Mayor's Party Alignment and Public Policy Execution: Evidence from Brazil

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INTRODUCTION

The Brazilian government delivers 40 million meals a day to feed students in elementary public schools, which is almost 20% of all Brazilian population, at the total amount of over 760 million euros in 2021 (CONSELHO DE MONITORAMENTO E AVALIAÇÃO DE POLÍTICAS PÚBLICAS, 2021). The procurement of these meals comes, at least in part, from smallholders. According to the federal regulations composing the National School Feeding Program (PNAE, in Portuguese), 30% of the school feeding budget transferred from federal to the other levels must be used specifically to procure from these farmers.

The National School Feeding Program is acknowledged by FAO as a pioneering and well succeeded case, as it is rare for a school feeding program to reach every student enrolled in public schools, not only minorities or small groups (KELLY and SWENSSON, 2017). Nonetheless, as the 30% set aside rule is not strictly enforced at the local level, there might be room for political use. Since local mayors have discretions over the implementation of this policy at the local level its execution or success tends to vary. Indeed, even though it is a countrywide public policy, the percentage of food products coming from smallholders varies from zero to almost one hundred per cent, depending on the municipality at stake (at the local level) (FNDE, 2017).

Some municipalities seem to have more difficulties than others on reaching the targeted percentage, like little or no structured family farmers' product supply. Beyond effective difficulties to implement the PNAE program, political motivation at the local level can also play a role. This context creates a suitable environment to investigate the following research question: Are the municipalities that elected mayors belonging to the same party that created the National School Feeding Program more likely to meet (or even exceed) the 30% set aside rule?

Grisa et al (2020) researched whether having a PT (Workers' Party) mayor is related to procuring more from family farmers. Their quantitative study was restricted to two states in the south of Brazil, and they have not found conclusive results. Bezerra and Gondinho (2021) discovered that if voters find out mismanagement or corruption in school feeding, they do not reelect the mayor, however their research does not account for the 30% PNAE's procurement rule. We are not aware of previous studies looking at a causal relation between political affilation at the local level and PNAE implementation. We predict PT mayors would implement this public policy more than mayors from other parties.

We use high temperature as an instrumental variable. Bad weather is believed to possibly influence election results because of turnouts (THE WASHINGTON POST, 2020; U.S. NEWS, 2016); however, there is not much evidence of it (GOMEZ, 2007). We tested and confirmed this idea. Our tests and regression show that electing a mayor from the same party that created PNAE's 30% rule increases up to 5.7% the likelihood of meeting the 30% target.

This research question is empirically relevant for two reasons, the first is related to the social impact of this policy. "Family farmer[1] agriculture is fundamental for Brazilian development. There are approximately 4.4 million family farmers, corresponding to 84% of all Brazilian farmers" (BRAZILIAN AGRICULTURE MINISTRY, 2018). Said policy encourages public procurement specifically from this agriculture type. The second reason is that this policy has a national and comprehensive reach. This is clearly relevant for welfare, as it is related to education, health, and a large economic budget with respect to children, teachers, and family farmer producers.

It is also relevant for theory, because we provide an alternative explanation for political drivers of a public policy implementation. Previous literature usually tests enforcement (ARRETCHE and MARQUES, 2007) and reelection as motivations for it (BEZERRA and GONDINHO, 2021; FERNANDES and ALMEIDA, 2019). We test another incentive that is political alignment.

Our main contribution relies on the kind of data and methodology. We collected secondary data for all 5,570 municipalities in Brazil. We provide a new way of empirically accessing the relations on party alignment and public policy execution using instrumental variables for causal inference.

The paper is organized as follows: section two presents the theoretical framework; section three we show the institutional context of school feeding program. On section four we describe the politics in Brazil focusing in PNAE data we used. Section five shows the methodology, and we explain the variables. Section six presents our results. The conclusion on section seven contains policy implications as well as research suggestions.

