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The Political Economy of Slum Growth: Evidence from Brazil

Guillermo Alves¹

¹Economista Principal. Dirección de
Investigaciones Socioeconómicas.
CAF - Banco de Desarrollo de
América Latina galves@caf.com

One-fourth of the world's urban population lives in slums and the number of slum residents grew from 650 million in 1990 to 1 billion in 2018. Existing explanations for slum growth focus on rural-urban migration and poverty. While these factors are relevant for rapidly urbanizing low-income countries, slum growth is frequent in highly urbanized, middle-income countries in Latin America. This paper provides evidence from Brazil that local government actions can increase slum growth without changes in poverty or immigration. Using a regression discontinuity design in close elections, I find that victories by a center-left, pro-poor party in the 2000 municipal election strongly increased the share of households living in slums in 2010 compared to 2000. I explore the mechanisms behind this result with a novel panel of census tracts and data on municipalities' policies, expenditures, and sociodemographics. A more permissive attitude towards the formation of new slums is the main candidate to explain the observed effect.

KEYWORDS

Slums, Brazil, Elections

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La economía política de los asentamientos: evidencia de Brasil

Guillermo Alves¹

¹Economista Principal. Dirección de Investigaciones Socioeconómicas. CAF - Banco de Desarrollo de América Latina galves@caf.com

Un tercio de la población de los países en desarrollo vive en asentamientos de acuerdo a UNHabitat. Existe buena evidencia sobre los impactos negativos de las condiciones de vida en los asentamientos sobre sus habitantes pero las causas del crecimiento de los asentamientos han sido menos estudiadas. En este documento se presenta nueva evidencia sobre el efecto que tienen las condiciones políticas locales y las políticas urbanas sobre el crecimiento de los asentamientos. Utilizando un diseño de regresión discontinua, se muestra que cuando un partido de centro izquierda con una agenda redistributiva toma el control del gobierno municipal en Brasil, se incrementa fuertemente la proporción de hogares que viven en asentamientos. En el documento se exploran los mecanismos detrás de este efecto considerando conjuntamente datos de un nuevo panel de sectores censales, de políticas implementadas, gasto público, y características sociodemográficas de los municipios. De este análisis se concluye que una actitud más permisiva respecto a la creación de nuevos asentamientos es el mecanismo principal detrás del efecto encontrado.

KEYWORDS

Asentamientos, Elecciones, Brasil

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1 | INTRODUCTION

One-fourth of the world's urban population lives in slums, and the absolute number of slum residents grew from 650 million in 1990 to 1 billion in 2018 (UN, 2021). Living conditions in slums have negative impacts on multiple dimensions of residents' lives, including health, education, and happiness (Field, 2005, 2007; Galiani and Schargrodsky, 2010; Galiani et al., 2017; Alsan and Goldin, 2019). In addition to these individual-level impacts, slums can negatively affect the efficient allocation of land within cities (Henderson et al., 2020) and workers between cities (Alves, 2021; Lagakos et al., 2023). Given these significant consequences, scholars have emphasized the need to understand the drivers of slum growth beyond simply attributing it to urban poverty (Feler and Henderson, 2011; Marx et al., 2013). This paper contributes to this literature by examining the role of local government actions in determining the share of slum households in a city.

Government actions impact the share of slum households in a city in several ways (Brueckner and Selod, 2009; Cavalcanti et al., 2018; Alves, 2021). First, governments directly intervene in slums using a range of policies and programs that can have opposite effects on that share. Slum upgrading and titling policies can transform slums into non-slum areas and thus mechanically reduce the incidence of slums. Conversely, eviction and policing efforts can increase the costs of squatting, which may limit slum growth. Second, government actions in the non-slum housing market can also impact the share of households in slums. A more abundant and cheaper supply of non-slum housing can help reduce the growth of slums. This supply mainly depends on land-use regulations and infrastructure investments, which are defined by local governments (Glaeser et al., 2005; Saiz, 2010; Baum-Snow and Han, 2019; Anagol et al., 2021). Finally, slums may grow if government actions increase the demand for slum housing. This can occur, for example, if governments cause local increases in poverty, inequality, or immigration.

Empirically studying the causal effects of government actions on slum growth is challenging for two main reasons. The first challenge is the identification problem, where unobserved factors simultaneously influence the election of officials, policy implementation, and slum growth. For instance, a negative local shock that leads to an increase in poverty may cause an uptick in both slum incidence and support for political parties with pro-poor agendas. The second challenge is more specific to slum growth and refers to the difficulty of measuring slums and slum policies. Informality is a defining feature of slums, which makes their measurement susceptible to errors and potential biases. For instance, local governments that are more active in slum policies may have a better measurement of slums, which creates a bias. Furthermore, the absence of systematic data on policies, such as slum upgrading, titling, or eviction efforts, for the entire set of cities in any given country complicates the understanding of how government policies impact slum growth.¹

In this paper, I provide evidence on the effect of local government actions on the share of households living in slums in Brazilian cities between 2000 and 2010. To overcome the first challenge above, I use a regression discontinuity design in close mayoral elections in Brazilian municipalities. Specifically, I exploit the fact that the winning party in a close election can be seen as a random event and thus isolates the causal effect of the party's policies on slum growth. To address the second challenge, I provide a definition of slums that allows for consistent comparisons across different cities and over time. I define slums based on the UN and Brazil's statistical agency (IBGE) criteria and consider census tracts with at least 50 households lacking basic amenities such as water, sanitation, property rights, bathroom, or trash collection.

¹Since the impacts of slum policies on slum growth are potentially city-wide, data on those policies for a single or a few cities would not be enough.

I find that mayors belonging to a center-left, pro-poor party elected in the 2000 election increased the share of households living in slums by approximately ten percentage points between the 2000 and 2010 censuses. This effect is quantitatively significant given that, on average, one-third of urban households were living in slums in 2010. These findings raise the question of what specific policies and actions these mayors implemented to drive the growth in slum incidence. To address this question, I employ three empirical tools that correspond to the three ways by which governments can impact slum growth, as discussed above.

First, I analyze if these mayors led to a higher share of households in slums by upgrading fewer slums. To do so, I build a novel panel of census tracts between the 2000 and 2010 censuses and identify if a given tract was upgraded from a slum in 2000 to a non-slum in 2010. Using this panel, I decompose the change in the municipality-level share of slum households in an extensive and intensive margin. The extensive margin measures the effect of the changes in the slum classification of tracts between censuses. The intensive margin measures the growth in the number of households by type of tract. I find that these pro-poor mayors did not cause higher slum growth by upgrading fewer slums or by increasing the number of households in existing slums. Rather, they caused slum growth by acting on the extensive margin, increasing the share of households living in new slums.

Second, to evaluate whether these mayors increased the share of households in slums by limiting the supply of non-slum housing, I analyze publicly available data on municipalities' policies and expenditure patterns. I examine a set of housing policies and regulations that affect the non-slum housing supply, including constructing new houses and distributing land for housing construction, and regulations defining the rules of zoning, urban land subdivisions, and the urban perimeter. I find no effects on these policies and regulations. Expenditure data further confirms a lack of action by these mayors on the non-slum housing supply. Although I find that they spent significantly more on education and health, these mayors did not spend differently in the relevant expenditure categories, such as sewerage, urban infrastructure, and housing. These results lead me to discard interventions on the supply side of the non-slum housing market as the driver of the effect of these mayors on slum growth.

