

Political Impact of Immigration to Brazil

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Abstract

The paper analyses the impact of immigration on the presidential elections in Brazil between 2006 and 2018. For this purpose, it uses two instrumental variables: (i) based on the geographical distance, and (ii) the shift-share. The results suggest that if a municipality hosts the mean of the immigrant share of the local population, the PT's vote share reduces in 5.25 percentage points (p.p.). For the heterogeneous effect, I find that the impact is stronger for municipalities that (i) host a lower share of immigrants, (ii) have a lower population, (iii) have a higher unemployment rate, and (iv) hold a lower educational quality. Higher immigrant share increases the PT's vote share in the Brazilian South region. Besides, restricting the estimations for different election cycles, the impact becomes then positive in the 2006–2010 cycle and negative for the remainder. The mechanism analysis suggests that the electoral impact potentially run through the increase of foreign student share in the educational system, which may be a proxy of competition for public goods. Moreover, I find that immigrants reduce homicide, increase municipality spending per capita, and its net revenues.

Keywords: Economics of Migration; Political Economy; Instrumental Variable; Panel Data Models; Cross-Sectional Models.

Resumo

O artigo analisa o impacto da imigração nas eleições presidenciais no Brasil entre 2006 e 2018. Para tanto, utiliza duas variáveis instrumentais: (i) com base na distância geográfica e (ii) no *shift-share*. Os resultados sugerem que se um município recebe a média da proporção dos imigrantes na população local, a parcela de votos do PT diminui em 5,25 pontos percentuais (p.p.). Para o efeito heterogêneo, o impacto é mais forte para os municípios que (i) abrigam uma parcela menor de imigrantes, (ii) têm uma população menor, (iii) têm uma taxa de desemprego mais alta e (iv) têm menor qualidade educacional. A maior entrada de imigrantes eleva a participação de votos do PT na região Sul do Brasil. Além disso, restringindo as estimativas para diferentes ciclos eleitorais, o impacto passa a ser positivo no ciclo 2007-2010 e negativo no restante. A análise do mecanismo sugere que o impacto eleitoral se dá potencialmente pelo aumento da participação de estudantes estrangeiros no sistema escolar, o que pode ser uma proxy de competição por bens públicos. Além disso, os resultados mostram que os imigrantes reduzem os homicídios, aumentam o gasto per capita do município e sua receita líquida.

Palavras-chave: Economia da Migração; Economia Política; Variável Instrumental; Modelos de Dados em Painel; Modelos de Corte-transversal.

JEL Code: F22, P48, C26, C23, C21.

Área 8: Econometria

1 Introduction

For the last ten years, the number of forced migrants reached over 75 million among refugees and internally displaced people in mid-2021 and, by 2022, over 8 million more refugees are expected only from Ukraine war¹². The migratory flux across the world has been drawing the attention of many different fields to study various consequences that emerge from it. The reasons why people migrate are many, for instance, Migali et al. (2018) summarize that structural factors such as poverty, previous immigrants in the host country, conflicts, and the search for favorable economic conditions are some of them. Recently, the number of immigrants to Brazil has had an upward trend, which potentially impacts the labor market, political decisions, and voting.

This paper addresses an important aspect still little studied about the migratory influx to Brazil. I study the impact of the recent migratory influx on the presidential election in Brazil using four election cycles between 2006 and 2018, the period in which the data are available. The election result is measured by the Workers' Party (PT) percentage share of votes, for the immigrants I use the number of visa requests as a proxy. To estimate the causal effect, I apply an instrumental variable (IV) based on Card (2001), in which he considers that immigrants are prone to go to cities with a higher share of their compatriots. I also propose a second IV based on the distance from each municipality to the immigrants' country of birth. The argument is that distance is one of the factors for migration (i.e., closer locations tend to host more immigrants) and it influences the election result through migratory influx. The literature has a long history of using shift-share IV for assessing voluntary migration, but a lesser number of studies that employed geographical distance (Del Carpio and Wagner, 2015; Black et al., 2015; Peri, 2012; McKenzie et al., 2010). The Kleibergen-Paap version of F-statistics for the first stage relevance assumption is higher than 10 (Stock and Yogo, 2002).

The results suggest that if a municipality hosts the mean of the immigrant share of the local population, the PT's vote share reduces in 5.25 percentage points (p.p.). For the heterogeneous effect, I find that the impact is stronger for municipalities that (i) host a lower share of immigrants, (ii) have a lower population, (iii) have a higher unemployment rate, and (iv) hold a lower educational quality. Higher immigrant share increases the PT's vote share in the Brazilian South region. Besides, restricting the estimations for different election cycles, the impact becomes then positive in the 2006–2010 cycle and negative for the remainder. The mechanism analysis suggests that the electoral impact potentially run through the increase of foreign student share, which may be a proxy of competition for public goods. Moreover, I find that immigrants reduce homicide, increase municipality spending per capita, and its net revenues.

The rest of the paper is organized as follows. The next section provides a brief overview of the recent Brazilian immigration. Section 3 details the data sources and the descriptive statistics. Section 4 describes the empirical strategy. Section 5 presents the results. Finally, section 6 reports the concluding remarks.

2 Related Literature

The analysis presented in this paper contributes to the literature as follows: (i) it is one of the firsts studies that assess the impact of immigration in Latin America on the elections; (ii) it adds a new developing country to the small number of developing countries already assessed; and (iii) it presents a new result in the literature regarding the direction of the impact depending on the election cycle.

I can summarize the influence of the immigration flow on the voting preference through two channels: (i) the way natives perceive immigrants as positive or negative, and (ii) the way the

¹<https://www.npr.org/2022/04/26/1094796253/ukraine-russia-refugees>.

²https://www.unhcr.org/statistics/unhcrstats/618ae4694/mid-year-trends-2021.html#_ga=2.77142293.1277531087.1653227446-38445665.1653227446

population perceives the involvement of the government with the immigration flow (Mayda et al., 2018; Altındağ and Kaushal, 2020). Immigrants potentially affect the local population through the labor market competition, culture, social norms, sense of security, and rivalry over public goods, whose supply cannot expand rapidly (Ajzenman et al., 2022; Mayda et al., 2018; Card et al., 2012; Alesina and Giuliano, 2011).

Mayda et al. (2018) find that a rise of high-skilled immigrant share of the local population had a significant impact on the reduction in Republican's vote share, whereas the rise of low-skilled immigrant share increased the Republican's vote share. They interpret that the natives perceive the skill composition of immigrants as a net cost or a benefit. Since Republican Party is associated with having a more restrictive viewpoint on the migratory flow, they benefit from certain areas that hosted a higher share of low-skilled immigrants. They propose a new interpretation for the consensus that immigration is correlated with a higher vote share of the Democratic Party due to the skill composition of immigrants. Then it can reconcile the US case with European studies that show a positive association between migratory influx and right-wing parties since Europe has received more low-skilled immigrants than US.

Altındağ and Kaushal (2020) analyse the political impact of the Syrian refugee in Turkey using surveys of Turkish citizens' political preferences and the election result. They find that this influx reduces the president's right-wing party support, measured by a periodic opinion poll, but has no impact on the vote share. The authors interpret it as the migration influx had just a short-term political impact. That is, the time span between the opinion poll and the elections was sufficient to make the native perceptions on the refugees fade away. They also argue that (i) it is likely that the voters did not hold the president's party responsible for the refugee flow, and (ii) the incumbent's party could have lost vote share had other party assumed a more restrictive position over the refugees.

The local population has different opinions and perception on the migratory influx. Implications on social norms, cultural incompatibility, and security can shape how they sense immigrants in a more positive or negative way. (Brown, 2000). Allport (1954) hypothesizes that there are four channels through which intergroup contact facilitates prejudice reduction: equal status among groups, common goals, intergroup cooperation, and support of authorities, law, or custom. Based on it, Pettigrew (1998) points out that long-term relationships to outgroups are the most effective way to reduce intergroup prejudice.

