

Pork is policy: Dissipative inclusion at the local level

Frederico Bertholini¹ | Carlos Pereira² | Lucio Renno^{1,3}

¹CODEPLAN-DF

²Getulio Vargas Foundation (FGV)

³University of Brasilia

The article investigates the impact of local policies on human development indicators in Brazilian municipalities. This is an attempt to investigate the role of the legislative branch in reducing inequality and poverty through budget amendments, usually seen in derogatory form as pork barrel politics. We assess the effect of pork on municipalities using up-to-date policy evaluation techniques. Brazil is a case of extreme inequality and an active legislative branch in disbursing monies. The data set contains over 60,000 observations from all 5,500+ Brazilian municipalities for over a decade. We use matching and longitudinal data analysis techniques, treating pork as exogenous shocks, mapping how its effect reverberates on social and economic indicators in succeeding years. The results indicate a positive impact of such policies in improving local level development. However, these results are not sustainable over time, thus suggesting inclusion with a dissipative profile.

1 | INTRODUCTION

Universal versus local policies seems an endless dilemma for politicians and policymakers, especially regarding their effects on economic and social development. Should one allocate resources on universal policies, in that everyone has access, or focus on local policies—geographically or sectorially targeted—that mostly benefit particular groups in society?

These choices impose governance trade-offs. Conventional wisdom dictates that local policies are usually of a clientelistic nature, with a distributional bent in which particular interests prevail. Pork barrel, club goods,¹ and clientelism all fit the description and are usually understood in derogatory form, associated with rent seeking, capture, leakage, and corruption. More recently, targeted programs, based on mean tests have changed this perspective by emphasizing the technical, impersonal redistribution of monies to specific groups. It is reasonable to conjecture that the distribution of local policies also follows technical protocol, albeit mean tests are not required in some such policies. Conversely, universal policies potentially reach greater numbers of beneficiaries and its fairness is usually less controversial.

We propose that this is a false dichotomy when considering policy impact. Policies have different scopes, destinations, and aims; still, similar standards and criteria should be applied to evaluate their

impact. We should not discredit one type of public policy based on preconceptions. In other words, pork barrel politics are policies nonetheless and their impact in society should be evaluated as such.

Pork is usually seen as suboptimal relative to universalistic policies or those based on means tests. We follow Golden and Min (2013) and define pork barrel politics as “local public goods. . . . Examples of pork-barrel goods include (some) discretionary allocations of capital construction, particularly those made out of the public eye with partisan goals” (p. 76). Similar, to Diaz-Cayero et al. (2012, 2016), we test if the allocation of local policies impacts human development indicators, including infant mortality rate (IMR), age–grade gap, unemployment, and income, capturing distinct dimensions of human development (Sen, 1999).² Hence, we treat pork barrel as a public policy and test for its impact on social and economic aspects of human development at the local level.

The purpose of this article, therefore, is to investigate the effect of local policies proposed by legislators via amendments to the annual budget in local level development. Do legislative national transfers help or harm municipalities’ social and economic developments? Is access to policies and policy provision by the state, intermediated through Congress, an important promoter of human development?

Therefore, our study contributes to understanding how the provision of public goods and services fosters well-being (Przeworski et al., 2000; Sen, 1999; Touchton, Sugiyama, & Wampler, 2017; Touchton & Wampler, 2014). Different from prior work, however, we emphasize the disbursement of public funds by legislators in the form of infrastructure provision to municipalities in different areas (health, education, public works, etc.). We use a plethora of development indicators, capturing the multidimensional nature of human development (Sen, 1999), to investigate the effect of such policies, and we control for other intergovernmental transfers. Hence, we focus on how the additional contribution of paid amendments improves living conditions in Brazilian municipalities.

Our answer to the main research question is nuanced: Inclusive policies might have a dissipative potential (Alston, Melo, Mueller, & Pereira, 2013, 2016). That is, local policies authored by congress members, not always implemented in a coordinated manner, might have a dissipative effect that washes away over time. In other words, local policies can generate social and economic inclusion in the short run, but the effect dissipates as it is inefficiently distributed over time and in a governance environment prone to poor coordination.

Localized, targeted policies may generate externalities with high collective costs (weak means tests, coordination problems between local and national decision makers, and lack of coordination within Congress between political parties), reducing the benefits accrued, especially over time. Hence, the dissipative effect of a targeted policy is a matter of empirical verification. In some cases, the costs of this dissipative inclusion might be low. In others they might be extremely high, overriding the public good it produces. This article tests such an approach, focusing on evaluating the impact of budgetary amendments at the municipal local level in Brazil. Hence, this debate is linked to discussions about the relationship between dosage and result and to the potential diminishing returns of policy investment over time.

To test our argument, we constructed an original data set covering all Brazilian municipalities from 1999 to 2010 mapping all intergovernmental transfers to municipalities and including several poverty, inequality, and developmental indicators at the municipal level. To our knowledge, it is one of the largest data sets on public expenditures in the developing world and one of very few to vertically integrate hypothesis testing up and down the federal ladder of abstraction.

We use matching and longitudinal data analysis techniques controlling for several observable characteristics of the municipalities. We treat legislative amendments as exogenous shocks by generating a new inflow of resources at the local level as a kind of stimulus of the local economy. Then, we map how they reverberate on social and economic indicators in succeeding years. Hence, we evaluate the impact of amendments on socioeconomic indicators at the local level.

It is important to highlight that we do not claim that pork transfers would have a different effect on local welfare—more focused or more efficient—when compared to other transfers. The manuscript claims that when controlled for other types of transfers and additional observable characteristics of the municipalities, pork transfers do provide an inclusive social and economic effect though not consistent over time, thus suggesting a dissipative profile of local policies.

Whereas the literature on political democracy explores the connection between election and government performance by promoting accountability (Boix, 2015), and between citizens' participation and the implementation of inclusive social policy (Touchton et al., 2017; Touchton & Wampler, 2014), we argue that social and economic inclusion, albeit dissipative, could be a consequence of a very competitive electoral environment. Legislators proposing amendment funding have electoral incentives to ensure that the money gets spent appropriately and they have the will, networks, resources, and knowledge to monitor implementation in their districts.

We develop our argument as follows. Next, we examine different views about the role and effects of pork barrel politics, including optimistic and critical perspectives of the effect of pork on local development. We then focus on the meaning of dissipative inclusion, defined as a process in which inclusive policies might also be accompanied by a myriad of distortions and inefficiencies. Next, we apply a quasiexperimental method (propensity score matching) and observe the impact of receiving local policies (treatment effect) on social inclusion and economic performance of the municipality. Finally, we conclude highlighting the main findings and results.