Third, I examine changes in municipalities' demographics using census data as proxies for a potential increase in demand for slum housing in the municipalities governed by these mayors. If these pro-poor mayors had implemented policies that attracted low-income migrants or increased poverty levels more generally, then new slums may have formed. However, I find no effects on the number or proportion of poor migrants in the municipality or poverty rates. As a result, I reject the hypothesis that changes in housing demand for slums drove the main effect of the paper.

Considering the ways enumerated above in which government actions can contribute to the growth of slums, the empirical analysis of this paper rejects all except for a more permissive attitude towards slum formation. Although I do not have a measure of policing and enforcement efforts against slum formation, three pieces of additional evidence support the interpretation that a permissive attitude towards slum formation was the key driver of slum growth. First, the increase in the incidence of slums in this context was due to the creation of new slums, which is an area where enforcement efforts could make a significant difference. Second, [Brollo et al. \(2020\)](#) and [Feierherd \(2022\)](#) have shown lower enforcement efforts by these pro-poor mayors in other areas of public policy. Third, certain characteristics of this party suggest that its mayors could have adopted a pro-slum attitude during their tenure. A pro-slum agenda would be consistent with the party's broader pro-poor agenda, which resulted in a rapid increase in support among low-income voters during the 2000s

(Zucco, 2008).² Also, this party has a longstanding connection with social movements, including organizations that promote rural and urban squatting (Hochstetler, 2000; Samuels, 2004; Albert, 2021).³

The primary contribution of this paper is its documentation of the political factors that can lead to the growth of slums and its exploration of the mechanism through which these factors operate. In addition, the paper demonstrates that slum growth can occur without increases in immigration or poverty. The finding that slum growth results from the relocation of households within a city sheds light on the workings of slum growth in highly urbanized developing countries, such as those in Latin America.

The paper offers several contributions to the literature on the determinants of slum growth. The causal relationship between government actions and slum growth has occupied a central role in theoretical economic models (Jimenez, 1985; Brueckner and Selod, 2009; Cai et al., 2018; Cavalcanti et al., 2018) and is supported by ethnographic, survey, and time-series evidence in the social sciences (Perlman, 1980; Gay, 1994; Alvarez Rivadulla, 2017; Holland, 2017). This paper contributes by providing the first quasi-experimental evidence on that important relationship. The paper builds upon the work of Feler and Henderson (2011), who show that local governments try to worsen low-income housing conditions to prevent immigration. I find that, depending on their political affiliation, local governments may have a positive attitude toward slums, which ends up incentivizing slum growth.⁴ Lastly, the study of slums is challenging due to the lack of comprehensive data. A series of recent studies surmount those challenges by collecting rich historical data on slums for certain cities (Henderson et al., 2020; Harari and Wong, 2021; Rojas Ampuero and Carreras, 2022). I contribute by showing the potential of a new method that can track the evolution of the universe of slums in a country using publicly-available census data.

Beyond the slum literature, the paper contributes to understanding the determinants of informality, which is a defining dimension of slums. Government regulations and enforcement efforts have an important function in the literature on the determinants of informality (Perry et al., 2007; La Porta and Shleifer, 2014; Ulysea, 2020). The paper joins a set of previous works which show that the enforcement of formal institutions does not only depend on state capacity and may have political roots (Casaburi and Troiano, 2016; Brollo et al., 2020). The paper's findings also relate to previous research suggesting that the non-enforcement of certain rules could operate as a form of redistribution and insurance in the contexts of the imperfect social safety nets of Latin American countries (Holland and Schneider, 2017; Holland, 2017; Feierherd, 2022; López-Cariboni, 2022).

The rest of the paper is organized as follows. I begin by describing the institutional context of the study. The following section describes the data sources. A methodology section follows, presenting the regression discontinuity design. Next, I present the results

²While the impacts of the national-level pro-poor policies adopted by this party, such as the massive conditional cash transfer program Bolsa Familia, have received wide attention, pro-slum policies constitute a typical case of special-interest redistributive politics operating at the local level. See Persson and Tabellini (2002) for a detailed discussion of special-interest politics. In pro-slum policies, a well-defined group -the current and potential slum residents- receive valuable transfers in the form of new housing (Holland and Schneider, 2017).

³The pro-squatting movements includes the rural "Movimento de Trabalhadores Rurais Sem Terra" (MST, Landless Peasants' Movement), the largest social movement in Latin America, and the urban "Movimento de Trabalhadores Sem Teto" (MTST, Homeless Workers' Movement) (Albert, 2021). The capacity of squatters to organize and form coalitions was a key component of Jimenez's (1985) seminal analysis of the causes of slum formation.

⁴Although both papers look at Brazil, they analyze different periods with opposite political contexts. While Feler and Henderson's baseline water provision levels are mostly a consequence of policies of the dictatorship era in Brazil, I look at a democratic context characterized by intense political competition. Another difference is that I look at actual electoral and policy data (in addition to census data) to document the impact of local institutions on slum growth, while Feler and Henderson look at census data only.

and close by offering some concluding remarks.

2 | CONTEXT

Brazil is a highly decentralized country in terms of public expenditure decisions (Ter-Minassian, 1997). In particular, for policies relevant to this paper, municipalities manage land use regulations and are in charge of local infrastructure provision (Garman, Haggard and Willis, 2001). This makes municipalities the natural jurisdictional level at which to study the impact of changes in politics and policies on slum growth.

Brazilian municipalities are governed by a mayor, who is elected for a four-year term.⁵ Elections take place in October and mayors take office in January of the following year. State and federal elections are also held every four years, but their timing is such that there are two years between municipal and general elections. In this paper, I study the effect on slum growth of mayors elected in the 2000 elections, with their tenure going from 2001 to 2004.

Two characteristics of PT help to understand why the party could have adopted a pro-slum attitude at the local level during the 2000-2004 term. Firstly, the PT is often characterized as a programmatic party with a strong pro-poor agenda (Samuels and Zucco, 2014; Klasnja and Titiunik, 2017). Additionally, Holland (2017) has shown that the poor in Latin America, especially in Brazil, tend to support squatting and land invasions. The local support of PT was rather limited in 2000, and thus, during the 2000-2004 tenure, the party needed to grow its support at the local level, particularly by leveraging national pro-poor policies like Bolsa Familia. By the 2006 election, the party had successfully redirected its electoral support from more developed areas to the country's poorest regions (Zucco, 2008).

The PT's strong ties with social movements, including those that promote rural and urban squatting, is another important characteristic of the party (Hochstetler, 2000; Samuels, 2004). These movements include organizations that promote rural and urban squatting, such as the rural "Movimento de Trabalhadores Rurais Sem Terra" (MST - Landless Peasants' Movement) and the urban "Movimento de Trabalhadores Sem Teto" (MTST - Homeless Workers' Movement) (Albert, 2021). The theoretical literature on slums in economics has highlighted the importance of squatter organizations and leaders in coordinating squatting attempts and mitigating externalities (Jimenez, 1985; Brueckner and Selod, 2009; Brueckner, 2013). Moreover, the relationship between squatter movements, political parties, and slum growth has been a central topic in the sociological and political science literature on Latin American slums at least since the 70s (Perلمان, 1980; Gay, 1994; Alvarez Rivadulla, 2017).