Card et al. (2012) call it as compositional amenities, which correspond to the preference a person has regarding certain characteristics of neighbors and coworkers. The authors find that it explains more the variation of attitudes toward the immigrants than wages and taxes. Religion is a parameter of cultural distance, which might constrain natives to safeguard their customs and traditions (Hainmueller et al., 2016). Hangartner et al. (2019) examine the local population's attitude toward the sudden and temporary immigrants to Greek islands. They find that the natives become more hostile to refugees, immigrants, and Muslims, and more prone to restrict the number of asylum seekers. When it comes to social norms, Alesina and Giuliano (2011) show that some cultural values persist in the second-generation immigrants. Natives are also concerned about the sense of security, for instance Chalfin (2015) finds that an increase in the Mexican immigrant reduces rape, larceny, motor vehicle theft, and led to a higher aggravated assault.

The literature on the subject matter shows that immigration flow to Europe tends to increase the vote share to political parties that support a stricter migratory policy, generally the right-wing parties (Otto and Steinhardt, 2014; Barone et al., 2016; ; Halla et al., 2017 Harmon, 2018; Vasilakis, 2018; Hangartner et al., 2019; Dinas et al., 2019). For instance, Halla et al. (2017) assess the political impact of immigration in Austria, their results show that it caused a higher right-wing party's vote share, especially in host locations with a higher unemployment rate and low-skilled immigrants.

Dinas et al. (2019) use the same phenomenon and similar identification strategy as Hangartner et al. (2019) to evaluate the impact of immigration on the elections of the the Greek islands. The results suggest an increase of 2 p.p. in the right-wing party vote share in the islands affected by the

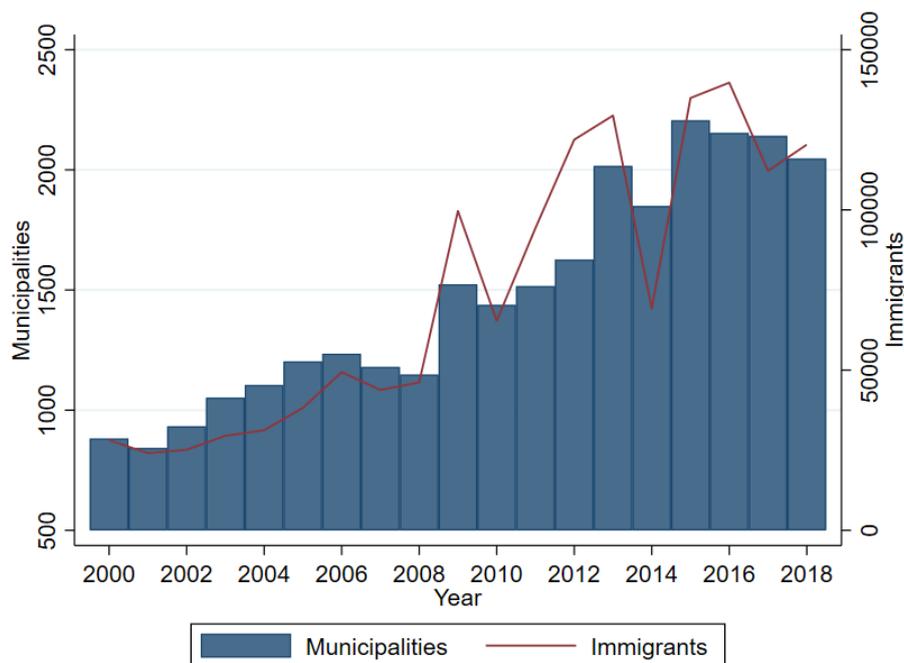
transitory refugee flow. [Barone et al. \(2016\)](#) appraise the phenomenon in Italy. The center-right parties gained a higher vote share due to immigration inflow. The results also suggest that part of the voters shifted from left to right-wing parties. They find that municipalities with smaller (i) population size, (ii) higher cultural diversity, (iii) lower educational level, (iv) a higher public good competition increase the right-wing parties' vote share.

[Dustmann et al. \(2019\)](#) examine the Danish migration policy that randomly allocated immigrants to municipalities. Their result identifies that a greater proportion of immigrants increase the likelihood that parties with an anti-immigration agenda would run for mayor. In municipalities with less urban regions, a larger number of allocated immigrants raise a proportion of votes for right-wing parties. In addition, the authors observe that municipality with a smaller population and more crimes associated with immigrants increase the vote share for right-wing parties.

3 Brazil's Background

Brazil has a long history as an immigrant's host, most of them composed of Iberian and sub-Saharan Africans for slavery. After the 19th century, it has changed. According to [Levy \(1974\)](#) between 1872 and 1920, more than 3.2 million immigrants arrived in the country, implying that 5.1% of the population were of foreign-born, part of them composed of subsidized immigration. Most of them were Portuguese, Spanish, Italians, Germans, and Japanese. They reduced the lack of workforce, concurrently they contributed to the country with finance investments, technology, and human capital ([Pereira, 1964](#); [Rocha et al., 2017](#)). [Monasterio and Reis \(2008\)](#) find evidence that manufacture spots are correlated with transportation costs, agglomerative forces, and externalities due to European immigrants. Yet, these numbers increasingly dropped over time, especially during the 1930s, no further immigration wave has occurred since then ([Monasterio and Lopes, 2018](#)).

Figure 1: Visa requests and host municipalities



When it comes to a more recent period, there is an increase in the number of long-term visa requests in the country³. According to the migratory data, in 2000, there were 28,151 requests, it finds its lowest

³I use “number of immigrants” and “long-term visa requests” interchangeably since the latter is our proxy variable in the paper.

counting in 2001 with 24,094. Then, the curve has an upward trend and achieves its peak, in 2016, with 139,712. In sum, Brazil has received more than 1.3MM visa requests for staying at least a year between 2000 and 2018. A similar trend can be seen in the number of municipalities that received at least one visa request for staying. The lowest counting is in 2001, when 843 municipalities registered at least one visa request for stays, it reaches its peak in 2015, a year before than the number of immigrants.

Table 1: Rank of immigrants' origin

Rank	2006	2010	2014	2018	Total
First	USA (23)	Bolivia (29)	Bolivia (46)	Haiti (86)	Bolivia (119)
Second	Bolivia (15)	USA (28)	USA (37)	China (42)	China (109)
Third	China (10)	China (25)	China (32)	Venezuela (41)	USA (108)
Fourth	Argentina (9)	Argentina (13)	UK (25)	Colombia (33)	Haiti (102)
Fifth	Germany (8)	UK (12)	France (21)	Bolivia (29)	Argentina (59)

Note: The approximate number of visa requests, in thousands, are in parenthesis. Each column is the total number of visa requests in the election cycle (2003-2006; 2007-2010; 2011-2014; 2015-2018).

At the same time, Brazil received visa applications from 193 countries. For instance, the top five in number of visa requests are Bolivia (119 thousand), China (109 thousand), USA (108 thousand), and Haiti (102 thousand) in the whole period between 2003 and 2018. At least one Latin American country is represented at each period, and Bolivia distinguishes itself within the sample. China has a steady increase in visa applications, and the same thing is happening to the United States, with the exception of the last period. In 2018, the number of visas from Haiti is in sharp increase compared with the previous period (16 thousand). Brazil has been engaged with Haiti since 2004, when the country commanded the United Nations Stabilization Mission. The political and economic crisis in Venezuela has generated millions of refugees, most of them went to Colombia and to other South American countries, a minor part crossed the borders toward the northern Brazilian state of Roraima.