THEORETICAL FRAMEWORK

Party Ideology and Party Alignment and Public Policy Implementation

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[1]According to the Brazilian law (nº 11,326), a farmer is considered a family farmer if he or she: does not hold, in any way, an area greater than 4 (four) fiscal modules (that depending on the municipality a fiscal module varies from 50,000 to 1,100,000 square meters) predominantly use the labor force of the family itself in the economic activities of its establishment or enterprise; have income predominantly originated from activities linked to the farm; direct his or hers establishment or enterprise with his or hers family.

We argue that even though PNAE's 30% rule is a nationwide public policy, there are institutions that can hinder or encourage its implementation, and these are influenced by the ideology of the party in power. In this section, we show evidence that party ideology and party alignment matter for public policy implementation, especially when there is not enough enforcement.

Based on the idea of policy-seeking party (STROM, 1990), parties search for power to create and implement public policies. One of the policies in which party ideology is important is carbon dioxide emissions mitigation. Empirical research comparing government ideology in different countries has found that left-wing governments are associated with less environmental pollution among the least polluted countries (CHANG et al., 2018).

In Brazil, common sense says the ideology of the party matters, as new incumbent usually discontinues the public policies in place to start new ones (CAMPO et al, 2017) possibly because he or she wants to establish new policies to be remembered and reelected. This can be due to a new ideology in place.

In research about specific party ideology and policy implementation in local level, Silva and Baia (2018) indicated an association between the party affiliation of mayors and the decision of municipalities to participate in *Mais Médicos para o Brasil* ("More Doctors for Brazil" in Portuguese) program. This program was created when PT (Workers' Party) was in federal government in 2013. The objective of the program was to address the shortage of doctors in the countryside and on the outskirts of large cities by bringing foreigner doctors to take these positions.

Municipalities governed by parties that supported the federal government took part in this program more than those against the federal government. However, financial positive incentives (more budget to spend on health) from the federal government to the municipalities to implement it made it popular also with parties against the federal government (DA SILVA; BAIA, 2018). This kind of incentives are not part of PNAE program.

Party alignment can affect intergovernmental budget transfer specially when mayor is from the same party as the executive power leader, but not when they are just in the same coalition (MEIRELES, 2019). In Brazil, part of the financial transfers of nonessential spending is negotiated through agreements, that are proposed by municipalities and evaluated by the federal bureaucracy. Using regression discontinuity design (RDD) for close elections, Meireles (2019) found that mayors aligned with the federal government send 0.4 standard deviation more proposals than the ones that the ones that are not aligned.

Voter turnout

We analyzed voter turnout literature because we rely on temperature as an instrumental variable for electing a PT mayor and if he or she is implementing the 30% PNAE rule. Popular wisdom says bad weather on election days may change election results (THE WASHINGTON POST, 2020; U.S. NEWS, 2016). Gomez, Hansford and Krause (2007) tested and confirmed it for the U.S. presidential elections from 1960 to 2000. These authors look specifically into rain data. We use temperature instead of rain because when elections happen in Brazil (the month of October) it does not rain much and it turned out not to be a good instrument, while temperature can be quite higher than usual.

In democracies with compulsory voting and universal enforcement with the same punishment for the whole population, we expect not a high asymmetry in tournout between different demographic groups (NICOLAU, 2022). In Brazil, we have mandatory elections since 1932. Voting is a right and an obligation and there is a strong voting culture. In 2022, almost 80% of the population voted (UOL, 2022). However, punishment for not voting in Brazil seems to affect more relatively he wealthy. If a person is in the city where he or she is supposed to vote and does not do it, he or she cannot get passport for instance (TSE, 2022).

Left-wing voters in generally, such as PT (Workers' Party acronym in Portuguese) voters are less likely to vote in bad weather conditions days. The classical explanation is that prospective left-wing voters have higher costs of turnout and lower intrinsic utility from voting, and hence only vote if stimulated by external conditions. The empirical evidence on this founds mixed results (LIND, 2020). We found no empirical research specifically on this in Brazil.