3 | DATA

3.1 | Slums in a panel of census tracts

I measure slums following the basic structure of the United Nations Human Settlements Programme (UN-Habitat) definition (UN, 2003). This definition identifies a slum household as one that exhibits deprivation in some of the following dimensions: basic urban services, property rights, housing quality, and living space. Following common intuition and the practice of several national statistical agencies, such as those of Brazil and India (IBGE 2011, Census of India, 2013), I add an agglomeration dimension to the UN-Habitat definition and identify a slum when a critical number of contiguous households experience some of the

⁵Mayors are elected by simple majority rule in municipalities with fewer than 200,000 people and absolute majority when the municipality population is 200,000 or more. See Brollo and Nannicini (2012) and Fujiwara (2015) for detailed descriptions of Brazil's political system.

deprivations above.

I identify contiguous households as those living in the same census tract. Census tracts in Brazil are relatively small, with an average of 240 households per tract in the 2000 census. Having small tracts constitutes an advantage in terms of identifying neighboring households in comparison with countries with larger tracts. For instance, US tracts have between 1,200 and 8,000 people. In terms of the critical number of households in a contiguous area needed to define a slum, I follow Brazil's official slum definition and set the threshold at 50 households.⁶

I follow two rules to define the set of deprivation variables included in the slum measure. First, the variable must be available and consistently measured in the data aggregated by census tract in both the 2000 and 2010 censuses. Second, the variable must be included in the dimensions of the UN-Habitat slum definition mentioned above. Five variables jointly comply with those rules: access to water, access to sanitation, access to trash collection, the existence of a bathroom, and squatting status.

The next step consists in defining what constitutes a situation of deprivation in each variable. For this step I also take the UN-Habitat slum definition as a reference. I define deprivation in water as having no piped connection or well or spring inside the property. For sanitation, I define a situation of deprivation when the house is not connected to the local sewer system or has no septic tank. I define deprivation in trash collection as the household not having its trash collected by a trash company, so it buries or burns it on the property or throws it into vacant land, a river, or the sea. The absence of a bathroom for the exclusive use of the household also defines a situation of deprivation. Finally, the indicator in the legal dimension establishes that the household is in a situation of deprivation if does not own, rent, or have another type of legal permission from the owner to live in the house.

In summary, a census tract is defined as a slum if at least 50 households in that tract show deprivation in at least one of those five variables. The paper's main outcome variable is the share of urban households in a municipality that lives in tracts classified as slums. I compute this variable by adding the number of households in all the urban tracts classified as slums and dividing the resulting magnitude by the number of households living in all the urban tracts of the municipality.

I apply the slum definition to a novel panel of urban census tracts built with the 2000 and 2010 censuses. The objective of building this panel is to understand the mechanics of slum growth and separately identify the processes of creation of new slums and of upgrading of existing slums into non-slums. In terms of understanding the mechanics of slum growth, the panel allows to decompose the municipality-level change in the share of households in slums in an extensive margin given by changes in the slum status of the tracts and an intensive margin given by the population growth within each type of tract.

Creating a panel of census tracts is a challenging undertaking due to the shifting boundaries of tracts between censuses. To address this issue, I employ a method for constructing a panel of tracts that have consistent boundaries across two years. Specifically, I use the area of the 2000 tracts as the benchmark and apply areal weighted interpolation to allocate the

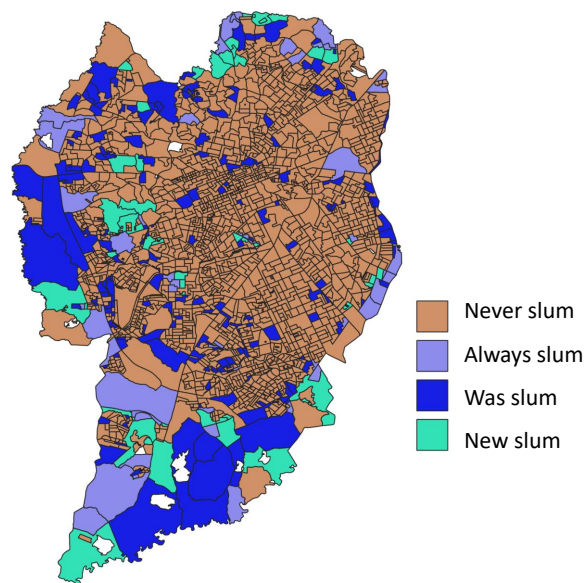
⁶The IBGE classifies census tracts as slums using the category of "subnormal agglomerates" (*aglomerados subnormais*). A tract is classified as subnormal agglomerate if the majority of at least 51 households have each of the following conditions: lacks essential public services (water, electricity, trash collection, sanitation), has occupied until recently (10 years or fewer) or currently occupy land without property rights, and constitutes a dense and disordered settlement. Although this classification is in principle interesting, since it provides an official direct multidimensional measure of slums, the IBGE explicitly states that this measure should not be used to compare slum growth between the 2000 and 2010 censuses. This is because the classification is not exhaustive and there is no measure of how exhaustive it is. The ability to identify a subnormal agglomerate improves over time depending on the success of the collaboration between the IBGE and local authorities. This could introduce a serious bias in an analysis of the impact of local policies and politics on slum dynamics.

population of the 2010 tracts to the corresponding 2000 tracts based on their proportional share of intersecting area.

The areal interpolation procedure fully assigns the population of 89% of all 2010 tracts to a 2000 tract.⁷ The remaining 11% have some or all of their population unassigned to a 2000 tract, due to being partly or fully rural in 2000.⁸ To address this issue, the unassigned population is treated differently depending on whether the majority of the tract was rural or urban in 2000. If the majority of the area was rural, the unassigned population is placed in a new tract with zero population in 2000. On the other hand, if the majority of the area was urban, the unassigned population is assigned entirely to the 2000 tracts with which they intersect.⁹

Figure 1 displays a map representing the municipality of Curitiba and the classification of census tracts into four categories based on their slum status in each census. The map reveals a spatial pattern that is observed in multiple cities across the data, and closely aligns with the model and data for Nairobi in Henderson et al. (2020). The central region of the city primarily comprises tracts that were not classified as slums in either census. In terms of slums that existed in 2000, the majority of those closer to the city center were upgraded, while those in the outskirts remained classified as slums. Additionally, new slums primarily formed in the periphery of the city.

FIGURE 1 Evolution of tracts in a large city. Curitiba



⁷Fully here corresponds to at least 99% of the area of the 2010 tract being assigned to a 2000 tract.

⁸Half of these have at least 90% of their area matched to a 2000 tract. 14% of them have an area that was entirely rural in 2000.

⁹For tracts in this second group, assigning their unmatched population to a new tract would have created tracts that are too small to reach the critical threshold of 50 households required to identify a slum. When these 2010 tracts intersect with a single 2000 tract, their unmatched population is fully assigned to that 2000 tract. When they intersect several 2000 tracts, their unmatched population is assigned to those 2000 tracts proportionally to the area of each intersection.

While the main use of the census data is to measure slum growth, I further use the 10% sample of the 2000 and 2010 censuses to study the evolution of municipalities' sociodemographics. Given the relevance of migration and poverty for understanding slum growth, I build variables capturing these two phenomena. In terms of migration, the Brazilian census asks if the head of the household was born in the municipality and, if not, for how long she has been living in the municipality. With these variables, I identify the total number of migrant households as those whose heads were not born in the municipality. I further separate the total number of migrants depending on when they arrived in the municipality to evaluate if they arrived during the 2000-2004 term. In terms of poverty rates, I use a relative poverty line of half the median of the national distribution of households' per capita income. I further combine the migration and poverty measures to construct a measure of the number of poor migrants in each municipality.