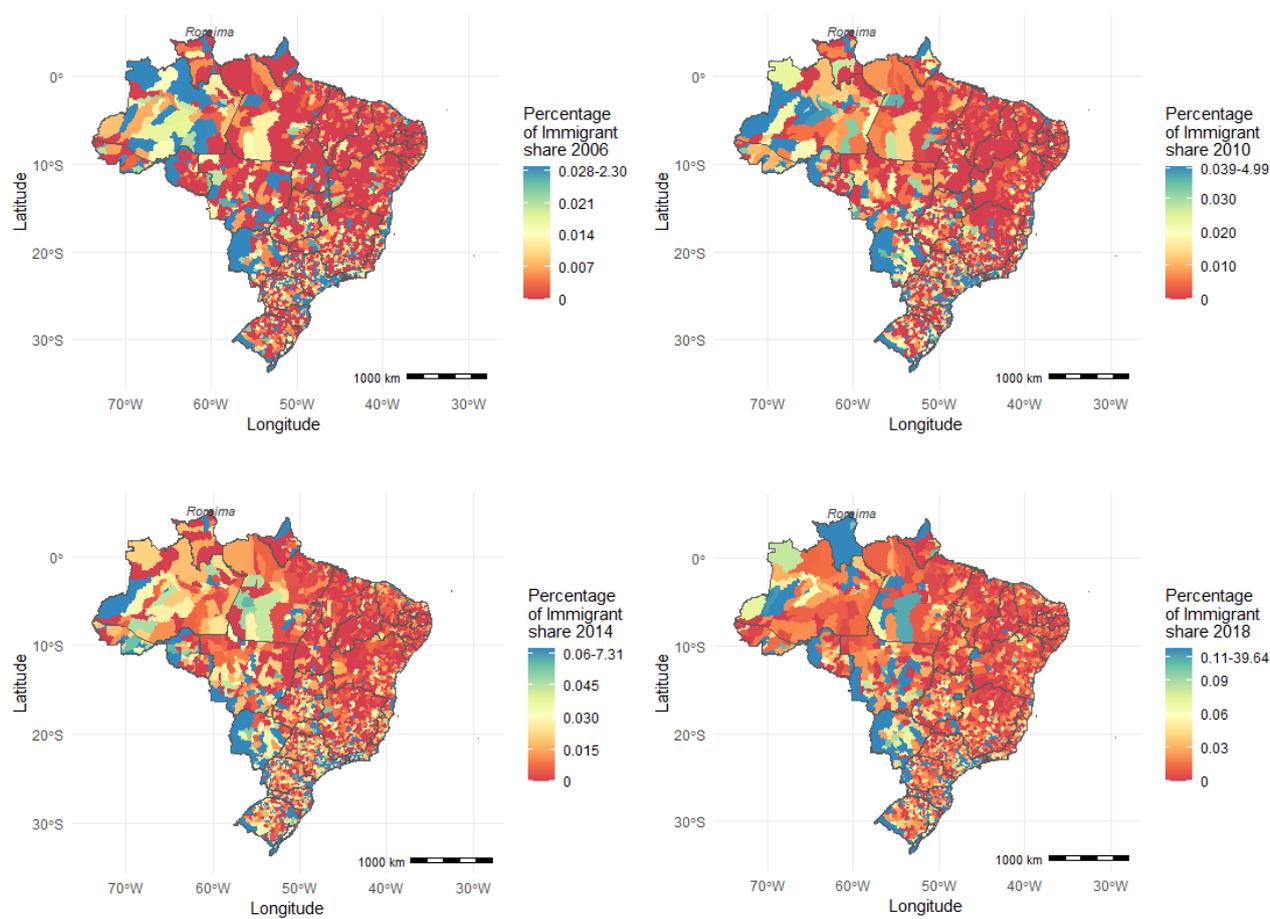
The immigrants' occupation profile is summarized in a list composed of 85 categories, except for "under age", "Dependent of temporary visa holder", and "Dependent of permanent visa holder". The most common occupation is student (339,384), followed by officer⁴(192,595), non-classified occupation (183,757), decorator (161,129), and engineer (105,038).

Based on [Figure 2](#), the proportion of visa applications relative to the municipality population follows a consistent pattern throughout the four election cycles. The share of visa demand is higher at the western and southern border of Brazil. Indeed, municipalities with the highest share of immigration are located at the border between the South and the North because of their proximity to other countries. From 2015 to 2018, the inflow of Venezuelan immigrants increased, notably in the state of Roraima. The number of visa applications submitted by Venezuelans during each electoral period is as follows: 1146 (2006), 2065 (2010), 319 (2014) and 40951 (2018).

The President's election takes place every four years. The president is elected when she receives the largest number of valid votes in the first or second round. In the event that one of the candidates fails to meet this threshold in the first round, the first and second most-voted candidates go to the second round. The period considered for analysis encompasses four elections (2006, 2010, 2014, 2018), the Worker's Party won the first three elections, in 2018 they went to the second round election and were defeated. [Figure 3](#) presents the PT's vote share map in the first round election. I note a geographical pattern across the years, where the Northeast region votes consistently more to PT, whereas in the Midwest, Southeast, and South regions the PT's vote share is consistently lower than the remainder.

⁴In Portuguese, officer means literally "oficial" which is a broad term that usually refers to a military position.

Figure 2: Immigrant share by municipality



4 Data sources

I use Brazilian municipalities to assess the causal relationship between migration and the presidential election. Over the years, the number of municipalities increased from 5664 in 2006 to 5570 in 2018, spread over 26 states and one federal district. In 2018, the average municipal population is 35,404, with most municipalities having a relatively small population⁵.

Information about the elections in Brazil is available in the official statistics of the Superior Electoral Court (TSE). I measure the results of the Workers' Party (PT) elections as a percentage of the presidency in the first round of 2006, 2010, 2014 and 2018. The reason for this is as following: first, Brazil has a multiparty presidential system implying that not all parties launch presidential candidates in every election and, second, PT can be considered the reference since it won three out four (2006-2014) presidential elections during the period.

The immigration database is provided by the Department of Justice and encompasses all temporary and permanent visa applications⁶. The available data begin in 2000 and contain some information about immigrant such as her gender, date of birth, country of birth, the state through which she had access to the Brazilian territory, and the municipality where she will reside⁷. Immigrants in the database are allowed to live in the country for at least a year, have no citizenship, and cannot vote.

⁵São Paulo is the largest city with 12 million inhabitants approximately.

⁶The details about the requirements of how to be eligible to obtain a visa <http://www.portalconsular.itamaraty.gov.br/vistos> and <https://www.justica.gov.br/seus-direitos/migracoes/autorizacao-de-residencia>.

⁷The immigrant can move to other municipalities without the need to inform Brazilian authorities about it.