2 | A REVIEW OF THE LITERATURE ON PORK BARREL POLITICS: DISTRIBUTIVE OR RESPONSIVE

There have been disagreements among scholars about the effect of discretionary municipal-level transfers. Conversely, it is possible to identify a literature that emphasizes the “evils of pork.” That is, from the perspective of the target municipality, the national funds seem to be free, but clearly at the national level someone has to pay for the legislative stimulus spending. In line with Golden and Min (2013), this side of the literature focuses on the distributive dimension of pork barrel politics.³ Conversely, there is also evidence that local-level distributive policies can have positive direct effects on the well-being of citizens, therefore related to the view that pork is responsive to specific public interests. We explore these competing views below.

2.1 | The limitations of pork barrel politics: An emphasis on distribution

The perception that pork is a distributive tool with collective costs is widespread in the literature. Baron (1991), for example, models pork in plurality institutions and states that it benefits particular interests with collective costs and can lead to economically inefficient distributive programs. Shepsle and Wringast (1981) offer a similar view, considering pork economically inefficient, but politically and electorally popular. Ortega and Penfold-Becerra (2008) confirm this argument and further claim that this type of policy targets low-income voters because they extract higher marginal benefits from these types of goods compared to higher income groups. For Robinson and Verdier (2003), pork barrel and patronage are a relatively attractive political strategy when there are high levels of inequality and low productivity. Brusco, Nazareno, and Stokes (2004) also demonstrate that buying votes is an efficient strategy to mobilize electoral support among low-income citizens in Argentina. They demonstrate that this is particularly the case when parties can threaten to punish, in a believable manner, voters who abandon patronage bargains. *Hence, pork is associated with poverty and inequality and policy inefficiency, creating a feedback loop that crystalizes cycles of exclusion.*

Diaz-Cayeros, Estevez, and Magaloni (2003) state that politicians will invest relatively more funds in particular goods in districts with low electoral competition, where it will be easier to identify targets and maximize the electoral return of pork. Calvo and Murillo (2008) show that both the proximity to the political network and ideology mold pork barrel expectations in voters with respect to local benefits compared to national ones. Thus, political parties have the possibility of choosing between political networks and ideology to adjust voter expectations. *Pork derives from and reinforces less political competition and thrives on the need of the poor.*

Moreover, practices to allocate local policies can be more common among members of certain parties than others. Brusco et al. (2004), for example, argue that voters and politicians from parties that are traditionally related to patronage practices may use pork barrel policies more. Ames (1995), analyzing the Brazilian case, argues that federal deputies from the Workers' Party (PT) are less interested in the provision of infrastructure but, conversely, more interested in patronage. Ames (1995, 2001), however, is quite critical of the use of budgetary amendments as a reelection strategy and for negotiations in Congress, as it increases governing costs, allocation inefficiency, and the likelihood of public debt.

According to Sodr e and Alvez (2010), budgetary amendments in the Brazilian Congress focusing on local policies are a source of inefficiencies, patronage, and corruption. In their view, budgetary amendments produce more harm than good for the political system by linking amendments to corruption. Based on a small sample of 200 Brazilian municipalities included in random investigations by the Office of the Comptroller General (CGU), the authors argue that municipalities with evidence of corruption received amendments in the 2 years prior to the CGU audit (Zamboni, 2012). *Hence, budgetary amendments induce corruption.*

The work by Cohen, Coval, and Malloy (2011) finds that federal spending causes state businesses to shrink, suggesting that pork barrel spending does not stimulate local business by crowding out private corporation investments. Actually, the more access a state has to the federal pump in Washington, DC, the more private companies wither on the vine. It implies a kind of "evils of pork," in which firms located in the benefited states significantly cut physical and R&D spending, reduce employment, and experience lower sales. They show that fiscal spending shocks significantly dampen corporate investment activity. This retrenchment occurs within large and small states and is most pronounced among geographically concentrated firms. *Pork arrests development by intimidating private investment.*

2.2 | The advantages of pork barrel politics: Responsive policies

An alternative perspective sees pork barrel politics in a lighter vein. Be it because voters demand this type of policy and it brings electoral rewards to incumbents who deliver pork (Ames, Pereira, & Renn o, 2011; Pereira & Renn o, 2003, 2007), or because the negotiation over the execution of amendments on the part of the executive branch is transformed into an important guarantee of governability (Alston & Mueller, 2006; Ames, 2001; Pereira & Mueller, 2004), amendments are essential to foster representation of interests and grease the decision-making process in multiparty presidential systems (Raile, Pereira, & Power, 2011). In this last aspect, pork is exchanged for political support.

But, pork may also affect citizens directly, improving living conditions, reducing inequalities and poverty. Carvalho (2007) presents positive outcomes from amendments in decreasing regional inequalities in Brazil, focusing on state-level data. The legislative branch may also propose bills that address inequality and poverty, in addition to presenting budgetary amendments (Lemos, 2001). Lemos (2001) shows that legislators propose social policy bills frequently, indicating their disposition in attenuating poverty and exclusion.

It is, therefore, essential to consider a possible positive role, even if dissipative, that local pork barrel policies have in promoting development, especially in poorer municipalities with serious social and

economic problems, and restricted access to public funds. If pork is what the voters want and need and pork is what Congress delivers, then local policies might not mean any type of rupture in the representative process (Ames et al., 2011). On the contrary, they indicate that democracy is functioning in a responsive manner by addressing local problems, as predicted by the literature on political representation (Pitkin, 1967; Powell, 2005).

In addition, incumbent legislators are especially interested in assuring that their amendments reach the proposed destination and that they are implemented correctly. Pork barrel affects the incumbent's electoral chances. Therefore, he/she devotes time and effort to make sure the money is spent and affects citizen's lives.

Therefore, pork can be an efficient strategy both for voters and lawmakers and can play a role in improving the quality of democratic representation, defined simply as the force with which voters' interests are reflected in the outcomes of the political system (Powell, 2005). In countries immersed in inequality and poverty, with municipal governments that are needy for funds and have a great dependence on the federal budget, the transfer of funds via pork barrel policies can not only be an efficient manner of distributing income and social inclusion, but oftentimes the only means by which federal funds reach needy populations in some Brazilian municipalities.

2.3 | Null evidence about the effect of pork

There are also scholars who offer neither a negative nor a positive view of the effect of pork barrel politics on local development. Snyder and Welch (2015), for instance, claim a different interpretation of the Cohen et al. (2011) findings that new chairmanship allocation of pork leads to a decline in the consolidated investments of firms in the senators' home state. They take a second look at the Cohen's et al. data and find no evidence that changes in congressional seniority, and the corresponding increase in the allocation of federal transfers, influences corporate investments. In fact, "the same inference could be obtained in a placebo that begins years earlier, suggesting that the capital-expenditure decline was primarily a 1987–1992 Texas effect (following a 1980–1986 oil price decline), and the standard errors were not clustered by state." Precisely, they suggest that the Cohen et al. capital-expenditure effect is indeed a Texas effect.