3.2 | Data on politics and policies

Data on mayoral elections is publicly available from Brazil's national electoral authority (Tribunal Superior Eleitoral). Regarding policies implemented during the 2000-2004 term, there are two sources of information. The first source is a survey called MUNIC, conducted by IBGE, which asks authorities in municipalities about policies implemented in the years immediately preceding the survey. This survey covers all municipalities and has been conducted almost every year since 1999. For the purposes of this analysis, the 2004 version of the survey is used, as it provides data on policies implemented during the 2001-2004 tenure.

A major limitation of the MUNIC survey is that it relies on mayors' responses about their actions without actual data on those actions. Additionally, most questions in the survey have a binary structure that asks whether a policy was implemented or not, without providing a quantitative measure of the policy's relevance. To address these limitations, I use the second source of information, which is the data on municipalities' expenditures obtained from Brazil's Federal Ministry of Finance (Secretaria do Tesouro Nacional). This database contains information on total expenditure and revenue for different categories. I use these expenditure for all years in the 2001-2004 tenure, except for 2001, as the data for that year has a much lower level of disaggregation in terms of expenditure categories.

3.3 | Selection of the Sample and Period

The paper's sample is composed of 270 municipalities that satisfy three specific criteria. The first and primary criterion is defining an urban sample, as slums are an urban phenomenon. This is achieved by selecting the 462 municipalities that had an urban population of at least 50,000 according to the 2010 census. The second criterion is given by the close election regression discontinuity design, which requires municipalities in which the PT participated in the 2000 election. The PT had much less support in 2000 than in the following decade, and the party participated in the elections of 1,300 municipalities out of 5,555. Among these, 271 were urban municipalities that met the 50,000 urban population threshold. The third criterion excluded only one additional municipality that underwent significant territory splitting between 2000 and 2010. Thirteen of the final sample of 270 municipalities also experienced some level of splitting, but the impact was relatively small, with the urban population of the new municipality averaging 1.1% of the original one and a maximum of 3.8%.

The final sample of 270 municipalities encompasses the largest urban areas in Brazil,

including all of the 20 largest cities.¹⁰ Furthermore, the sample represents a vast majority of the country's urban population. Based on the 2010 census, the study's sample covers 71% of the urban population living in municipalities with at least 50,000 inhabitants and 81% of the population residing in municipalities with over 500,000 urban dwellers.

Table A1 presents descriptive statistics for the 464 municipalities with more than 50,000 urban inhabitants in 2010, distinguishing if a PT candidate participated in the 2000 election. In general, municipalities with PT candidates are larger and wealthier, with lower poverty rates and incidence of slums.

In terms of the period of analysis, the choice of evaluating slum growth between 2000 and 2010 relies on the availability of census tract data. Although Brazil has publicly available data for previous censuses, there are no data by census tracts before 2000. In addition, dealing with the rapid process of municipalities' division in the 1990s in Brazil would further reduce the number of municipalities in the sample. In terms of choosing the election year, between the 2000 and 2010 censuses there were mayoral elections in 2000, 2004, and 2008. The choice of the 2000 election is motivated by leaving enough time for housing markets to adjust to the policies implemented during the four-year mandate of the elected mayor. Households' housing decisions typically take time to fully adjust, and policies implemented near the end of the term for mayors elected in the 2004 election would have only two years to have an effect.¹¹ In Section 5, I show that there were in fact no effects on PT mayors winning the 2004 election on slum growth between the 2000 and 2010 censuses.

4 | EMPIRICAL STRATEGY

Studying the effect of changes in the political environment on economic outcomes is challenging because a variety of unobserved phenomena affect both electoral and economic outcomes. I address this issue by estimating the effects of political conditions on slum growth with a regression discontinuity in close municipal elections.¹² This estimation procedure consists in comparing outcomes in those municipalities in which the PT mayor won by a small margin versus those in which she lost by a small margin. In this section, I first describe the regression discontinuity design and the details of its implementation in the current paper. Then I present evidence in favor of the validity of the design for the setting I study.

4.1 | Regression Discontinuity Designs in Close elections

The regression discontinuity design in close elections is of the sharp regression discontinuity type. In sharp regression discontinuity designs the treatment variable T changes from zero to one at a given point of a continuous observable variable v , such that:

$$T = 0 \quad \text{if } v < 0, \quad T = 1 \quad \text{if } v \geq 0 \quad (1)$$

The researcher's interest relies on the impact of T on an outcome variable Y , with the

¹⁰These 20 largest cities do not consider the capital city, Brasilia, because it does not have mayoral elections due to its federal district status.

¹¹Regarding the timing of households' housing decisions, in a representative survey of eleven large cities in Latin America, 45% of people declared to live in the same neighborhood where their parents lived and 34% in the same house CAF (2022).

¹²See Lee and Lemieux (2010) and Cattaneo et al. (2019) for comprehensive reviews of regression discontinuity designs.

usual problem being that there might be unobserved variables that are correlated with both T and Y . The key assumption of the design is that the relationship between any relevant unobserved variable and v is continuous at the threshold, and then any observed discontinuous variation in Y may be rightly attributed to T . Adopting the potential outcomes notation and adding the subscript i to index municipalities, the regression discontinuity estimate of the treatment effect of T on Y at $v = 0$ is:

$$\lim_{\epsilon \uparrow 0} E[Y|v = 0 + \epsilon] - \lim_{\epsilon \downarrow 0} E[Y|v = 0 + \epsilon] = E[Y_i(1) - Y_i(0)|v = 0] \quad (2)$$

In close elections, the forcing variable v is the difference in the percentage of votes between candidates. In the context of this paper, it is defined as the difference between the PT candidate and the non-PT candidate who obtained the highest number of votes among all non-PT candidates. The main outcome variable Y in the paper is the 2000-2010 change in the share of households in the municipality who live in slums. Beyond this main outcome, I also estimate impacts on implemented policies, expenditure categories, and changes in municipalities' sociodemographics.

In practice, because there are no observations exactly at the cutoff, the estimation of the two conditional expectations on the left-hand side of Equation 2 requires using observations further away from the cutoff. The contemporary approach to approximating those two regression functions consists in estimating low-order (first and second) local polynomials separately for each side of the discontinuity (Cattaneo et al., 2019).

Local polynomial estimation must then use observations that are further away from the cutoff, but not too far away to preserve the local nature of the design. Thus, selecting the bandwidth within which the local polynomials are estimated is a critical aspect of the regression discontinuity design. I define the bandwidth in a fully data-driven way by minimizing the mean-squared error of the local estimator.

For the paper's benchmark estimations, I use a first-order local polynomial, a uniform kernel, and the same optimal bandwidth on both sides of the discontinuity. Beyond this benchmark, I also provide results for the paper's main outcome using different optimal bandwidths on each side, zero and second-order polynomials, and a triangular kernel.

4.2 | Validity of the Regression Discontinuity Design

The identification assumption of the regression discontinuity design is that potential outcomes are continuous around the cutoff. I provide evidence in favor of this assumption by showing that there is no sorting around the threshold and no discontinuities in a broad set of covariates measured before the election.

Figure A1 in the Appendix presents a histogram of the distribution of the forcing variable with no evidence of sorting around the threshold. Furthermore, the test proposed by Cattaneo et al. (2020) for the null hypothesis of continuity of the density at the threshold yields a p-value of 0.53. This evidence on the absence of manipulation of the running variable coincides with previous studies of close elections in Brazil and other countries (Eggers et al., 2015; Akhtari et al., 2022).