Figure 3: PT's vote share

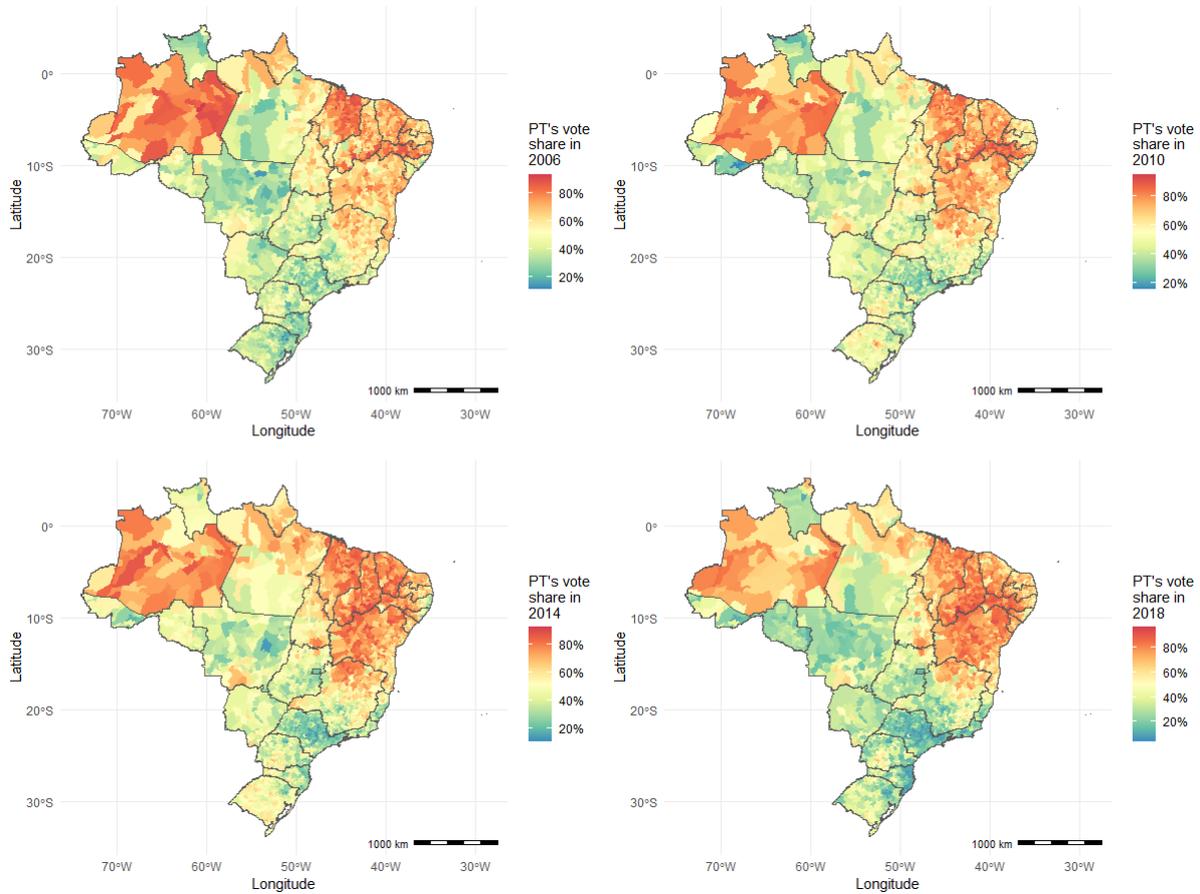


Table 2 presents the descriptive statistics for all variables used. The data are tabulated at the municipality-level according to each presidential election. The mean PT's vote share in 2006 was 51.6%, in 2010, it reaches the peak with 55.3%, then decreased to 52.2% and 46.1% in 2014 and 2018, respectively. In 2018, the PT loses the presidential elections after winning four consecutively (2002, 2006, 2010, and 2014). Brazil increasingly attracts immigrants to more and more municipalities over the years. The mean immigration follows an upward trend from 148,323, in 2006, 255,045, in 2010, 414,955, in 2014, and finally its peak in 2018 of 507,183 visa applications.

The covariates⁸ are related to demography, economy, education, health, and politics. The population⁹, the population density, the GDP¹⁰, and the woman share are obtained from the Brazilian Institute of Geography and Statistics (IBGE). The infant mortality rate computes the 1-year-old-infant deaths per 1000 live births, available in the Datasus. Educational quality is from the Basic Education of Development Index (IDEB). The index is constructed according to the students approval rate in school and the mean grade in the standardized exam across the elementary and middle school every two years since 2005, whose range is from 0 to 10. For the election result in which there is more than one IDEB result I calculate their average. Lastly, the political variables are dummies that indicate whether the mayor and the state governor are from PT.

⁸Since the main estimations are based on panel data, the challenge for the analysis is to gather variables that are periodically updated.

⁹The number of inhabitants and the percentage share of women both of them estimated by the General Accounting Office (TCU) and made available by the Brazilian Institute of Geography and Statistics

¹⁰The municipality GDP computed using 2003 as the base year.

Table 2: Descriptive statistics

Election year	2006	2010	2014	2018
PT vote share(%)	51.6 [17.8]	55.3 [15.8]	52.2 [18.5]	46.1 [24.1]
N	5565	5567	5570	5570
Immigration	47.3 [925.8]	95.6 [1628.6]	109.8 [2160.1]	131.0 [1813.5]
N	2758	2282	3045	3471
Population	33567.7 [1.9×10 ⁵]	34277.8 [2.0×10 ⁵]	36409.3 [2.1×10 ⁵]	37431.8 [2.2×10 ⁵]
N	5564	5565	5570	5570
Educ quality	3.6 [0.9]	4.3 [0.9]	4.9 [1.0]	5.5 [1.0]
N	5022	5512	5414	5509
GDP growth(%)	0.04 [0.08]	0.1 [0.1]	0.04 [0.16]	9.7×10 ⁻¹⁰ [8.5×10 ⁻⁹]
N	5560	5564	5565	5570
GDP pc	6372.7 [7411.8]	7702 [8364.0]	9492.5 [11203.3]	9816.7 [9164.6]
N	5560	5564	5565	5570
Infant mort rate	67.0 [41.0]	76.3 [43.5]	85.4 [50.9]	92.1 [54.1]
N	5403	5306	5295	5284
Density	107.1 [575.0]	108.2 [572.4]	115 [604]	118.6 [622.5]
N	5565	5565	5565	5565
Woman share	0.5 [0.1]	0.5 [0.02]	0.5 [0.04]	0.5 [0.05]
N	5564	5565	5570	5,570
PT Mayor	0.09 [0.3]	0.13 [0.34]	0.17 [0.38]	0.14 [0.35]
N	5565	5567	5570	5570
PT Governor	0.06 [0.2]	0.16 [0.4]	0.2 [0.4]	0.3 [0.5]
N	5565	5567	5570	5570

Note: *Immigration* is the mean of the total visa requests among the municipalities that received at least one applicant in each election cycle. In brackets are the standard deviation, and N is the number of observations. The election cycles are the following: (2003-2006; 2007-2010; 2011-2014; 2015-2018).

5 Empirical Strategy

To estimate the impact of immigration on the presidential election, I first present cross-sectional data to have an initial data exploration, and then I move to the panel data.

Cross-sectional data are estimated as follows:

$$PT_{msrt} = \alpha + \beta Immig_{mt} + \beta_1 Immig_{mt-1} + PT_{msrt-1} + X'_{mst} \Phi + \nu_m + \pi_s + \varepsilon_{mstr}, \quad (1)$$

where m , s , r , and t correspond to municipality, state, whether it is in the first or second round election, and year election, respectively. $Immig_{mt} = \frac{Immigration_{mt}}{Population_{mt}}$, PT_{mstr} is the Workers' Party vote share in percentage points. X'_{mst} is the vector of control variables, including dummy variables whether the mayor, state governor is from PT. In cross-sectional regression, I include $Immigrant_{mt-1}$, PT_{msrt-1} . π_s , δ_t are state and year election fixed effects. ν_m is the dummy whether the municipality is the state capital.

The panel data are estimated as follows:

$$PT_{mstr} = \alpha + \beta Immig_{mt} + X'_{mst} \Phi + \gamma_m + \delta_t + \varepsilon_{mstr}, \quad (2)$$

where PT_{mstr} is the Workers' Party vote share in percentage points, $Immig_{mt} = \frac{Immigration_{mt}}{Population_{mt}}$, X'_{mst} is the vector of control variables, including dummy variables whether the mayor, state governor is from PT. γ_m is the fixed effect at the municipality level.

Equation 2 is formatted differently than equation 1 since I will use the Fixed Effects estimator that demean all the variables.

5.1 Instrumental variable

The challenge I face is to overcome the potential bias in estimating the causality of immigration on the PT's vote share. There are two potential sources of bias: (i) omitted variables (for instance local economic shocks, local amenities, local incumbents inducing immigrant influx to their political area of influence), and (ii) reverse causality since immigrants might choose to migrate to municipalities according to their political preference.

To determine the causal effect, the 2-stage least squares estimator (2SLS) is used to address the potential bias. I propose two instruments for that purpose. The first one is the shift-share instrument, following the specification proposed by Barone et al. (2016) that is an adaptation from Card (2001). The second IV is the geographical distance from the municipalities to the immigrants' country of birth.