Similarly, Levitt and Poterba (1999) find no association between chairmanship, state political competition, and geographic distribution of federal funds. Thus, higher district federal spending does not appear to be the source of the link between state economy growth and congressional representation. In fact, their results provide support for both nonpartisan and partisan models of congressional distributive politics. That is, in spite of the effect of several political variables on economic growth rate, they find no consistent associations between political variables and allocation of public spending.

Fowler and Hall (2015) also find that more senior congressmen did not bring more discretionary federal outlays to their districts, although earmarks were only 2% of total outlays. They find that senior members of the U.S. Congress, on average, bring no more pork to their districts than the counterfactual freshman representing the same district at the same time. Based on these findings, Fowler and Hall conclude that although American legislators win reelection at astounding rates, voters have no pork-based incentive to reelect their experienced incumbents. Therefore, pork barrel politics cannot explain the incumbency advantage.

3 | PORK AS DISSIPATIVE INCLUSION

We claim that pork barrel policies play a positive role in Brazilian politics by promoting social and economic inclusion. However, their effects might not be sustainable over time, suggesting a dissipative profile of the inclusion.

Since its redemocratization process (1985), Brazil has been impacted by a strong and dominant belief anchored in the urgent need for social inclusion (Alston, Melo, Mueller, & Pereira, 2016).⁴ A general belief in social inclusion emerged as a reaction to the overwhelming social-economic inequality in Brazil, marked by one of the largest concentrations of wealth in the world. This belief produced a feedback loop with the growing awareness among political and social groups on the need for policies capable of promoting radical changes toward social inclusion. Therefore, as a consequence of the combination between strong economic growth and social inequality that occurred during the military regime (1964–1985), democratic governments have been intensely pressured by the belief in the need to implement social protection and inclusion policies.

Everything in Brazil became a matter of inclusion and politically justifiable in its name, including the legislators' initiatives to the annual budget in the form of local pork barrel policies (Pereira & Bertholini, 2017). However, the nature of such inclusion has been dissipative. Conversely, the belief of social inclusion has fostered institutions pushing Brazil in the direction of outcomes such as lower inequality and lower poverty. Conversely, a myriad of distortions and inefficiencies accompany the process of what Alston et al. (2016, p. 143) term dissipative inclusion, "a process through which open access to economic and political markets is achieved through belief-led purposeful policy, but where inefficiencies and dissipation are integral part of the process." Therefore, dissipation cancels out neither the transformative nature of the changes the country has experienced nor the inclusive facets of public policies performed by the government and legislators.

The upshot is that the push for greater social inclusion is full of distortions. It is important to bear in mind that these distortions are not a mere bug in the system that could be eliminated if there were more knowledge/technology or if more effort were made, but rather it is a largely unavoidable side effect of the inclusive development profile of the country that will necessarily arise. Dissipative inclusion, therefore, is an acceptable form of responding to the belief based on redistribution and attenuating inequality and poverty that has guided Brazilian politics in the last 30 years or so. We apply it here to explain the role of Congress in distributing federal monies, but it could be used to analyze any targeted policy program (i.e., *Bolsa Família*, *Land reform*, *Minha Casa Minha Vida*, etc.⁵).

The net effect of dissipative inclusion in Brazil is hard to determine not only because it is difficult to quantify both the dissipation and the inclusion, but also because the process is still ongoing and the outcomes on either side do not necessarily materialize at the same time. In many cases, the dissipation is quicker to emerge and tends to be much more conspicuous than the inclusion. It may also be, as suggested by Lindert (2003), that over time, social spending tends to become less distortive, whereas learning and adaptation tend to make inclusion more effective. For these reasons, it is common for the process of dissipative inclusion to be messy and confused with purely dysfunctional policymaking that has no compensating benefits.

This article aims precisely to investigate to what extent local policies, like pork barrel, play this social inclusion role, albeit dissipative, by providing citizens the benefits of such local policies, but with collective costs.

Pork barrel has several characteristics that make it prone to dissipative inclusion. It is seen by part of the literature as prone to ineffectiveness, given its particularistic and personalistic nature. But it also has traits that point to the possibility of generating inclusion. Although pork and other federal resources may not be substitutes for one another, the distribution of pork by legislators may allocate additional funds. Incumbent legislators have vested interests in making sure the money is spent locally, as their career survival depends, to a great extent, on pork (Pereira & Renno, 2003). Legislators' motivation to deliver pork is, therefore, to feed their electoral network at the local level (mayor, local council, local business, contractors, etc.) in exchange for electoral support and engagement for their reelection. This

might be the reason why some municipalities have never received pork (where legislators have no local network connection), whereas others keep receiving pork even when they, relatively speaking, no longer need it. Therefore, the level of inclusion and dissipation generated by local policies must be put to a test.

In addition, we argue that budgetary amendments in Brazil may lead to dissipation due to the decentralized nature of pork barrel policymaking and the lack of coordination among congress members' local policy initiatives. The budgetary decision making, implementation, and execution are very complex processes in Brazil. The executive has the power to craft the budget bill and sent it to Congress. The rules of the budgetary process are such that the executive runs very few risks of seeing his proposal disfigured by Congress.⁶ Despite this high level of executive control, Congress nevertheless systematically proposes and approves a large number of amendments (collective and individual) to the annual budget. These amendments, however, can only be over items in the investment category, which are typically only a small part of the entire budget. Moreover, Congress may not authorize expenditures that exceed budgetary revenues. Even though the resources added by Congress are small relative to the whole budget expenditure, they have a direct and substantive effect on the probability of reelection of legislators (Pereira & Renno, 2003). Until 1993, there were no limits regarding the number of amendments that each legislator could make to the PLO.⁷ All the steps and complex negotiations to approve amendments inside Congress do not assure that a project once approved and enacted by the president will be delivered. It is the executive who is responsible for budget execution, including the legislators' demands. Given the absence of synchronization between tax collection and expenditure, the executive has acted strategically by making the execution of amendments contingent on the availability of resources. Recently, however, Congress managed to make the execution of legislative amendments mandatory.

Once approved by Congress and signed by the president, these legislative amendments are included in the annual law. Both opposition and governing parties advance budgetary amendments. Hence, pork barrel policymaking requires intra- and interparty coordination as well as between branches of government. This process is extremely complex, making coordination and close scrutiny of all amendments by the small group of individuals responsible for their organization highly improbable (Alston & Mueller, 2006; Figueiredo & Limongi, 1999; Pereira & Mueller, 2004). Furthermore, the exclusion of budgetary amendments is costly for those in charge of coordinating this process, as it is prone to logrolling practices. Hence, most amendments presented are approved and included in the annual budgetary law, without careful scrutiny in the approval stage. Only when amendment execution is negotiated with the executive branch, through specific ministries, does the technical analysis take place. But even then, political links and networks are central to assure the actual disbursement of funds. The governance process, therefore, is prone to coordination problems and, consequently, dissipation.