Table A3 in the Appendix shows that there are no discontinuities in 2000 in a broad set of relevant outcomes. First, there is no discontinuity in the share of households in the municipality who live in slums, which directly relates to the main outcome of the paper. Also, the table shows no discontinuities in the share of households suffering each of the five deprivations that enter the slum definition, the size of the urban population, and the poverty rate.

5 | RESULTS

5.1 | The Impact of PT mayors on Slum Growth

Figure 2 presents the graphical evidence of the main result of the paper. PT mayors in office between 2001 and 2004 caused higher growth in the share of households in slums between 2000 and 2010. Regression estimates in Table 1 show that the effect is large. The point estimate of 10.6 percentage points in the benchmark of column 1 compares to an average of around one-third of households living in slums in the sample of urban municipalities where PT candidates ran for mayor in the 2000 election (see Table A1).

FIGURE 2 Impact of PT victories in 2000 on slum growth between 2000 and 2010

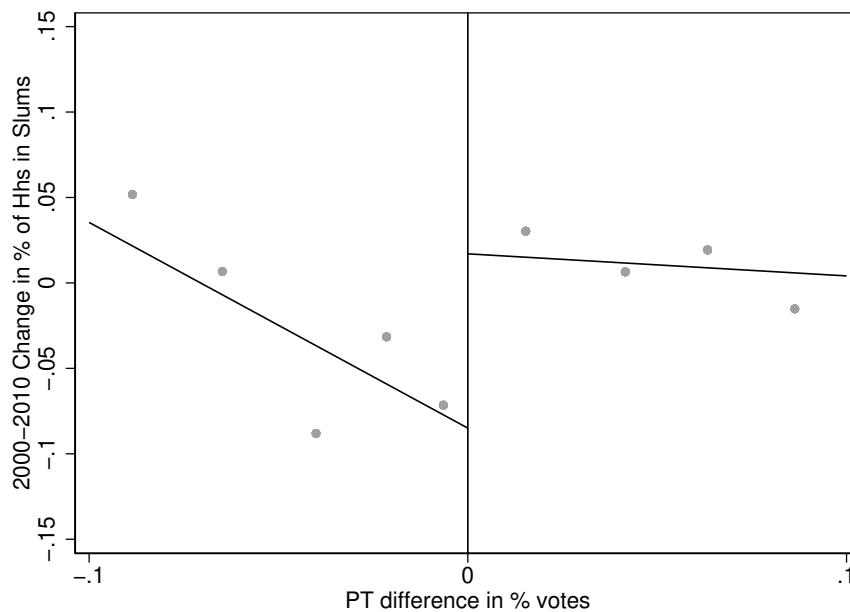


FIGURE 3 The x-axis measures PT mayor's vote difference in percentage points in the 2000 election and the y-axis measures the change between the 2000 and 2010 censuses in the share of households in the municipality who live in slums. See Section 3 for details on the definition of slums. The dots are local averages with the number of bins chosen with the mimicking variance quantile-spaced method using spacing estimators. The solid lines are first-degree polynomials estimated separately for each side of the discontinuity. Observations are restricted to those municipalities in which PT won or lost by less than 10% ($N=49$) to better illustrate the local nature of the design. This window coincides with the optimal bandwidth (0.098) of the paper's benchmark regression (see Table 1). The graph was built using the `rdplot` stata command of Calonico et al. (2017).

This main result of the paper is robust to a variety of specifications. First, Table 1 shows three additional estimates obtained with a local linear polynomial and allowing for different optimal bandwidths on each side of the discontinuity and a triangular kernel with either the same or different optimal bandwidths on both sides of the discontinuity. Second, similar results are also obtained in Table A5 in the Appendix using a second-order local polynomial and a variety of specifications in terms of bandwidth and kernel.

A third confirmation of the paper's main result is obtained using the local randomization approach to the regression discontinuity design, as discussed by Cattaneo et al. (2019). I

follow this approach by comparing unconditional averages of slum growth between municipalities governed by PT and non-PT mayors within a fully data-driven bandwidth.¹³ This procedure yields a point estimate of 0.084 for the effect of PT mayors on slum growth with a p-value of 0.018.

TABLE 1 Impact of PT victories in 2000 on slum growth between 2000 and 2010.

	Change in the Share of HHs in Slum Tracts			
	(1)	(2)	(3)	(4)
RD_Estimate	0.106** (0.049)	0.080* (0.045)	0.081* (0.046)	0.082* (0.044)
Obs	48	53	69	72
Left Bandw.	0.0981	0.166	0.153	0.180
Right Bandw.	0.0981	0.070	0.153	0.142
Kernel	Uniform	Uniform	Triangular	Triangular

TABLE 2 The dependent variable is the difference in the share of households in the municipality living in slum tracts in 2010 with respect to 2000. Point estimates with robust bias-corrected inference are obtained using the `rdrobust` stata command with first-degree polynomials estimated separately on both sides with MSE-optimal bandwidth (Calónico et al., 2017). In columns (1) and (3), the bandwidth is required to be the same on both sides of the discontinuity, and in columns (2) and (4), it is allowed to differ between the two sides. ** $p < 0.05$, * $p < 0.1$.

Table A7 in the Appendix shows that PT mayors winning the 2004 election did not have an effect on slum growth between the 2000 and 2010 censuses.¹⁴ This result can be explained as a combination of a different political context and housing markets taking time to fully adjust. Regarding the political context, PT reached the federal government for the first time in 2002 and became later the dominant player in Brazilian politics winning four presidential elections in a row, the first two with a difference of more than 20 percentage points. As noted by Zucco (2008), by the 2006 presidential election, the PT had already consolidated its electoral support among the poor. This rapid change in the context could have reduced the party's need to implement aggressive pro-poor policies at the local level. In terms of housing market dynamics, policies implemented by the end of the term of mayors elected in the 2004 election would only have between 2 and 3 years to affect outcomes measured in the 2010 census.

¹³The choice of the bandwidth and the inference on the resulting point estimate are implemented with the tools provided by Cattaneo et al. (2016). The optimal bandwidth is obtained by computing balance tests for a set of covariates measured before the election. I use three variables from the 2000 census: the share of households in slums, the urban population, and the poverty rate obtained with a poverty line of half the national median per capita income. The same window is obtained when using only the first of those three variables or only the first and second ones. The optimal bandwidth is $(-0.077, 0.077)$ and includes 36 municipalities.

¹⁴I further find no effect of PT winning the 2000 election on PT winning the 2004 elections. This result, available upon request, is consistent with the absence of a party incumbent effect found by Fowler and Hall (2014) for the US and Klasnja and Titiunik (2017) for PT in Brazil, and it limits the scope of dynamic effects of the types analyzed by Cellini et al. (2010).

5.2 | Mechanisms

The previous results show robust evidence that PT mayors winning the 2000 election strongly increased the incidence of slums in their municipalities. This result opens the question of what was that these mayors did differently that caused slum growth. Based on existing theoretical models on slums, I examine this question with a typology of three possible mechanisms structured around a simple demand and supply framework for slum and non-slum housing markets (Brueckner and Selod, 2009; Cavalcanti et al., 2018; Alves, 2021). The first mechanism acts on the supply of slum housing, the second on the supply of non-slum housing, and the third on the demand of slum relative to non-slum housing. I next present each of those mechanisms and evaluate them with the three empirical tools described in Section 3: the panel of census tracts, the data on policies, and the data on municipalities' sociodemographics.