According to Gomez, Hansford and Krause (2007) model, the damage for poor people to vote in Brazil would be higher than for the rich for two reasons: the cost of not voting is lower for the poor as the enforcement does not really have an impact on them; and the cost of voting is higher for them in a very hot election day as they have less resources to avoid bad weather discomfort than the rich such as using a private car with air conditioning.

For this and other reasons presented in this section, we argue that temperature is a good instrumental variable, and it is fundamental for voter turnout. Poor people would vote less in disconformable temperature locations, not only because of their low social economic status, but because of a very hot temperature in a tropical country can make people less willing to vote.

INSTITUTIONAL SETTING

National School Feeding Program

The federal level of government collects most of the taxes in Brazil and redistribute part of these financial resources to the lower levels to help them provide public services (ARRETCHE and MARQUES, 2002). For most municipalities, there is a strong dependence on federal transfers because a large part of the state and municipal budget comes from these federal transfers. For 81.98% of Brazilian municipalities, transfers from federal and state levels accounted for more than 75% of total municipal budget in 2016. This dependency ratio was less than 50% in only 1.81% of them (BRAZILIAN EDUCATION MINISTRY, 2017).

The federal entity who manages PNAE and transfers money to lower administrative levels is the National Education Development Fund (FNDE, in Portuguese) a structure part of the Ministry of Education. The amount of money transferred from FNDE to municipalities is based on the number of students enrolled in the previous year. It is a fixed amount per student in the whole country[2]. Another fundamental actor for PNAE is called "executing entity". It is responsible for the overall operation of the program at the local level, and this includes receiving the funds, creating the menu, publishing procurement calls, signing contracts, delivering daily meals and nutritional education. States, municipalities, and even individual primary schools can play the role of executing entity. Municipalities are traditionally the executing entity for kindergarten and elementary schools and pre-kindergarten.

The last fundamental actor for PNAE is known as School Food Councils (SFC, or CAE in Portuguese). These councils are responsible for monitoring school food programs at the state and municipal levels. Besides ensuring wise use of financial resources, SFCs encourage the efficient delivery of the program (KELLY and SWENSSON, 2017). It is a collegial body serving as a forum for decision making and advisory nature, it makes recommendations for the actors who are implementing the program. Every year, all municipalities and states submit their food procurement invoices to be approved by the SFC, thus allowing municipalities and states to send these documents to federal government. SFC has the power to disapprove the accounts the municipality provide, thus making them redo it before sending to FNDE or even hindering this process which can lead to the municipality not receiving the funds on the next term.

FNDE is authorized to suspend transfers of PNAE to executing units if they fail to constitute the respective SFC or fail to present the book accounts of the resources previously received for the execution of the PNAE or to commit irregularities in the execution of the PNAE. Note, however, that the failure to reach the 30% target goal is not a requirement for the

[2] With exceptions to minorities who are 'quilombolas', those of African descent, and indigenous communities. These minorities receive more money than traditional students.

executing entities to keep receiving money from the federal government[3]. There are some justifications that municipalities may claim for non-compliance with the law, they are especially related to the low or uncertain supply of the family farmer's products (BONDUKI, 2017).

Making the PNAE 30% rule a federal law was demanded by Lula who was the president in 2009. This law was designed by the Education Minister, Fernando Haddad, who was also part of PT. In the 1990s PT lost the first presidential election it participated to a more libertarian candidate. Therefore, PT mobilized its members and created a document proposing alternative public policies. One of them was the idea of making municipalities responsible for school feeding in elementary school before it happened officially and prioritize local food procurement in 1991.

Decentralizing school feeding would be the first step to have a more local procurement. In this same decade in 1994 and 1998, PT's party platform for federal government prioritized procuring from small business and smallholders' farmers (GRISA et al, 2020). Giving that the 30% rule is a historical claim from PT, we assume a mayor from this party would be more willing to implement it than mayors from other parties.