The lack of coordination results in a possible accumulation of transfers by different congress members—especially from different parties—to the same municipality while other municipalities receive none. That is, the unequal political competition or voracious hunger for pork across municipalities and congress members' distinct interests/strategies of electoral survival generate incentives to dissipate funds. It could occur that irrespective of the municipality's developmental needs, congress members might prefer to allocate local policies to places where they already have political connections, bypassing other more needy municipalities. This is consistent with Mignozzetti and Cepaluni (2017, p. 29) who claim “politicians prefer to improve services that can be traded by votes. Programmatic politics become less important as clientelism represent the only equilibrium strategy for gathering votes.” The authors show that increasing the clientelistic supply in Brazil, which is associated with the size of city council, decreases infant mortality and increases educational enrollment at local

level in Brazil. However, these changes are not accompanied by improvements in education quality and preventive health care.

Furthermore, smaller municipalities, with less capability of coordinating local networks (mayor, council members, public employees, local businesspeople, etc.), could receive less pork while other municipalities with greater capabilities for organization and coordination receive benefits in a disproportionate manner. Finally, the repeated allocation of public policies in the same locality could reduce its impact on social and economic indicators in the long run, as they are no longer needed. Dissipative inclusion, in this way, could follow the law of diminishing returns. Over a certain threshold, further investment in a specific locality, policy program, or sector results in lower levels of benefit for the targeted population. Hence, there would be a dose response relationship between amendments implemented in a locality and their values and the outcomes reached.

In sum, it is possible that the lack of coordination in the organization of the thousands of amendments presented yearly to the budgetary law could lead to a less efficient allocation of these resources, requiring dose response assessment.

4 | DATA SET AND ANALYTICAL STRATEGY

We developed an original data set containing information about which Brazilian municipalities were benefited with the payment of budgetary amendments presented by Brazilian legislators between 1999 and 2010. The question we aim to answer is: What is the impact of this type of expenditure on certain aspects of human development at the municipal level?

The data set has a panel structure, with a larger number of cases in a cross-cutting selection, 5,570, for each of the years included. There are a total of over 60,000 municipality/year observations. We focus on the cases in which actual amounts of financial resources were in fact transferred, paid, to the municipalities through legislators' budgetary amendments. We explore four variables based on this principle: a dichotomous indicator of whether the municipality received monies from an amendment, how many years it received transfers from amendments, the number of amendments paid, and the total amount paid. Note that all, therefore, refer to municipalities that benefited from funds transferred due to the direct intervention of the legislative branch. Therefore, an additional advantage of our study is that we can do a detailed analysis by year and clearly follow the impact of pork barrel policies year after year.⁸

In addition, we control for the fact that amendments may be the main or most important source of financial resources for certain locales. In this respect, it is also essential to take into account the profile of the public expenditures in that municipality. Hence, we control for other discretionary transfers from the federal and state levels and municipal budgetary expenditures. We test if amendments improve human development indicators *taking into account all other monies spent in the municipality*.

Finally, our data set includes a myriad of variables that describe the social and economic conditions of municipalities, the dependent variables in our analysis. We include indicators on jobs and income, health, infant mortality, and education. Hence, we test whether the transfers of federal monies originated by legislators affect distinct social and economic indicators of human development. We expect that budgetary amendments will have a positive effect on improving living conditions at the local level. However, its impact will be attenuated over time. The insistence in transferring funds to municipalities that have become more inclusive over time, on a certain threshold, leads to null impacts, reducing the transfer's benefit and increasing its costs. Hence, over time, mostly due to coordination problems, the inclusionary impact of amendments dissipates, as one would expect given the diminishing returns of some policies and how response varies to dosage.⁹

5 | MATCHING AND THE DISTRIBUTION OF AMENDMENTS ACROSS BRAZILIAN MUNICIPALITIES

To examine whether the execution of individual amendments authored by congress members has a positive effect on local level human development, we used a quasiexperimental method in which Brazilian municipalities were paired through propensity score matching (PSM) based on a series of observable pretreatment characteristics. The following variables were used in the PSM, taking the year of 2002 as the benchmark: per capita GDP, infant mortality, all intergovernmental transfers to municipalities¹⁰ (including *Bolsa Familia*, PSF, FUNDEB, SUS, and state transfers), FIRJAN Jobs and Income Index, FIRJAN Education Index, FIRJAN Health Index, the effective number of political parties (based on the Golosov, 2010, formula) in national legislators elections calculated for each municipality, the voting difference between the first-round winner and runner-up in mayoral elections, and dichotomous regional variables (Center-West, Southeast, North, Northeast).

Many aspects can influence the performance of a public policy, be it local or national. For example, infant mortality has decreased in Brazil and income and formal employment increased, but these results can be a consequence of other factors that go beyond the implemented social policies. Through PSM, we aim to obtain a control group (that did not receive amendments) similar as possible to the treatment group (municipalities that received amendments) in relation to the observable local characteristics, hence isolating the effect of amendments from other confounding causes.

From then on, the treatment effect is verified (receiving individual amendments from lawmakers) in the dependent variables that measure social inclusion performance. Each Brazilian municipality that received amendment(s) was matched to similar municipalities (the closest neighbor) that did not receive amendments through the results of a probability model (logit).¹¹ The average difference of the results between the two groups (control and treatment) was compared to obtain the treatment “amendments executed or not” in the period 2002 to 2009.¹²

These results help uncover the story about why a municipality receives amendments. It is a combination of political and technical factors that drive the allocation of amendments. Given the allocation patterns of pork, we see it has the potential to be an efficient policy because it transfers funds to where they are needed. In municipalities that experienced revenue shortages under economic crisis, the monies from a budgetary amendment would work as an exogenous shock, promoting anticyclical policies. Furthermore, pork may be efficient because closely monitored by extremely interested politicians and their networks. So, it is a matter of making sure their promises will be accomplished to credibly claim credit for them.

Poorer municipalities, measured by per capita GDP, are more likely to receive funds as are those with higher infant mortality rates during the base year of the sample (2002), lower employment rates, and lower mean income. Hence, social and economic characteristics of the municipalities, which indicate the need for the transfers, affect the allocation of budgetary amendments’ funds. The potential for budgetary amendments to attenuate problems of exclusion, poverty, and inequality is present.

A controversial issue in the pertinent literature has to do with the role played by political competition attracting or diverting pork transfers. Should incumbent legislators target local benefits to safe or to competitive municipalities? Is pork conditioned by political competition or it determines the latter. Conversely, incumbent legislators may play safe and allocate the majority of the resources to “secure” municipalities to avoid disputes with other politicians, as predicted by Cox (2010). Conversely, Pereira and Renno (2003) show that the distribution of pork strongly affects the amount of competition inside the electoral district by decreasing the amount of rivals inside electoral strongholds. Yet, Levitt and Poterba (1999) find no association whatsoever between political competition and geographic distribution of funds.