5.2.1 | Slum policies

The first mechanism by which governments can increase slum growth is through policies that impact the supply of slum housing. Slum policies can be divided into two groups depending on them being more or less friendly towards slums. Slum upgrading and titling policies constitute the "friendly" approach to slums, with its benefits for slum residents being well-documented (Field, 2005, 2007; Galiani and Schargrotsky, 2010; Galiani et al., 2017). These policies potentially reduce the share of households living in slums by transforming slums into non-slums. The second group of "less friendly" policies includes evictions and policing efforts. These policies impact slum growth by defining the costs of squatting in the municipality.

I evaluate if slum upgrading and titling policies explain the paper's main result using the panel of census tracts. If these policies were behind the higher slum growth caused by PT mayors, these mayors should have converted less slums into non-slums. Table 3 examines this hypothesis by decomposing the 2000-2010 change in the municipality-level share of households that live in slums in the four types of tract evolution. The results show no evidence of PT mayors doing more or less slum upgrading. Instead, the table shows that PT mayors caused higher slum growth by increasing the share of households in new slums.

Table A9 in the Appendix complements the results in Table 3 by decomposing the growth in the incidence of slums in an extensive and intensive margin. The extensive margin is given by the share of tracts classified in each of the four types of tract evolution. The intensive margin is given by 2000-2010 change in the average number of households residing in each type of tract. The results reveal that the increase in the share of households residing in slums under PT mayors was only driven by the extensive margin, with no discernible effects on the intensive margin. More specifically, the effect is due to a 5-percentage-point increase in the share of tracts classified as new slums, with no effects observed on the other categories. This is an important effect considering that only 11% of tracts fell under the new slum category for the average of 270 municipalities.

The result obtained with the panel of tracts on PT mayors not doing more or less slum upgrading is confirmed by both the MUNIC survey and the expenditure data. The survey asked municipalities if they had implemented slum upgrading and urbanization policies between 2001 and 2004 and if they did it on their own or in collaboration with private or public institutions. Table A11 in the Appendix shows no discontinuities in these variables. The estimates with expenditure data in Table A13 in the Appendix yields the same conclusion. PT mayors did not spend differently in the categories related to slum

TABLE 3 Impact of PT victories in 2000 on slum growth between 2000 and 2010 by type of tract evolution.

	Change in the Share of HHs in Slums by Type of Tract				
	All	New slum	Was slum	Stayed slum	Never slum
	(1)	(2)	(3)	(4)	(5)
RD_Estimate	0.106** (0.049)	0.088*** (0.032)	0.002 (0.045)	0.006 (0.020)	-0.046 (0.038)
Obs	48	52	69	73	66
Optimal Bandw.	0.098	0.108	0.154	0.161	0.147

TABLE 4 The dependent variable is the 2000-2010 change in the share of households in the municipality that live in each of four types of tract: “All”, all tracts; “New slum”, classified as slums in 2010 and not in 2000; “Was slum”, classified as slums in 2000 but not in 2010; “Stayed slum”, classified as slums in both censuses; “Never slum” not classified as slums in both censuses. The regression discontinuity estimates are obtained with the `rdrobust` stata command (Calónico et al., 2017) using a first-degree polynomial estimated separately for each side of the discontinuity, a uniform kernel, and the same MSE-optimal bandwidth estimated on both sides of the discontinuity. *** $p < 0.01$, ** $p < 0.05$.

upgrading policies, such as urban infrastructure, housing, and sanitation.¹⁵

Although I lack direct data to evaluate the role of lower eviction and policing efforts as a mechanism, there are a few pieces of evidence that suggest it could be a primary factor behind the impact of PT mayors on slum growth. The anatomy of slum growth under PT mayors, as demonstrated by results obtained from the panel of census tracts, provides one key piece of evidence. Enforcement efforts are particularly critical for preventing slum growth during the stage of slum formation. Once slums have formed and consolidated, eviction and policing efforts become less effective in limiting slum growth on both the extensive and intensive margins. On the extensive margin, full evictions and slum clearance become more politically costly. This higher political cost is also present on the intensive margin, together with the practical difficulty of monitoring the growth in the number of households in a slum. The results from the panel show that the change in the share of households in slums under PT mayors occurred precisely in the form in which enforcement and policing efforts are most likely to make a difference, which is the formation of new slums.

Evidence that is external to this paper also supports the idea that eviction and policing efforts are the primary mechanism behind the impact of PT mayors on slum growth. As discussed in Section 2, a series of characteristics of PT support the interpretation that the party adopted a pro-slum approach during the 2000-2004 term. Additionally, research by Brollo et al. (2020) and Feierherd (2022) have found evidence of less enforcement of norms by PT mayors in other areas of public policy.

¹⁵Table A13 shows that PT mayors did spend more in education and health, two categories in which the party would also spend more at the federal level during the 2000’s. Although the table shows an estimate for the housing expenditure category that is statistically significant at the 10%, that result is not robust to alternative specifications or to a graphical analysis.

5.2.2 | Housing policies

The second possible mechanism that could explain the impact of PT mayors on slum growth is that they may have implemented policies that restricted the supply of non-slum housing, leading to increased incentives for households to choose slum housing instead. This could have been achieved in a few ways. Firstly, by directly reducing the growth in the supply of non-slum housing, such as constructing fewer houses or providing less formal land for housing construction. Secondly, PT mayors may have indirectly restricted the supply of formal housing by modifying regulations that have a significant impact on housing supply, as these regulations are known to affect housing availability (Quigley and Raphael, 2005; Saiz, 2010).

Table 5 examines the possibilities of PT mayors restricting the supply of non-slum housing using the MUNIC survey. The first two columns of the table focus on policies and indicate that PT mayors did not construct fewer houses or provide less land for housing construction. This finding aligns with the lack of action by these mayors in expenditure categories that are associated with the supply of non-slum housing, as detailed in Table A13 in the Appendix. Although PT mayors did allocate more funds to health and education, they did not affect spending on housing, urban infrastructure, or sanitation. The remaining columns (3-5) of Table 5 provide additional evidence that PT mayors did not make changes to some of the essential laws governing land use in cities. These laws include urban perimeter delimitation, urban land subdivision regulation, and zoning laws.

TABLE 5 Impact of PT victories in 2000 on policies affecting the supply of non-slum housing.

	(1)	(2)	(3)	(4)	(5)
	Construction	Land	Perimeter	Subdivisions	Zoning
RD_Estimate	0.214 (0.148)	0.397 (0.271)	0.078 (0.114)	0.234 (0.159)	0.130 (0.197)
Obs	60	45	66	67	66
Optimal Bandw.	0.134	0.093	0.148	0.150	0.149

TABLE 6 Dependent variables are binary variables from the 2004 MUNIC survey indicating (1) Construction of new houses (2) Giving free urban land for construction of new houses (3) Existence of a law delimiting an urban perimeter (4) Existence of a law regulating urban land subdivisions (5) Existence of zoning law. Regression discontinuity estimates are obtained with the `rdrobust` stata command using a first-degree polynomial, uniform kernel, and the same MSE-optimal bandwidth estimated on both sides of the discontinuity (Calonico et al., 2017).

5.2.3 | Changes in municipalities' sociodemographics

A third possible mechanism behind the paper's main result refers to slum growth being caused by an increase in the demand for slum housing. This demand originates in the housing needs of low-income households, including migrant ones (World Bank, 2009; Alves, 2021). Mayors can potentially increase the number of such households by attracting low-income migrants or through poor economic performance that results in a rise in the poverty rate of the municipality.