Following Barone et al. (2016), immigrants tend to migrate to regions where the same origin group is located. I exploit the assumption that the previous shocks that influenced the immigrants to a municipality is not correlated with posterior shocks conditional on the full set of controls in equation (1) and (2). The instrument is arranged in the following way:

$$\frac{\sum_{c=1}^N \delta_{mc} \times Immigrants_{ct,-m}}{Population_{mt}}, \quad (3)$$

where δ_{mc} stands for the share of immigrants from country c in municipality m in 2000, $Immigrants_{ct,-m}$ is the number of immigrants from country c in the 4-year election cycle t ($t=2010,2014,2018$), removing those in municipality m . $Population_{mt}$ is the average population of municipality m in year t .

The second proposed instrumental variable exploits the geographical distances from each municipality to immigrants' country of birth. I follow the literature that used the geographical distance as an instrumental variable (Del Carpio and Wagner, 2015; Altındağ and Kaushal, 2020; Hangartner et al., 2019; Dinas et al., 2019; Peri, 2012). The intuition is that the higher the distance from the municipality to the immigrant's country of birth the lower the migratory influx. The identification assumption is that, conditional on the full set of controls, the distance from the municipality to the inverse of the sum of distances of the immigrant's country of birth has no influence on the voter's political preference except through the influx of immigrants into the municipality. The instrument is arranged in the following way:

The IV in the cross-sectional data:

$$Distance_m = \left(\sum_{c_t} distance_{mc} \right)^{-1} \quad (4)$$

And for the panel data:

$$Distance_{mt} = \left(\sum_{c_t} distance_{mc} \right)^{-1} \times Time_t \quad (5)$$

where $distance_{mc}$ is measured by the euclidean distance from the municipality m to the country, that is:

$$distance_{mc} = \sqrt{(latitude_m - latitude_c)^2 + (longitude_m - longitude_c)^2} \quad (6)$$

$Time_t$ is the dummy for each year election, and c is the immigrant's country of birth that moved to any part of Brazil during each election cycle t (2006-2018). It happens that in every election cycle the immigrants came from all the same 193 countries, then I apply the dummy of year election to impose a variation throughout the panel data.

6 Results

In this section, I present the results of the electoral impact of the immigration influx into Brazil, considering the period between 2006 and 2018. I divide this section into four subsections. In the first and second subsections, I present the initial causal evidence for both the cross-sectional data, exploiting the OLS and 2SLS, and panel data based on the Pooled OLS, Fixed Effects, and FE-2SLS. Subsection 3 analyses the heterogenous effect on panel data. Finally, I do a robustness check.

6.1 Cross-section

Table 3 provides estimates of the 2010, 2014 and 2018¹¹ presidential elections. It reports the correlation between the PT's vote share and the share of immigrants using the specification (1). In panel A, the correlation is negatively, but not statistically significant. In panel B, I apply the shift-share instrument, the F-statistic for the excluded instrument suggests I have a weak instrument. In panel C, the F-statistic provides evidence that the distance instrument is a weak instrument. This suggests that the estimate bias is even higher than the OLS method. In sum, the cross-sectional data do not reveal much regarding causality. Based on the OLS and on the IV use, I cannot reject the null hypothesis that is different from zero.

Table 3: Cross-section

	2010 (1)	2014 (2)	2018 (3)
Panel A: OLS			
Immigration	-12.6[-0.003] (7.9)	-11.0[-0.004] (15.2)	-123.1[-0.96] (116.7)
Panel B: shift-share as instrument			
Immigration	-7791.0[-1.64] (12177)	-130.5[-0.043] (237.8)	330.4[0.26] (253.7)
Instrument (1st stage)	-0.01 (0.01)	0.12* (.07)	0.08 (0.05)
F-statistic	1.34	3.00	1.85
Panel C: distance as instrument			
Immigration	6581.3[1.38] (7104.9)	-9708.8[-3.20] (14865.8)	-5180.1[-4.04] (4980.7)
Instrument (1st stage)	-12.6 (7.9)	-11.0 (15.2)	-123.1 (116.7)
F-statistic	2.6	0.52	1.11
Control	Yes	Yes	Yes
Immigration mean	0.00021	0.00033	0.00078
N	5272	5193	5243

Notes: The dependent variable is the PT's vote share in the first round. Immigrant share is the total number of visa requests in each municipality over the local population. Instrument(1st stage) is the point estimation of the instrument corresponding to its panel. In panel B and C, I use the shift-share and the distance instrument respectively. In square brackets is the point estimates times the immigration mean. F-statistics reports the Kleibergen-Paap statistics. In parentheses is the robust standard deviation. *** p<0.01, ** p<0.05, and * p<0.10.

¹¹I ignore the 2006 election cycle due to the presence of the lagged immigration share, represented by $Immig_{mt-1}$ in Equation 1.

6.2 Fixed-effects

A second approach is based on the panel data. It has two advantages over the cross-section: (i) it increases the number of observations, and (ii) it enables to control for unobserved effects of individuals' constant over time. Then, the next step is to check the estimations based on the Pooled OLS, Fixed-effects, and the Fixed-effects-2SLS (FE2SLS).

In the first column of the [Table 4](#), I use the Pooled OLS estimator stacking the election cycle between 2010 and 2018 and applying specification (1). The estimation shows a negative correlation between immigration share and the PT's vote share but not statistically significant. The second column reports the FE estimator. Here, the estimate becomes more negative than in the first column, still statistically non-significant.

Table 4: Fixed Effects

	(1)	(2)	(3)	(4)
Panel A: First stage				
	Pooled OLS	FE	FE-2SIS	
Shift-share			0.28** (0.13)	
Distance × 2006				95.1*** (16.9)
Distance × 2010				90.6*** (19.1)
Distance × 2014				72.8*** (18.0)
Panel B: Second stage				
Immigration	-3.7 [-.001] (-380.2)	-42.9 [-.02] (50.7)	-210.7 [-.07] (208.8)	-14603.5*** [-5.25] (2793.9)
Control	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
F statistics			4.97	11.2
Mean Indep. Var.	0.00036	0.00036	0.00036	0.00036
N	20654	20529	15515	20529

Notes: The dependent variable is the PT's vote share in the first round. Immigrant share is the total number of visa requests in each municipality over the local population. In panel A: I present the estimations for the first stage regressions whose excluded instruments are presented in the left column. In panel B, I use the share of immigrants by municipality in 2000. In square brackets is the point estimates times the immigration mean. F-statistics reports the Kleibergen-Paap statistics. In parentheses is the robust standard deviation. *** p<0.01, ** p<0.05, and * p<0.10..

In column (3) and (4), I apply the FE2SLS. Column (3) presents the shift-share instrument, as shown in panel A. The F-statistic for the excluded instrument suggests that it is a weak instrument, which is potentially troublesome for an interpretation of causality. Nevertheless, the estimate becomes more negative than the previous coefficients in the second stage. It might be a sign of a positive bias from the omitted variables.

In column (4), I use the distance instrument for analysis. In panel A, the results suggest that the coefficients have the expected sign. The relevance assumption is observed since all three instruments have their p-value below 0.01%, the F-statistic for the excluded instruments is above conventional levels. In panel B, the immigration coefficient becomes even more negative. It is noticeable that every time I add an extra layer for reducing omitted variables, the estimate of interest variable becomes more negative. Unlike the last three columns, the last estimate is statistically significant. An increase by the

mean immigrant share across municipalities corresponds to a reduction in the PT’s vote share by -5.25 percentage points ($-14603.5 \times 0.00036 = -5.25$).