We have included two measures of political competition as controlling in the PSM: first, the effective number of parties (ENP) between the national legislator's candidates at the municipal level, and second, the difference of votes between the winner and the second runner for the mayoral position in the first round of the elections. Despite the controversy in the literature, the empirical findings provided by the logit model show that municipalities where political competition is intense attract more pork barrel. Representatives, therefore, who face stiffer races, tend to be even more attentive to the allocation of their budgetary amendments. It is important to bear in mind, however, that these two political competition variables were included as control variables for matching purposes only and not to explain the social and economic consequences of pork at the local level.

Results also indicate that municipalities receiving other transfers also had the greatest chances of receiving funds from amendments, which suggests an overlap in the transfer of funds from the executive and legislative branches due to a potential intrabranched coordination problem and a propensity for an excessive concentration of funds in fewer localities. This would induce a problem of dissipation, as resources converge to the same localities, reducing their overall impact over time. Conversely, it might indicate a confluence of interests in the policy agendas of both branches, something not unusual in multiparty presidential systems where presidents are capable of building and maintaining majority coalitions in Congress (Limongi & Figueiredo, 2008). Given that social and economic factors also influence the allocation of budgetary amendments, it is possible to consider that both branches of government are working together to solve serious local issues, generating more inclusion.

In sum, the potential for inclusion is certainly present, but also of some dissipation and inefficiency. In fact, all policies are prone to both inclusion and dissipation; it is a matter of testing the extent of each. To do so, we must focus on the impact of amendments in attenuating indicators of poverty, inequality, and local level development. We turn our attention to this in the remaining analysis.

6 | THE EFFECT OF BUDGETARY AMENDMENTS ON HUMAN DEVELOPMENT

As can be seen in Figure 1, receiving amendments for at least 1 year reduces infant mortality rates by 13.7% on average. When municipalities receive amendments for 2 years, infant mortality presents a significant reduction of 7.2% in relation to municipalities that did not receive amendments or that received them for just 1 year.

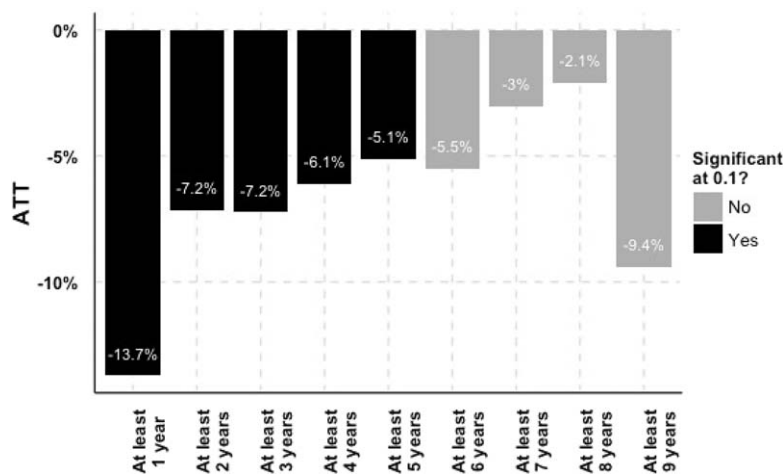


FIGURE 1 Average effect of the execution of amendments on infant mortality

One noteworthy aspect is the consistent effect in the reduction of infant mortality up to the 5th year of executing amendments. After the 6th year, however, this impact no longer presents statistical significance. That is, one cannot infer that the execution of amendments during a period longer than 5 years does produce an effective reduction in infant mortality.¹³ This result can be interpreted as a good example of how local policies authored by congress members can provide inclusion of a social aspect that reduces inequalities by decreasing infant mortality. This inclusion, however, also has dissipative characteristics, as municipalities that do not receive amendments do not have a reduction in infant mortality. Conversely, no matter how much is executed in municipalities that have received these amendments for more than 5 years, this does not translate into more inclusion via a reduction of inequalities via infant mortality; instead there is a dissipation of funds. Hence, there is a threshold over which more investment has no effect on reducing infant mortality.

Is this same pattern reproduced in other social inclusion dimensions? To answer this question, we used the same PSM to estimate the impact of the execution of individual amendments in creating formal jobs, the stock of formal jobs, and average wage in formal jobs, represented by the FIRJAN index for jobs and income in Brazilian municipalities. Figure 2 shows that municipalities that were able to execute legislative amendments for just 1 year substantially created more formal jobs, increased their stock of jobs, and had an increase of salary in formal jobs of about 5% in relation to municipalities that were not able to execute amendments.

The positive effect of the execution of amendments can also be observed consistently during the 8 following years in which amendments have been executed in the municipalities. In this case, however, there seems to be no dissipative effect for the period analyzed, given that the arrival of resources provided by legislative amendments generates positive and statistically significant results.¹⁴

As a robustness test, we modeled the same independent and dependent variables, but this time using the total amount (in R\$) of amendments in order to estimate both the response function and the continuous treatment effect function.¹⁵ As all the variables used for the PSM in this continuous treatment were the same as those we used for the discrete model, we could compare whether the dissipative effect still takes place within the continuous exposure to the monetary effect of legislative amendments. In addition, to test the impact of legislative budgetary amendments on infant mortality and formal jobs and income, we also examined the continuous effect of legislative amendments on the FIRJAN Health Index, FIRJAN Education Index.¹⁶