The results in Table 7 evaluate whether municipalities' sociodemographic characteristics were altered by PT mayors in a way that could increase the demand for slum housing. The outcomes include the poverty rate, the number of migrants, and the number of poor

migrants. As previously detailed in Section 3, migrants are divided into two groups based on whether they arrived during the mayors' tenure or afterwards. The results indicate no discontinuities in any of these variables that could be linked to a rise in the demand for slum housing.

The findings presented in Table 4 not only reject the possibility of changes in housing demand as the primary mechanism behind the paper's results but also suggest that slum growth in this context is primarily a phenomenon that occurs within the city. This pattern of slum growth, which does not involve a surge in low-income immigration, is distinct from the reality of low-income countries in Africa and Asia that are experiencing rapid urbanization. These results contribute to understanding the factors that drive slum growth in middle-income countries of Latin America, which are already highly urbanized.

TABLE 7 Impact of PT victories on 2000–2010 Demographic changes

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
RD_Estimate	-0.040 (0.044)	-83,751 (95,736)	-9,735 (14,263)	-11,844 (15,392)	-9,915 (9,348)	-1,645 (1,707)	-2,294 (1,933)	-17,431 (20,342)
Obs	67	78	73	74	79	71	69	98
Optimal Bandw.	0.150	0.179	0.164	0.169	0.181	0.157	0.153	0.224

TABLE 8 Dependent variables are: (1) the proportion of poor households in 2010 (2) the 2010 number of migrants households (3) the 2010 number of migrant households with less than 5 years of residence in the municipality (4) the 2010 number of migrant households with between 5 and 10 years of residence in the municipality (5) the 2010 number of poor migrant households (6) the 2010 number of poor migrant households with less than 5 years of residence in the municipality (7) the 2010 number of poor migrant households with between 5 and 10 years of residence in the municipality. Poverty is measured with a relative poverty line of half of Brazil's median per capita household income. Migrant households are those with at least one member who has not always lived in the municipality. All the regression discontinuity estimates are obtained with the `rdrobust` command, using a first-degree polynomial, a uniform kernel, and the same MSE-optimal bandwidth estimated on both sides of the discontinuity (Calónico et al., 2017).

5.2.4 | Joint consideration of mechanisms

The previous analysis of the three possible mechanisms indicates that the second and third mechanisms, which involve policies that reduce the supply of non-slum housing and an increase in the demand for slum housing due to higher poverty or immigration, can be discarded. As for the first mechanism, the analysis also reveals that slum growth cannot be attributed to PT mayors transforming slums into non-slums less frequently. Instead, the entire growth of slums is due to the creation of new slums, indicating that a more lenient approach towards the formation of slums may be the main cause.

As discussed above, while I cannot directly measure enforcement efforts, the plausibility of this explanation is bolstered not only by ruling out other potential causes but also by three additional factors. First, the anatomy of slum growth under PT mayors was driven by the formation of new slums, the margin in which enforcement efforts are more likely to make a difference. Secondly, the PT's strong programmatic emphasis on helping the poor, its need to expand its base among urban poor residents during the period in question, and its close ties to urban squatting movements all suggest that the party may have adopted a more lenient attitude towards squatting. Finally, prior research has demonstrated that the

PT enforces regulations less stringently in two other critical areas of public policy at the municipal level. The rejection of the primary competing hypotheses and these additional factors lead me to conclude that the main mechanism behind the paper's primary finding is the lower enforcement efforts against the formation of new slums.

6 | CONCLUSION

This paper provides new evidence on the impact of local politics and policies on the evolution of slums. I show how the proportion of slum-dwelling households grew after a center-left, pro-poor political party gained power at the local level in Brazil. These findings highlight the role of local political economy forces and institutions for understanding the dynamics of slum incidence, a topic that has been previously studied in sociology and anthropology literature but has not received much attention in the empirical literature in economics (Gay, 1994; Alvarez Rivadulla, 2017; Holland, 2017).

The regression discontinuity estimates of the paper are local in nature and this deserves a special note in terms of the internal and external validity of this paper's findings. With regards to internal validity, the local nature of these estimates corresponds to a highly competitive electoral environment, where candidates have strong incentives to target special interest groups (Persson and Tabellini, 2002). In terms of external validity, the findings suggest that researchers and policymakers should give greater consideration to local political conditions to gain a better understanding of the circumstances under which slums are more likely to emerge. This challenges the conventional view that slums are solely a consequence of rural-urban migration and poverty. Of particular importance are contexts where there is intense political competition for low-income voters. While such conditions may not exist most of the time, the sizable effects I identify suggest that brief periods of intense political competition can lead to significant changes in the slum landscape of a city. As is well-known in urban economics, changes to a city's landscape tend to be long-lasting. Therefore, the effects of a single political term could shape the incidence of slums in a city for decades to come.

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A. APPENDIX OF TABLES AND FIGURES

FIGURE A1 Density of the running variable

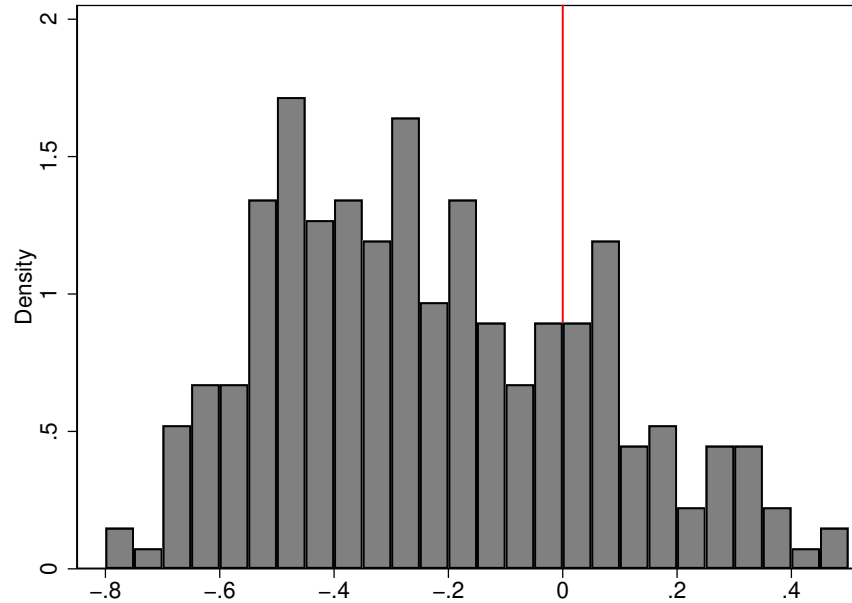


FIGURE A2 The x-axis measures PT's vote difference in percentage points and the y-axis measures the number of municipalities by bins of 10 percentage points. The test proposed by Cattaneo et al. (2020) yields a p-value of 0.53 for the null hypothesis of continuity of the density at the threshold.

TABLE A1 Descriptive statistics in 2010 for urban municipalities

PT participated in election	2000			2010		
	No	Yes	All	No	Yes	All
Number of municipalities	194	270	464	194	270	464
Urban Population	148,884	342,795	201,123	179,219	389,347	235,827
Poverty Rate	0.20	0.15	0.19	0.18	0.14	0.17
Share of HHs in Slums	0.46	0.32	0.43	0.48	0.34	0.44

TABLE A2 Source: own processing of 2010 Census data. Notes: Urban municipalities are those with at least 50,000 individuals living in an urban area, as classified by IBGE. Deprivation in each of the five dimensions is defined as the following. Water: not having piped connection or well or spring inside the property. Sanitation: not being connected to the local sewer system and not having a septic tank. Trash collection: not having trash collected by a trash company, thus burying or burning it on the property or throwing it into vacant land, a river, or the sea. Bathroom: absence of a bathroom for exclusive use of the household. Property rights: does not own, rent, or have another other type of legal permission from the owner to live in the house.