I interpret the gap between the columns (3) and (4) estimates due to the use of different instruments. That is, one of the drawbacks regarding the IV method is that the treatment effect may differ across distinct instruments, and a way of decoding it is to interpret it as the Local average treatment effect (Becker, 2016). The shift-share instrument considers 882 of 5570 municipalities as the compliers¹². Since those municipalities tend to host immigrants in every election cycle, the estimates capture a lower marginal effect¹³. The distance instrument, in turn, considers all the municipalities as compliers differing only in degree. Then those coefficients measure the impact of new immigrants in a broader sample, including those locations that never hosted a single immigrant. In this sense, applying the distance instrument, it is natural to expect a higher marginal effect compared to the estimates from the shift-share instrument.

I present two other results in Table 5. With respect to the second round of elections, the PT’s vote share declines slightly compared to the first round. The decision to vote in the second round tends to be more strategic, while in the first round it tends to better reflect the voter’s political preference. By extending the analysis to a coalition of left-wing parties as a new dependent variable, the coefficient becomes more negative than when I only consider the PT. This result suggests that voters link the issue of immigration to the left even more strongly, instead of redistributing votes between these parties.

Table 5: Second round and coalition

	(1)	(2)	(3)	(4)
	Second round		Coalition	
	S-S	Distance	S-S	Distance
Immigration	-152.7 [-.07] (181.3)	-13271.1***[-5.25] (2541.4)	-145.8 (173.7)	-15115.5*** (2892.1)
Control	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
F statistic	4.97	11.2	4.97	11.2
Mean Indep. Var.	0.00036	0.00036	0.00036	0.00036
N	20654	20529	20654	20529

Notes: In column (1) and (2) the dependent variables are the PT’s vote share in the second round of the elections. In column (3) and (4) I consider the following left-wing parties’ coalition to consider its vote share in the first round: PSTU, PSOL, PT, PDT, PPL, PSB, PCO, and PCB. Immigrant share is the total number of visa requests in each municipality over the local population. Instrument(1st stage) is the point estimate and standard deviation of the instrument corresponding to the panel. In panel B, I use the share of immigrants by municipality in 2000. In square brackets is the point estimates times the immigration mean. F-statistics reports the Kleibergen-Paap statistics. In parentheses is the robust standard deviation. *** p<0.01, ** p<0.05, and * p<0.10.

6.3 Heterogeneous effect

In this section, I explore the impact of immigration on the share of PT voting in different samples to get a better sense of the phenomenon summarized in Table 4. Table 6 provides the results for municipalities with different level of immigration influx, unemployment rate, and educational quality. Column (1) restrains the samples to the municipalities below the 95th percentile of the respective feature described in each panel. Column (2), reduces it to below the 90th percentile. Column (3)

¹²I use immigration data from 2000 as the “share” of the shift-share instrument, only 882 municipalities received visa requests.

¹³Panel A in the Table 6 confirms it, as the estimates restrain the samples to municipalities that host a lower number of immigrants, the immigration coefficient becomes more negative.

drops it to below the 75th percentile. Finally, column (4) considers the municipalities above the 75th percentile of the respective feature.

Table 6: Heterogenous effect of Immigration

	Below 95th percentile (1)	Below 90th percentile (2)	Below 75th percetile (3)	Above 75th percentile (4)
Panel A: Share of immigrants				
$Immig_{shift-share}$	-4025.4* [-1.5] (2334.9)	-6042.9 (4710.9)	915.0 (2725.0)	-31.9 (134.9)
$Immigration_{dist}$	-30945.8*** [-11.1] (2647.3)	-39943.5*** [-14.4] (4040.6)	-48666.1*** [-17.5] (8345.5)	-5129[-1.8] (4765.6)
F-stat $_{shift-share}$	1.90	1.55	0.86	4.19
F-stat $_{dist}$	47.91	32.93	12.48	0.45
N	19904	19100	16302	2905
Panel B: Population				
$Immig_{shift-share}$	-74.0 (122.8)	-19.3 (71.7)	46.6*** [0.2] (17.6)	-1355.3 (885.8)
$Immigration_{dist}$	-15319.9*** [-5.1] (3214.6)	-15878.8*** [5.5] (3606.2)	-16710.9*** [-6.0] (4763.8)	-10630.7*** [3.8] (1488.6)
F-stat $_{shift-share}$	6.00	10.20	36.52	6.78
F-stat $_{dist}$	9.03	7.64	4.83	19.81
N	19397	18265	14887	5484
Panel C: Unemployment				
$Immig_{shift-share}$	-207.2 (207.3)	-199.9 (204.5)	-118.7 (147.2)	33099.4 78836.9
$Immigration_{dist}$	-14411.9*** [-5.2] (2793.1)	-14214.4*** [-5.1] (2889.6)	-14397.9*** [-5.2] (3514.4)	-53511.1*** [-19.3] (11334.1)
F-stat $_{shift-share}$	4.97	4.96	6.74	0.16
F-stat $_{dist}$	10.96	10.02	6.68	8.37
N	20088	18951	15697	4832
Panel D: Education				
$Immig_{shift-share}$	-213.4 (209.4)	-239.0 (224.3)	-201.6 (179.7)	1832.15*** [0.7] (558.04)
$Immigration_{dist}$	-13302.6*** [-4.8] (2796.0)	-12360.9*** [-4.5] (3008.3)	-8029.9*** [-2.9] (2596.4)	-5899.9*** [-2.1] (1129.6)
F-stat $_{shift-share}$	4.90	4.85	5.09	37.27
F-stat $_{dist}$	9.54	7.43	3.87	12.38
N	19522	18583	15283	3800
Mean Indep. Var.	0.00036	0.00036	0.00036	0.00036

Notes: The dependent variable is the PT's vote share in the first round. Immigrant share is the total number of visa requests in each municipality over the local population. In square brackets, the point estimates times the immigration mean. F-statistics reports the Kleibergen-Paap statistics. In parentheses is the robust standard deviation. *** $p < 0.01$, ** $p < 0.05$, and * $p < 0.10$.

According to panel A of Table 6, host municipalities with fewer immigrants have a greater impact on the share of PT votes than the basic estimate in Table 4. This outcome suggests that the influx of immigrants has a negative monotonic effect, whose effect rises as the number of immigrants decreases. If the municipalities receive the mean immigration share, the PT's vote share drops from 11.1 p.p to 14.4 p.p., and 17.5 p.p from columns (1) to (3), respectively. All three columns have F-statistics above recommended levels, and the F-statistic is below 10 in column (4).

In the panel B of Table 6, the inspection to the F-statistics points to some columns with potential weak instruments. Columns (2) and (3) provides evidence of the validity for the shift-share instrument and column (4) recommends the use of the distance instrument. In column (2), I cannot reject the null hypothesis with a p-value below 10%. In column (3), in turn, I find a positive effect of immigration on

the PT's vote share. In other words, the shift-share instrument estimates suggest that the immigration increases voting for the PT in small municipalities. This results is not intuitive, since it is expected that the larger the population size the more cosmopolitan they get (Barone et al., 2016). On the other hand, using the distance instrument and comparing to the baseline estimate in Table 4, column (4) suggests that the municipalities with larger number of inhabitants tend to have a lower impact on PT's vote share, 3.8 against the 5.25 baseline estimate.

Table 7: Brazilian regions

	NO (1)	NE (2)	SE (3)	SO (4)	CO (5)
$Immig_{shift-share}$	-10918.8 (30183.6)	4067.4 (3916.5)	-1333.7** (590.8)	90.2** (38.43)	-6357.7* (3361.4)
$Immigration_{dist}$	5337.7 (5209.3)	-39795.0*** (13698.2)	-29137.9*** (8671.8)	509.0* (296.8)	-1275.7 (3168.7)
Control	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
F-stat $_{shift-share}$	0.12	0.81	21.25	29.78	2.00
F-stat $_{dist}$	1.07	3.69	5.22	1.63	1.98
N	1749	6927	6217	3926	1710

Notes: The dependent variable is the PT's vote share in the first round. Immigrant share is the total number of visa requests in each municipality over the local population. The Brazilian regions are North, Northeast, Southeast, South, Midwest In square brackets is the point estimates times the immigration mean. F-statistics reports the Kleibergen-Paap statistics. In parentheses is the robust standard deviation. *** p<0.01, ** p<0.05, and * p<0.10.