METHODOLOGY

Data Description

Our sample is initially composed of all 5,570 Brazilian municipalities. However, some missing values in variables of our interest reduced this number. Examples of this reduction are related to the lack of information for our main dependent variable, the procurement of family farmers' products percentage by municipalities. This data comes from the National Education Development Fund. Although official, we observe that some municipalities lack this information or even provide dubious data[4]. Such cases made us to be cautious and exclude that municipalities in the empirical analyses.

Our final sample consists of 4,457 municipalities. We also exclude municipalities that elected the mayor only on the second round, as it would be unsuitable to compare them with the others that elected the mayor on the first round. Only less than 10% of the municipalities

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[3] In May 2020, FNDE released the normative number 6 that says "The percentage not executed in accordance with the provision in the caput will be assessed when rendering accounts and the corresponding amount must be returned." This may be a fundamental difference on enforcement, as until before this resolution, returning money to FNDE was not foreseen by law. FNDE is already giving support to the executing units on how this will be implemented. Our data, however, covered a period below this change in the enforcement of the school program.

[4] For instance, some municipalities presented information stating that more than 100% of their food procurement are from family farmers, which is an unrealistic percentage.

are allowed by law to have a second round, as it is a possibility for the municipalities with 200 thousand inhabitants or more.

Dependent variable

Our dependent variable relies on the proportion of the school feeding budget used to procure products from family farmers over total budget of school feeding transferred from federal government to municipalities. This information is available annually in the FNDE database from 2011 to 2017. We use the annual information from 2013 to 2016, as the mayors elected in 2012 started a four-year mandate in 2013. We also used the average of the years 2013 to 2016 proportion of family farmer's products bought by a given municipality as the dependent variable in our model. We did so to control for potential harvest variations on the period.

Our independent variable of most interest is the mayor's party affiliation. This is a dummy variable identifying whether a municipality elected a PT mayor in the 2012. It takes the value of 1 if the candidate was from PT. This data was collected by the Superior Electoral Court (TSE in Portuguese). Further data of mayors from other parties were also collected for other empirical exercises.

Control variables

As Brazil is a large and heterogeneous country, not controlling for local differences may possibly lead to omitted variable bias. Therefore, we use some control variables which might affect the food procurement of family farmers, such as agriculture production (log), agriculture GDP, municipality area (log), education budget management under mayor responsibility, education budget management under education organ responsibility, number of School Feeding Council (SFC) meetings, population (log), population density and SFC year of creation.

Education budget management under education organ responsibility and education budget management under mayor responsibility are dummies that originally were two categories of 3 options categorical variable. The third category was "others". If the budget is under educational organ responsibility, there is probably more concern about it and a more specific management than if it is under mayor responsibility. School Feeding Council (SFC) number of meetings and year of creation are proxies for how active and institutionalized this governance actor is. The following table 1 summarizes the variables:

Table 1 - Description of the variables

Variable	Description
Dependent variable	
Complied 30% rule	Complied with the 30% procurement rule
First stage independent variable	

PT mayor	If elect mayor in 2012 was from PT
Instrument	
Temperature	Temperature on election days
Controls	
Agriculture production (log)	Agriculture production
Agriculture GDP	Agriculture added value to GDP in 2013
Area (log)	Municipality area in log
Educ. budget under mayor resp.	Education budget is under mayor responsibility
Educ. budget under educ. organ resp.	Education budget is under educational organ responsibility
Number of SFC meetings	How many meetings did SFC do in 2014
Population (log)	Municipality population in log
Population density	Population density
SFC year of creation	When SFC was created

Source: research data

Estimation strategy

To investigate our research question, our empirical analysis appears through a probit regression which estimates the likelihood P (y = 1 | x) = ϕ (x_{it} 'β), where ϕ represents the cumulative normal distribution (Greene, 2003):

$P(PNAE\ target=1|x) = ϕ\ (β_0 + β_1 PTmayor_i + β_2 CONTROLS_i)$ (1)

where i stands for each municipality. PNAE target is a dummy variable takes the value of 1 if the municipality used at least 30% of the school feeding budget to procure from family farmers, and zero otherwise. PT mayor is also a dummy variable that is 1 if the municipality elect mayor in 2012, and zero otherwise. And controls are explained in section 1.5.1.2.