TABLE A3 Impact of PT victories on pre-election outcomes

	Households in 2000:							Poverty (8)
	In slums (1)	No water (2)	No sanitation (3)	No bathroom (4)	No trash (5)	Squatting (6)	Total (7)	
RD_Estimate	-0.054 (0.138)	-0.000 (0.000)	-0.000 (0.002)	-0.000 (0.000)	0.007 (0.039)	-0.002 (0.004)	-142,721 (172,809)	-0.051 (0.056)
Obs	66	53	66	61	57	77	107	68
Optimal Bandw.	0.146	0.119	0.146	0.136	0.128	0.174	0.246	0.152

TABLE A4 All dependent variables are measured in 2000. They are the proportion of households in the municipality living in slums (first column) and suffering each of the five deprivations that enter the slum measure (second to sixth column). Deprivation in each of the five dimensions is defined as the following. Water: not having piped connection or well or spring inside the property. Sanitation: not being connected to the local sewer system and not having a septic tank. Trash collection: not having trash collected by a trash company, thus burying or burning it on the property or throwing it into vacant land, a river, or the sea. Bathroom: absence of a bathroom for exclusive use of the household. Property rights: does not own, rent, or have another other type of legal permission from the owner to live in the house. The dependent variables in columns 7 and 8 are the number of households and the share of households in poverty, considering a relative poverty line of half of Brazil's median per capita household income. All the regression discontinuity estimates are obtained with the RDROBUST STATA command (Calonico et al., 2017), using a first degree polynomial, uniform kernel, and the same MSE-optimal bandwidth estimated on both sides of the discontinuity.

TABLE A5 Impact of PT victories on slum growth between 2000 and 2010. Second order polynomials.

	Change in the Share of HHs in Slum Tracts				
	(1)	(2)	(3)	(4)	(5)
RD_Estimate	0.106** (0.049)	0.082 (0.058)	0.097* (0.050)	0.059 (0.062)	0.080* (0.045)
Pol Order	1	2	2	2	2
Obs	48	77	105	77	147
Left Bandw.	0.0981	0.172	0.273	0.174	0.365
Right Bandw.	0.0981	0.172	0.121	0.174	0.203
Kernel	Uniform	Uniform	Uniform	Triangular	Triangular

TABLE A6 The dependent variable is the difference in the share of households in the municipality that live in slum tracts in 2010 with respect to 2000. Point estimates with robust bias-corrected inference are obtained using the rdrobust stata command Calonico et al. (2017) with first degree polynomials estimated separately on both sides with MSE-optimal bandwidth. In columns (1) and (3) the bandwidth is required to be the same on both sides of the discontinuity and in columns (2) and (4) it is allowed to differ between the two sides. ** $p < 0.05$, * $p < 0.1$.

TABLE A7 Impact of PT victories in 2004 on slum growth between 2000 and 2010.

	Change in the Share of HHs in Slum Tracts			
	(1)	(2)	(3)	(4)
RD_Estimate	-0.042 (0.061)	-0.012 (0.055)	-0.038 (0.054)	-0.014 (0.055)
Obs	64	95	102	114
Left Bandw.	0.0955	0.196	0.152	0.225
Right Bandw.	0.0955	0.0835	0.152	0.125
Kernel	Uniform	Uniform	Triangular	Triangular

TABLE A8 The dependent variable is the difference in the share of households in the municipality that live in slum tracts in 2010 with respect to 2000. Point estimates with robust bias-corrected inference are obtained using the `rdrobust` stata command (Calonico et al. (2017)) with first degree polynomials estimated separately on both sides with MSE-optimal bandwidth. In columns (1) and (3) the bandwidth is required to be the same on both sides of the discontinuity and in columns (2) and (4) it is allowed to differ between the two sides.

TABLE A9 Impact of PT victories in 2000 on the extensive and intensive margins of 2000-2010 slum growth

	Share of tracts				HHs per tract			
	New slum (1)	Was Slum (2)	Stayed Slum (3)	Never Slum (4)	New slum (5)	Was Slum (6)	Stayed Slum (7)	Never Slum (8)
RD_Estimate	0.053* (0.032)	0.021 (0.037)	-0.137 (0.094)	-0.014 (0.139)	-14.1 (62.9)	-0.01 (27.0)	102.8 (67.1)	3.4 (11.6)
Obs	71	55	90	61	48	76	40	57
Optimal Bandw.	0.158	0.125	0.195	0.136	0.120	0.186	0.090	0.128

TABLE A10 In columns 1-4 the dependent variables are the share of tracts in a municipality that correspond to each of the four types of slum/non-slum evolution between the 2000 and 2010 censuses. In columns 5-8 the dependent variables are the change in average number of households between 2000 and 2010 for each of those four types of tracts. All the regression discontinuity estimates are obtained with the `rdrobust` stata command (Calonico et al., 2017), using a first degree polynomial, uniform kernel, and the same MSE-optimal bandwidth estimated on both sides of the discontinuity. * $p < 0.1$

TABLE A 11 Impact of PT victories in 2000 on slum policies between 2001 and 2004

	Slum Upgrading			Titling		
	All (1)	Own (2)	Collab (3)	All (4)	Own (5)	Collab (6)
RD_Estimate	-0.046 (0.206)	-0.309 (0.270)	0.251 (0.251)	0.172 (0.257)	0.057 (0.235)	0.227 (0.220)
Observations	71	45	64	57	74	66
Optimal Bandw.	0.156	0.095	0.142	0.127	0.168	0.146

TABLE A 12 Dependent variables are binary variables indicating if the municipality said to have implemented slum upgrading policies (“Urbanização de assentamentos”) or titling policies (“Regularização fundiária”). “Own” indicates that the policy was implemented by the municipality on its own. “Collective” indicates that the policy was implemented in collaboration with public or private institutions. All the regression discontinuity estimates are obtained with the `rdrobust` stata command, using a first degree polynomial, uniform kernel, and the same MSE-optimal bandwidth estimated on both sides of the discontinuity (Calonico et al., 2017).

TABLE A 13 Impact of PT victories on average 2002-2004 per capita expenditure

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
RD_Estimate	79.3 (52.4)	21.4*** (6.9)	37.3*** (13.1)	16.5 (11.9)	3.9 (10.4)	-2.2 (9.4)	-0.6 (2.0)	1.4* (0.7)	10.7 (11.0)
Observations	52	45	54	52	54	77	44	73	52
Optimal Bandw.	0.113	0.093	0.121	0.116	0.121	0.173	0.089	0.165	0.115
Average	293.8	71.3	62.7	47.9	37.8	9.9	8.8	1.6	53.9

TABLE A 14 The dependent variables are municipalities’ per capita expenditure in Reais at prices of 2000 for the average of the period 2002-2004 for the following categories: (1) total (2) education (3) health (4) administration (5) urban infrastructure (6) sanitation (7) social assistance (8) housing (9) other expenditures. I group in other expenditures all the categories not related to housing and urban infrastructure and that do not fall in the five most relevant categories for the average of Brazilian municipalities. All the regression discontinuity estimates are obtained with the `RDROBUST STATA` command (Calonico et al., 2017), using a first degree polynomial, uniform kernel, and the same MSE-optimal bandwidth estimated on both sides of the discontinuity.