According to Table 6, the analysis on the unemployment in panel C suggests that columns (1) and (2) comply with the requirements for robustness. Based on this, I find that a lower unemployment rate makes the immigration share effect slightly less negative. This evidence follows the literature. With regard to the educational quality in panel D, column (4) contains the F-statistics above 10 for both the shift-share and distance instruments. For the distance instrument, the immigration has a magnitude less negative than the baseline regression. That is, the baseline coefficient is -5.25, whereas in panel D is -2.1. Regarding the shift-share instrument, the coefficient is positive and statistically significant, yet I do not have the baseline estimation to compare it with.

In Table 7, I also analyse the results according to the Brazilian regions: North (NO), Northeast (NE), Southeast (SE), South (SU), and Midwest (CO). In columns (1), (2), and (5) the F-statistics is below 10, whereas columns (3) and (4) are robust for the estimation using the shift-share instrument. In the Southeast, the immigration share causes the PT's vote share to decrease, in the South it increases the PT's vote share. The opposing sign in the coefficient might be explained by Mayda et al. (2018), in which the authors find that the main factor influencing the voters is the educational background of immigrants relative to the them¹⁴. In Brazil, I find that it seems not to be the case, since the SE attracts the more skilled immigrants than the SO.

Table 8 suggests that the sign of the coefficient on the PT's vote share shifts according to the election cycle. Considering column (1), immigration influx caused a positive increase in the PT's vote share¹⁵. Nevertheless, in columns (2) and (3) the effect was negative, that is immigration reduces the PT's vote share. These results suggest that the immigration effect on presidential election can be more volatile than the literature reports. A deeper investigation of the subject must analyse the

¹⁴The microdata provide the profession of each visa request.

¹⁵It is valid to stress that although the F-statistic in column 1 and 2 are lower than the rule of thumb, it does not directly imply that the higher bias is bigger than the OLS bias. There are other tests that could be run to elucidate it (Andrews et al., 2019).

Table 8: Different periods

	2007-2010 (1)	2011-2014 (2)	2015-2018 (3)
$Immig_{shift-share}$	-35.2 (88.8)	438.1 (651.9)	-1630.8 (1898.0)
$Immigration_{dist}$	50963.2*** (16670.1)	-44175.5*** (15577.9)	-17852.4*** (4679.1)
F-stat $_{shift-share}$	5.71	0.72	2.39
F-stat $_{dist}$	9.56	8.22	14.77
Mean Indep. Var.	0.00036	0.00036	0.00036
N	9612	10068	10010

Notes: The dependent variable is the PT's vote share in the first round. $Immig_{shift-share}$ is the immigration share estimated by the shift-share instrument. $Immigration_{dist}$ is the immigration share estimated by the distance instrument. In square brackets is the point estimates times the immigration mean. F-statistics reports the Kleibergen-Paap statistics. In parentheses is the robust standard deviation. *** p<0.01, ** p<0.05, and * p<0.10.

source of these results, which can be due to the different migratory profiles or the different economic circumstances in Brazil.

Table 9: Mechanism

	Homicide (1)	Spending (2)	Spending per capita (3)	Net revenues (4)	Foreign student share (5)
$Immig_{shift-share}$	0.001 (0.001)	1.06×10^{10} (8.98×10^9)	3604.8 (5137.2)	-1296.16 (2093.1)	-27.6*** (7.5)
$Immigration_{dist}$	-.11*** (0.02)	2.1×10^9 (1.66×10^9)	38975.5*** (14518.1)	102960.5*** (24685.1)	71.0*** (13.1)
F-stat $_{shift-share}$	4.97	4.96	4.96	4.96	3.83
F-stat $_{dist}$	10.61	11.13	11.13	11.13	11.21
N	20162	20485	20485	18974	15515
Mean Dep. Var.			1206.25		
Mean Indep. Var.	0.00036	0.00036	0.00036	0.00036	0.00036

Notes: The dependent variable is the PT's vote share in the first round. Immigrant share is the total number of visa requests in each municipality over the local population. In square brackets is the point estimates times the immigration mean. F-statistics reports the Kleibergen-Paap statistics. In parentheses is the robust standard deviation. *** p<0.01, ** p<0.05, and * p<0.10.

6.4 Mechanism

In this section I present four potential transmission mechanisms that can explain the negative impact of the immigration influx on the PT's vote share: (i) homicide rate, (ii) municipality spending, (iii) net revenues of the town hall, and (iv) foreign student share. The F-statistics points that the shift-share instrument is mostly weak, hence I restrain the analysis of the distance instrument. The results suggest that the impact of immigration share on the presidential election can be partially explained by the increase of the share of foreigner enrolled in the school system.

With respect to homicide rate in [Table 9](#), the estimation shows that the immigration reduces it. That is, the evidence does not support the potential mechanism channel which connects crime to immigrants in Brazil. Regarding the heterogeneous effect on the homicide rate of [Table 10](#), the first column shows that by excluding the 5% most violent municipalities the PT's vote share decreases

Table 10: Heterogeneity of mechanism

	Below 95th percentile (1)	Below 90th percentile (2)	Below 75th percentile (3)	Above 75th percentile (4)
Panel A: homicide				
<i>Immig_{shift-share}</i>	-148.3 (162.3)	-80.9 (113.6)	-158.6 (262.1)	-4186.1[-1.5] (2268.2)
<i>Immigration_{dist}</i>	-14757.6*** [-5.3] (2902.8)	-14826.22*** [5.3] (3191.8)	-15519.9*** [5.6] (3949.3)	-11091.71*** [4] (2832.9)
F-stat _{shift-share}	5.26	7.21	5.51	6.61
F-stat _{dist}	10.61	8.98	7.94	6.09
N	20162	18974	15609	3293
Panel B: School enrollment				
<i>Immig_{shift-share}</i>	-1534.8*** [-0.6] (867.2)	-2092.4** [-0.8] (874.5)	4966.6*** [0.2] (8613.1)	130.1*** [0.04] (43.4)
<i>Immigration_{dist}</i>	-28715.47*** [-10.3] (3445.9)	-51690.4*** [-18.6] (3606.2)	-187010.5*** [-67.3] (46144.5)	-5315.1[-1.9] (15746.6)
F-stat _{shift-share}	6.72	5.18	2.83	6.08
F-stat _{dist}	11.21	12.56	8.90	0.09
N	15281	14184	11383	5484
Panel C: Municipality expenditure per capita				
<i>Immig_{shift-share}</i>	-119.4 (142.3)	-67.1 (104.2)	-58.7 (104.1)	-2490.5** [-0.9] (1263.8)
<i>Immigration_{dist}</i>	-15473.4*** [-5.6] (3113.2)	-18598.8*** [-6.7] (3061.4)	-17667.7*** [-6.3] (3469.5)	-7707.3*** [-2.7] (4349.1)
F-stat _{shift-share}	5.13	7.04	7.90	11.70
F-stat _{dist}	9.50	16.47	10.35	1.24
N	20229	19286	16099	3430
Mean Indep. Var.	0.00036	0.00036	0.00036	0.00036

Notes: Homicide is the mean of total homicides over the municipality's inhabitants. Municipality expenditure per capita is the per capita mayoral spending. School enrollment is the share of foreign students enrolled in either private or public schools. The dependent variable is the PT's vote share in the first round. Immigrant share is the total number of visa requests in each municipality over the local population. In square brackets is the point estimates times the immigration mean. F-statistics reports the Kleibergen-Paap statistics. In parentheses is the robust standard deviation. *** $p < 0.01$, ** $p < 0.05$, and * $p < 0.10$.

(-5,31 p.p.) comparing to the baseline estimation (-5.25 p.p.). Therefore, even though the immigrants reduce homicide rate, the heterogeneous analysis suggests that the natives potentially have the opposite impression.