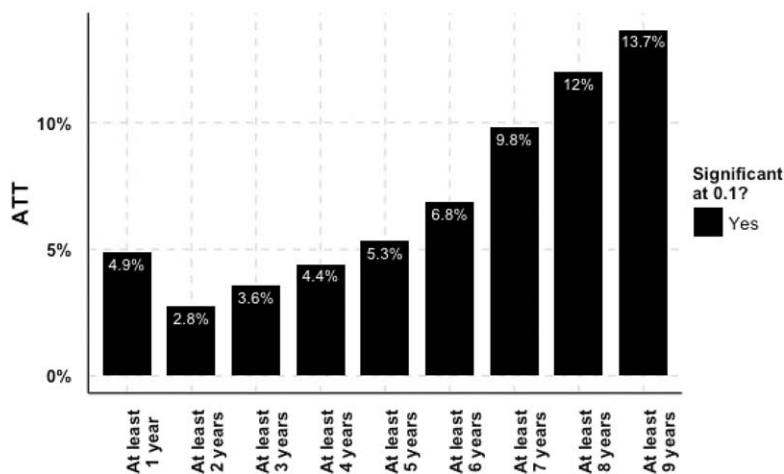


FIGURE 2 Average effect of the execution of amendments on formal jobs and income

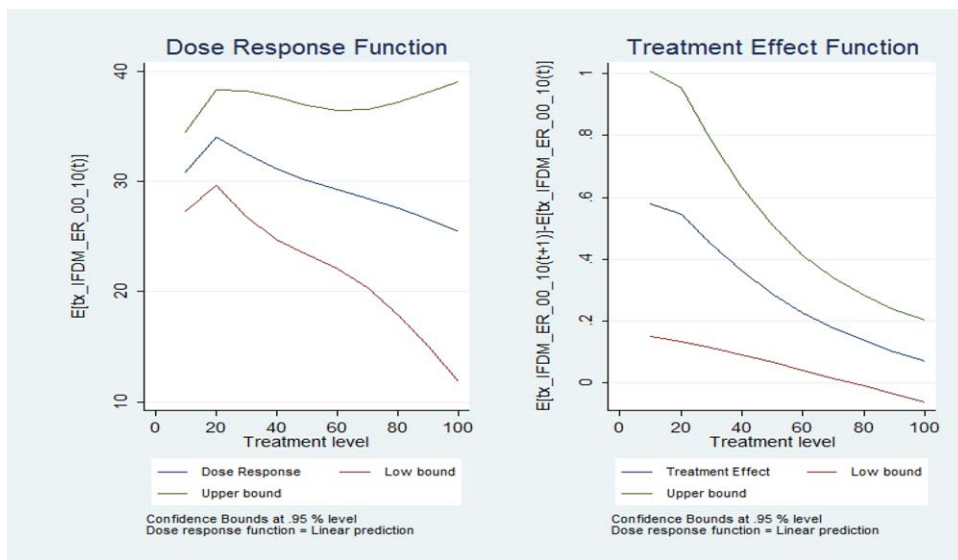


FIGURE 3 Continuous propensity score matching (2000–2010), variation in the FIRJAN Jobs and Income Index

As can be seen in Figures 3–6, the arrival of public resources originated from legislative amendments to the annual budget at the local level does unequivocally provide an initial positive dose response in all social and economic dimensions of inequality tested. In other words, pork barrel politics improves citizens’ living conditions.

However, similar to the results we obtained with the dichotomous PSM models, the initial positive dose response is not sustainable over time. That is, Figures 3–6 also show that the treatment effect function decreases their marginal effect on the total amount spent originated by legislative budgetary amendments in all social and economic dimensions analyzed. These consistent results suggest that the social and economic inclusion generated by pork barrel policies is dissipative. That is, there is a threshold over which the resources invested present diminishing returns, asymptotically approaching zero.

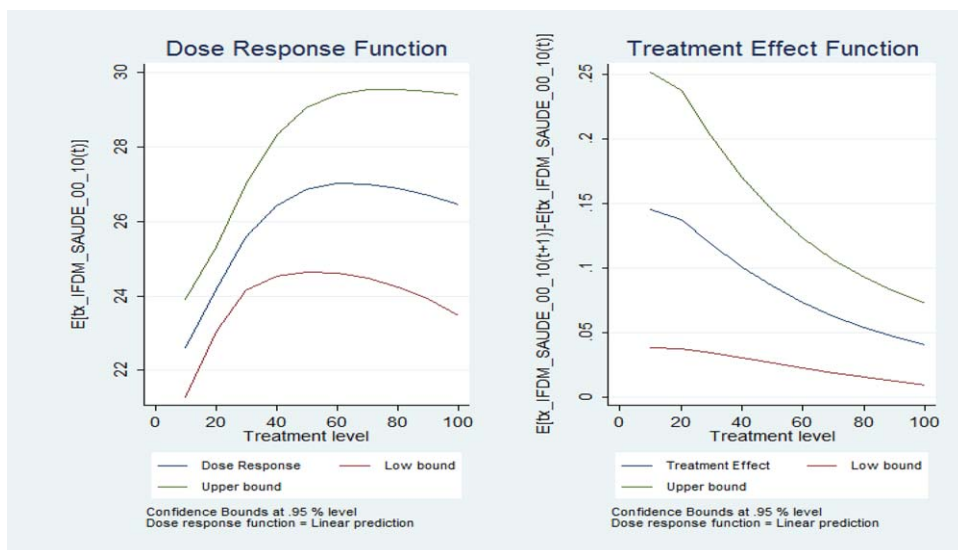


FIGURE 4 Continuous propensity score matching (2000–2010), variation in the FIRJAN Health Index of Health

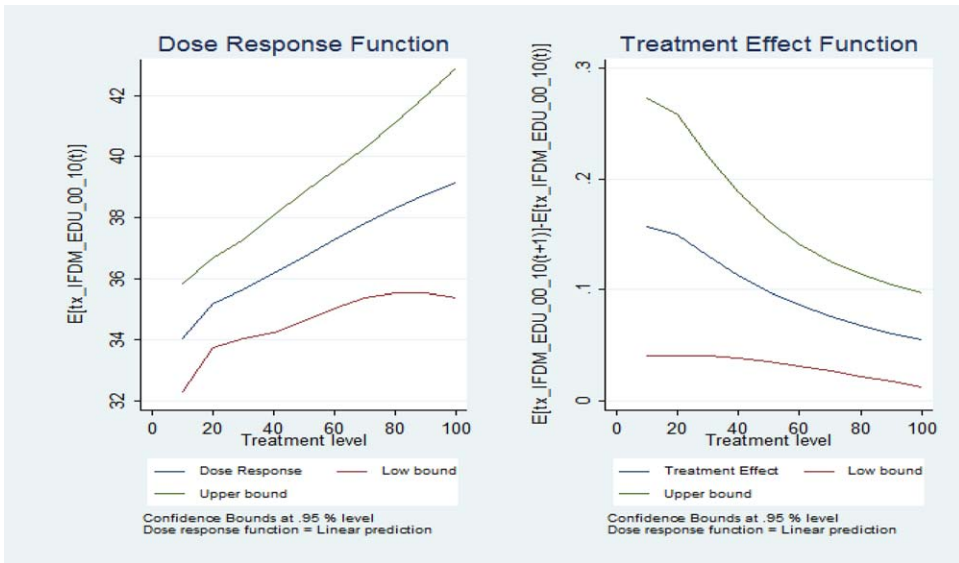


FIGURE 5 Continuous propensity score matching (2000–2010), variation in the FIRJAN Index of Education

7 | CONCLUSION

This article uses new theoretical and empirical approaches to evaluate the impact of national government spending initiated by legislators on selected social and economic indicators of inequality at the local level. We focus on pork barrel politics as an external shock and assess its impact on social inclusion and local development, controlling for observable characteristics of municipalities. We collected an innovative data set, unique in its scope and depth in the developing world, which allowed us to evaluate pork barrel policies in Brazil, but that can be useful in many other studies about public expenditures and their social and economic effects.

