i>SF</i>	-0.0222 [0.133] (0.0148)	0.0064 [0.792] (0.0244)	-0.0383 [0.138] (0.0257)
<i>NF</i>	0.0564 [0.002] (0.0182)	0.0408 [0.146] (0.0280)	0.0245 [0.410] (0.0297)
<i>CF</i>	0.0016 [0.921] (0.0161)	-0.0143 [0.600] (0.0273)	-0.0274 [0.430] (0.0347)
<i>Intercept</i>	13.4821 [0.000] (0.9985)	5.4299 [0.000] (0.2609)	4.9556 [0.000] (0.3338)
<i>Number of obs</i>	880	880	880
<i>F(10, 844)</i>	61.45 [0.000]		73.90 [0.000]
<i>R-squared</i>	0.5002		
<i>Number of groups</i>	256	5/26	
<i>Wald chi2(10)</i>		972.73 [0.000]	
<i>LR Test chibar2(2)</i>		236.39	
<i>L1 Variance</i>		0.0605 [0.000] <sup>†</sup> (0.0029)	
<i>L2 Variance</i>		0.0663 [0.001] <sup>†</sup> (0.0216)	
<i>L3 Variance</i>		0.0156 [0.207] <sup>†</sup> (0.0191)	
<i>Interclass Correlation L2</i>		0.5753 [0.000] <sup>†</sup> (0.0806)	
<i>Interclass Correlation L3</i>		0.1097 [0.187] <sup>†</sup> (0.1232)	

Standard errors between parentheses; Exact *p*-values in brackets; <sup>†</sup> these *p*-values were calculated using the function NORM.DIST from Microsoft Excel software as STATA does not provide this value for Mixed-effects regression.

Source: Data Analysis

## 8. Appendices

**Table 5: List of States**

<i>Region</i>	<i>Initials</i>	<i>Denominations</i>	<i>Region</i>	<i>Initials</i>	<i>Denominations</i>
<i>Center</i>	<i>GO</i>	Goiás	<i>Northeast</i>	<i>MA</i>	Maranhão
	<i>MS</i>	Mato Grosso do Sul		<i>PB</i>	Paraíba
	<i>MT</i>	Mato Grosso		<i>PE</i>	Pernambuco
	<i>TO</i>	Tocantins		<i>PI</i>	Piauí
<i>North</i>	<i>AM</i>	Amazonas		<i>RN</i>	Rio Grande do Norte
	<i>AP</i>	Amapá		<i>SE</i>	Sergipe
	<i>PA</i>	Pará	<i>South</i>	<i>PR</i>	Paraná
	<i>RO</i>	Rondônia		<i>RS</i>	Rio Grande do Sul
	<i>RR</i>	Roraima		<i>SC</i>	Santa Catarina
<i>Northeast</i>	<i>AC</i>	Acre	<i>Southeast</i>	<i>ES</i>	Espirito Santo
	<i>AL</i>	Alagoas		<i>MG</i>	Minas Gerais
	<i>BA</i>	Bahia		<i>RJ</i>	Rio de Janeiro
	<i>CE</i>	Ceará		<i>SP</i>	São Paulo

Source: Data Analysis