The provision of public goods can be measured by the total municipality spending and the per capita municipality spending in columns (2) and (3) respectively in Table 9. Net revenues, in column (4), measure the municipality's revenues minus its spending. Column (2) shows no statistically significance. Column (3) by computing the spending per capita presents a positive and statistically significant coefficient, that is, an increase of immigrants influx by its mean raises the spending per capita in R\$14.03 an augmentation in the mean by 1.2%. In column (4), the coefficient is positive and statistically significant which implies that the municipality gains more in revenues than it spends. In relation to the heterogeneous effect of municipality's spending in Panel C of Table 9, comparing to the baseline estimation (-5.25 p.p.), the heterogeneous effect provides evidence that the local population tend to be more electorally responsive to the immigration influx when municipality's spending is lower. The voters' responsiveness follows a non-monotonic behavior of -6.7% and -6,36% according to the column (2) and (3), when I exclude the 90th and 75th percentile onward in Table 10 and given that the baseline estimate is 5.25 p.p..

Finally, the foreign student share is a variable that measures the share of foreign student over the

Table 11: Distance to the frontier

	Below 90th percentile (1)	Below 75th percentile (2)	Below 70th percentile (3)
$Immig_{shift-share}$	-3739.8*** (1227.3)	-3476.9*** (1144.6)	-3614.3*** (1168.7)
$Immigration_{dist}$	-26598.3*** (2554.2)	-40520.5*** (5312.4)	-42308.6*** (6228.9)
F-stat $_{shift-share}$	10.21	9.80	9.79
F-stat $_{dist}$	36.93	19.64	15.76
N	19069	16238	15271

Notes: The dependent variable is the PT's vote share in the first round. $Immig_{shift-share}$ is the immigration share estimated by the shift-share instrument. $Immigration_{dist}$ is the immigration share estimated by the distance instrument. In square brackets is the point estimates times the immigration mean. F-statistics reports the Kleibergen-Paap statistics. In parentheses is the robust standard deviation. *** p<0.01, ** p<0.05, and * p<0.10.

total students enrolled in either public or private schools. It may be a proxy of competition for public goods. According to the column (5) of Table 9, the immigration influx cause a higher number of foreign students enrollment. It is a potential mechanism to explain PT's vote share. Regarding the shift-share instrument, the negative coefficient is negative and highly biased as exposed by the F-statistics 3.83. The panel B of Table 10 suggests that, within municipalities with lower share of foreigners enrollment, the electoral effect on the PT's vote share is much higher. For instance, excluding the percentiles higher than 95th and the 90th, the PT's vote share shrinks by 10 p.p. and 18 p.p. respectively.

6.5 Robustness checks

In this section, I present arguments to potential drawbacks against the identification hypothesis, which asserts that the only channel that the distance affects the election is through immigration share. Firstly, a foreign country performance can affect a municipality through trade and companies' expansion. Secondly, the distance potentially reflects the geographical location of the municipality. Thirdly, municipalities might be affected by unobserved shocks from other South American countries. I also correct the shift-share instrument inference based on the contribution of Adão et al. (2019)¹⁶

According to the first argument, countries' worldwide performance potentially affects a Brazilian municipality not only through trade, but through companies' business expansion or contraction. Since voters' preferences involve the economic situation, it is important to control for it. To overcome it, the estimations include the GDP growth rate.

The second argument asserts that the distance is related to the geographical location of the municipality. Rodriguez and Rodrik (2001) point out that the distance between locations might be correlated with the geographical position, for instance close distances in European countries as opposed to larger distances in Oceanian countries are correlated with their geographical position (Peri, 2012). Consequently, it potentially determines the quality of human capital, institutions based on colonial experiences, wars, soil, fertility, and natural resources. I approach this argument using the fixed effect estimator. When it comes to human capital, I control it in the baseline estimation with the educational quality.

Another potential downside to the identification hypothesis is that foreign shocks influence Brazilian municipalities, especially those that are closer to other countries. To minimize that, I exclude municipalities along the western border, which are closer to other South American countries. Table 11 indicates that the negative effect of the influx of immigrants to Brazil continues. Columns (1), (2), and

¹⁶The authors show that the standard errors of the shift-share instrument may overreject the null hypothesis due to the regression residuals are correlated across regions with similar sectoral shares, regardless of their geographical location.

Table 12: Standard errors correction of the shift-share instrument

	SE (1)	SE(AKM) (2)	SE(AKM0) (3)
Shift-share	0.061*** (0.013)	0.094 (1.451)	0.094 (5.1 × 10 ⁶)

Notes: This table reports the column (3) of the [Table 7](#) and presents the corrections proposed by Adão, Kolésar, and Morales (2019) in the columns AKM and AKM0. The dependent variable is the PT's vote share in the first round. In parentheses is the robust standard error. The difference of point estimates in the columns (2) and (3) from the column (1) is due the software code limitations. *** p<0.01, ** p<0.05, and * p<0.10..

(3) report the results excluding 10%, 25%, and 30% municipalities closest to the border, respectively. In both the instruments, the interest variable maintains the negative impact on the PT's vote share, under the distance instrument, the F-statistics for the excluded instruments are above 10, and statistically significant. The larger the territory stripe I exclude, the more negative the coefficient becomes, that is, municipalities closer to the border are making the coefficient less negative. I propose two explanations for it: (i) the foreign shocks are affecting the Brazilian municipalities through channels other than immigration influx, and (ii) the local people perceive foreigners less as potential competitors for jobs and public goods. The immigration share coefficient under the shift-share instrument shows a negative effect in all three columns. In column (2)¹⁷ the coefficient marginally decreases, and marginally increases in column (3), the results are less volatile than the estimation under the distance instrument.

Regarding the shift-share instrument, I used the standard error correction proposed by [Adão et al. \(2019\)](#) on the estimate of the Southeast Brazilian region reported on the column (3) of the table [Table 7](#). The result of [Table 12](#) shows that the shift-share instrument outcome is not more statistically significant, therefore it should be interpreted cautiously for the Brazilian immigration case. The reason is that most of the municipalities hosted none new immigrant, which implies that several instrument shares have similar values making the standard errors lower than what it should be according to the authors.

7 Concluding Remarks

This paper assesses the causal effect of the inflow of immigrants on the presidential election in Brazil. I use data from four election cycle from 2006 and 2018 following the microdata availability on immigration influx, which begins in 2000, and the Workers' Party vote share to measure the endogenous variable. To identify the causal impact, the Instrumental Variable approach is used based on the shift-share instrument ([Card, 2001](#)) and the distance instrument.

The evidence shows that an increase by the mean immigration share over the local population decreases the PT's share of voting by 5.25 percentage points. Then, the paper evaluates the heterogeneous effects associated with the level of immigration, the local population size, unemployment rate, and educational quality. It finds evidence that the impact is stronger for municipalities that (i) host a lower share of immigrants, (ii) have a lower population, (iii) have a higher unemployment rate, and (iv) hold a lower educational quality. The results across Brazilian regions show different voting reactions to the immigration influx. Moreover, the test of different periods provides evidence that the different election cycles present opposing causal effects. The mechanism analysis suggests that the electoral

¹⁷The F-statistics in columns (2) and (3), under the shift-share instrument, are slightly below 10, [Andrews et al. \(2019\)](#) suggest that one use other procedures to certify whether a F-statistic below 10 really represents a weak instrument. The authors claim that the weak instruments by themselves might not be a reason to be discarded.

impact potentially run through the increase of foreign student share in the educational system, which may be a proxy of competition for public goods. Moreover, I find that immigrants reduce homicide, increase municipality spending per capita, and its net revenues.

The investigation presented in this paper contributes to the literature as follows: (i) it is one of the first studies that assesses the impact of foreign immigration on the election result in a Latin American country; (ii) it adds a new developing country to the literature; and (iii) it presents a new result in the literature regarding the direction of the impact being dependent on the election cycle.

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