We find that local pork barrel policies generate development and social inclusion. Pork attenuates problems of exclusion, which resonate on social factors such as infant mortality and school

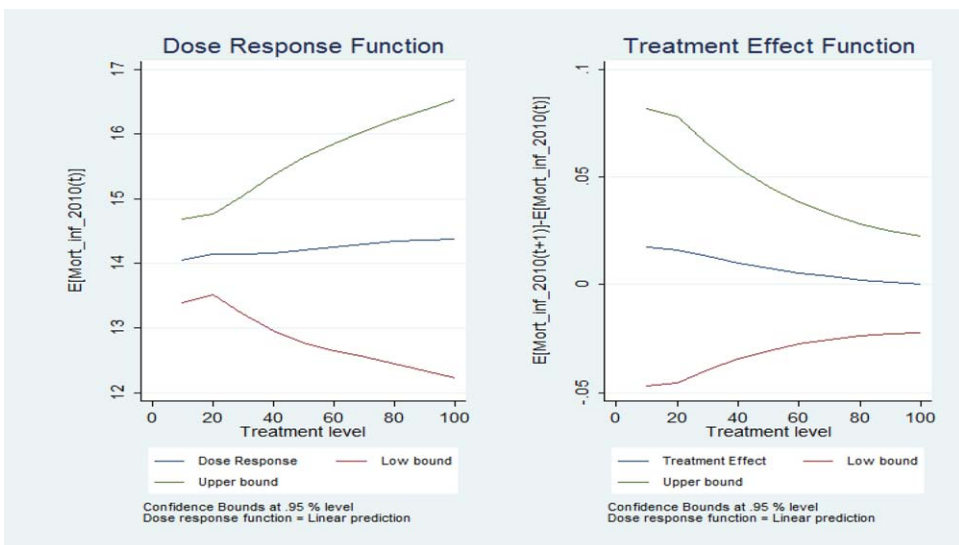


FIGURE 6 Continuous propensity score matching (2000–2010), variation in infant mortality

performance, and it promotes development, by creating jobs and raising mean income. We also find that municipalities that need amendments the most, due to poor social and economic conditions, are the ones that receive them. This serves as evidence of the fact that local policy initiatives made by Congress though “club goods” generate benefits and, consequently, have an impact by reducing inequality and improving economic conditions for those beneficiary municipalities that have the membership card.

However, local policies also generate the dissipation of funds and allocation inefficiencies. Therefore, club goods might be good, but not sustainably efficient over time. Over a certain threshold in public investment, there are diminishing returns of pork on most social and economic variables. Hence, the need for coordinating and monitoring the effect of amendments that transfer public funds to specific localities becomes vital for the improvement of the system. After certain thresholds, when pork no longer matters, it is important to avoid further dissipation by stipulating that other localities benefit from such transfers. It would be for the executive branch, through individual ministries, to assist in redirecting these transfers.

Hence, the study provided an opportunity to revisit and rethink the debate between particularism and universalism. Many “universal” policies may not reach impoverished citizens, especially in large federations and/or middle-income countries. This argument fits well in health care and education. It can be also extended to targeted programs. Instead, legislators proposing amendments have electoral incentives to ensure that their money gets spent appropriately in order to claim credit for benefits accrued, improving their chances of electoral survival. Pork *may* be suboptimal relative to universalistic policies, but it is far better than nothing. In fact, we claim that policies should not be judged by their type, but by their impact. Hence, impact evaluation through methodologically sound designs is the ultimate judge of a policy’s quality.

The existence of pork can serve a function in the political system, as it aids in the relation between the executive and legislative branches and provides stability to the legislative branch by increasing incumbency advantage where it is rare. But even more important, pork can improve living conditions at the local level, attenuating inequality and poverty and promoting development.

Like any other policy, be it universal, particularistic, distributive, redistributive, or targeted, pork may generate dissipation of funds and allocation inefficiencies. The issue is to test for the policy’s efficiency, focusing on dissipation, diminishing returns, increasing marginal costs, and the dosage/result relationship.

Regarding our current study, the adequate use of pork barrel policies can reduce inequality and poverty, hence contributing to more equal and just democratic regimes. If the quality of democracy is associated with how representative, equal, and fair political systems are (Diamond & Morlino, 2004), it is important to correct potential distortions to guarantee efficient public expenditures and, hence, improve the quality of democracy in the developing world.

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ENDNOTES

- ¹ Strictly speaking, pork barrel policies are not “club goods” as defined by Buchanan (1965), given that access to goods that pork provides is neither perfectly excludable (no need of membership card), not necessarily congestible in the form of crowding, nor divisible by forming a new club to produce the same good. Olson (1965), however, distinguishes between inclusive and exclusive clubs. The former shares pure public goods and require no membership size restrictions, while the latter share impure public goods and require owing to crowding and congestion by either partial rivalry or some excludability of benefits. By following Olson’s distinction, we consider pork barrel as inclusive club goods, even though pork is a targeted and geographically oriented policy in which the great majority of beneficiaries are citizens who live in a specific municipality that receives these policies.
- ² Different from Diaz-Cayero et al. (2012, 2016), however, we focus on policies originated in the legislative branch.
- ³ Golden and Min (2013) provide an exhaustive review of the literature. Here, we focus on two general approaches to pork barrel and illustrate these positions based on some studies.
- ⁴ The extensive literature on beliefs includes North et al. (2009), Acemoglu and Robinson (2006), Alesina, Glaeser, and Sacerdote (2001), Alesina and Glaeser (2004), B enabou (2000, 2002), Giuliano and Spilimbergo (2009), Jusko (2011), and Handler (2003).
- ⁵ *Bolsa Fam lia* (“Family Stipend”) is a conditional cash transfer program that requires beneficiary families to keep their kids in school, immunizations current, and so on. *Minha Casa Minha Vida* (“My Home My Life”) is a program offering low-cost loans to low-income people to purchase homes.
- ⁶ Alston et al. (2009) and Figueiredo and Limongi (2008) provide a comprehensive description of the complex budgetary decision-making, implementation, and appropriation processes.
- ⁷ In 1989, the total number of amendments was approximately 11,000; in 1990, 13,000; in 1991, 71,000; in 1992, 76,000; in 1993, 13,000; and in 1994, 23,000. Currently there is a limit of 20 amendments per congressman and a ceiling of R\$3.5 million. Similarly, there is a limit of 5 collective amendment per standing committees, 5 per regional bloc, and 10 per state bloc.
- ⁸ Our main models will cover the destination of amendments from 2002 to 2010 due to consistency limitations in this amendments data set provided by the Brazilian Senate.
- ⁹ We tested for biases in the allocation of amendments based on municipal political, economic, and social traits using a Heckman selection model in which receiving an amendment was the selection variable and amendments’ impact on distinct social and economic variables was the outcome equation. The equations are independent, showing that the effect is not guided by the selection process, justifying our focus here only on the results. Still, we briefly describe the characteristics of municipalities that receive amendments as part of the matching strategy used.
- ¹⁰ The data source for this information is IPEADATA on annual municipal transfer revenues (<http://www.ipeadata.gov.br/Default.aspx>), which covers the 1985–2011 period and considers all intergovernmental transfers.
- ¹¹ Table A1 in the Appendix shows the improvements in matching variables achieved after the matching process, often called match balancing summary. The overall quality of the matching procedure is considered acceptable, even though the balance was not achieved for every variable in the model. Our best specification is achieved with nearest neighbor matching, using control replacement and ratio = 2.
- ¹² Figure A1 in the Appendix shows the distribution of PSM between the control and treatment groups, showing that the matching balance was achieved.
- ¹³ Table A2 in the Appendix shows the average treatment effect (ATT) using matching with the closest neighbor in relation to infant mortality. Table A2 also shows other statistical parameters like standard error and *p* value.

- ¹⁴ Table A3 in the Appendix shows the average treatment effect on the treated (ATT) using matching to the closest neighbor in relation to creation of formal jobs, increase in job stock, and increase in wages from formal jobs. Table A3 also shows other statistical parameters like standard error and p value.
- ¹⁵ For more information on the continuous treatment, please refer to Bia and Mattei (2008) and Hirano and Imbens (2004).
- ¹⁶ Model specifications and estimations for dose response functions and continuous treatment functions are available on request.

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APPENDIX

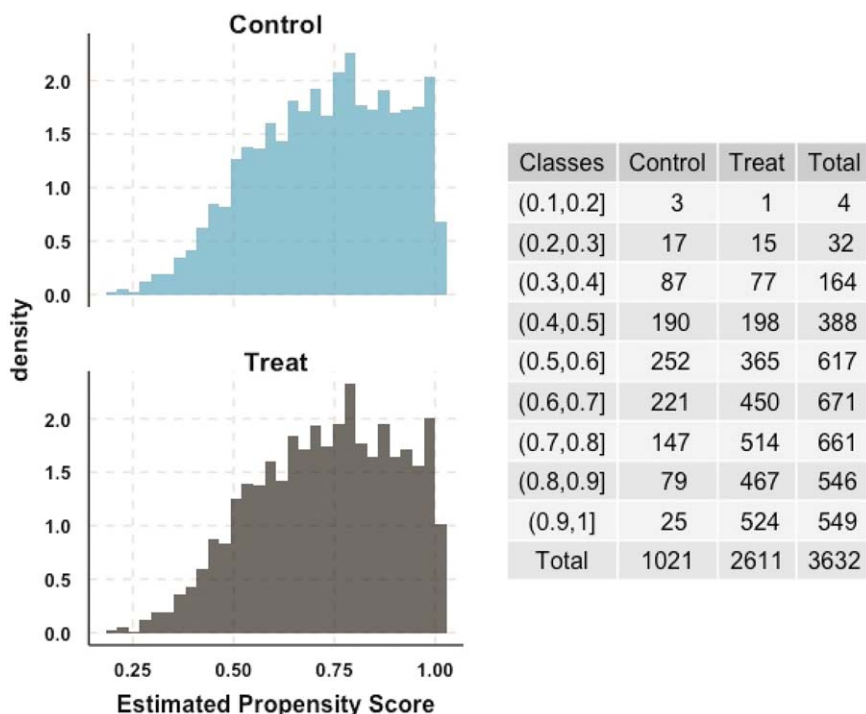


FIGURE A1 PSM distribution among control group (did not receive amendment = 0) and treatment group (received amendment = 1)

TABLE A1 Propensity score matching for Brazilian municipalities, 2002–2009, treatment as receiving a budget amendment—matching variables improvements in percent

Variable	Mean diff.	eQQ med.	eQQ mean	eQQ max.
Estimated propensity score	99.9900	15.0197	16.3053	12.9489
Per capita GDP 2002	97.7504	16.1655	15.5102	0.0000
Infant mortality 2002	79.1221	−9.0909	5.9576	0.0000
FIRJAN Jobs and Income Index	95.5505	16.7120	13.6133	4.7545
FIRJAN Education Index	95.7382	21.6277	21.9239	15.3061
FIRJAN Health Index	97.8192	18.2909	19.6125	14.2254
Intergovernmental transfers	25.0071	8.8787	−3.7408	0.0000
Effective number of parties	91.6584	10.3527	13.5196	0.0000
Electoral competition (mayoral)	−11.0930	1.9650	−3.2052	−52.8288
Center-West	−131.8153	0.0000	−120.7248	0.0000
Northeast	74.3604	0.0000	13.8706	0.0000
North	96.6584	0.0000	25.8547	0.0000
Southeast	55.6749	0.0000	17.0114	0.0000

TABLE A2 Average treatment effect on the treated (ATT) using matching to the closest neighbor in infant mortality

Received amendments:	Treat	Estimate	Std. error	<i>p</i> value	Conf. low	Conf. high	Sig.
At least 1 year	2611	−0.137	0.010	0.000	−0.157	−0.117	Yes
At least 2 years	1689	−0.072	0.022	0.001	−0.114	−0.029	Yes
At least 3 years	1083	−0.072	0.021	0.001	−0.113	−0.031	Yes
At least 4 years	693	−0.061	0.023	0.009	−0.107	−0.015	Yes
At least 5 years	424	−0.051	0.028	0.068	−0.106	0.004	Yes
At least 6 years	253	−0.055	0.035	0.115	−0.124	0.013	No
At least 7 years	151	−0.030	0.044	0.496	−0.117	0.057	No
At least 8 years	82	−0.021	0.059	0.725	−0.137	0.095	No
At least 9 years	37	−0.094	0.087	0.283	−0.265	0.078	No

TABLE A3 Average treatment effect on the treated (ATT) using matching to the closest neighbor in the creation of formal jobs, formal job stock, and formal job salary

Received amendments:	Treat	Estimate	Std. error	<i>p</i> value	Conf. low	Conf. high	Sig.
At least 1 year	2611	0.049	0.003	0.000	0.043	0.055	Yes
At least 2 years	1689	0.028	0.006	0.000	0.016	0.039	Yes
At least 3 years	1083	0.036	0.006	0.000	0.024	0.047	Yes
At least 4 years	693	0.044	0.007	0.000	0.031	0.057	Yes
At least 5 years	424	0.053	0.008	0.000	0.038	0.069	Yes
At least 6 years	253	0.068	0.010	0.000	0.049	0.088	Yes
At least 7 years	151	0.098	0.012	0.000	0.074	0.122	Yes
At least 8 years	82	0.120	0.017	0.000	0.087	0.152	Yes
At least 9 years	37	0.137	0.024	0.000	0.089	0.185	Yes