To further address endogeneities, we also employed an IV (instrumental variable) approach, wherein predictions of the treatment variable using an instrument from a first-stage regression were included in a second-stage outcome regression to minimize correlation with the error term. This action required finding an exogenous instrument that is correlated with electing a PT mayor but did not influence the outcome variables through other mechanisms. Using the instrument, we claimed to isolate the PT mayor factor from another that could be related both to electing a PT mayor and procuring more from family farmers. We modified the Equation 1 to implement this approach:

$y_{1i} = y_{2i}β + x_{1i}γ + u_i,$ (2)

$y_{2i} = x_{2i}Π_2 + v_i,$ (3)

where y_{2i} represents our endogenous variable of interest, the election of a PT mayor, x_{1i} is a vector of exogenous and control variables as explained above, and x_2 represents our instrument, the temperature on the October 7th, 2012 (the day of the election), a continuous

variable measured in Celsius and the error terms u and v.

If we do not use an instrumental variable, we could not claim causality in our results because it would be unplausible to isolate a direct relation between electing a PT mayor and more PNAE's 30% rule implementation. There would be a bias in electing a PT mayor in hotter election days if the municipalities with this characteristic would be hotter in general and it correlates with electing a PT in general. Northeast region is very hot and traditionally elects PT. However, we see that electing a PT mayor in 2012 (the year we analyzed) happened not exclusively in northeast as it was very common in all Brazilian coast.

RESULTS AND DISCUSSION

Table 2 reports the descriptive statistics. In the first columns, we present the whole sample, then only the municipalities that complied with the 30% rule in average from 2013 to 2016 and then only the ones that did not comply in average from 2013 to 2016.

We saw that complying with the law was raising from 2013 to 2015 when it reached a peak. Even in 2015, the highest year for this variable, less than half of the whole sample complied with the law. There is a high standard deviation for these variables, which highlights how heterogenous implementation of this policy is. PT mayor mean was higher for the complying sample than for the one that was not. Temperature mean was higher in the municipalities that do not comply with the law.

We find that the election of a PT mayor in 2012 increases the chance of hitting the 30% PNAE target in 2013, 2014, 2015 and 2016. Here, we presented the first (2013) and the last year (2016) of the mayor mandate. We made this choice because in the first year it may be hard to already make changes and implement a policy. And in the last year, the mayor could be more motivated to implement it looking for vote in the next election. Mean of the four mandate years were important to correct for harvest fluctuations.

We tested the instruments using Kleibergen-Paap Wald F statistic. It is a test for weak instruments (H0: coefficients of instruments in first stage are not different from zero). We can reject the hypothesis; the instrument is different from zero.

The critical value for a weak identification test resulting in maximal 10% of bias in IV coefficients is 16.38 (STOCK and YOGO, 2002). The instruments are sufficiently strong for predicting variation at the first stage (resulting in a joint Kleinberger-Paap F-statistic of 19.17).

Table 2 - Descriptive Statistic

Variable	Whole sample			Complied 30% rule (mean from 2013 to 2016) sample			Did not comply 30% rule (mean from 2013 to 2016) sample		
	Observations	Mean	Standard Deviation	Observations	Mean	Standard Deviation	Observations	Mean	Standard Deviation
Complied 30% rule in 2013	4717	0.345	0.476	1854	0.691	0.462	2863	0.121	0.326
Complied 30% rule in 2014	4717	0.407	0.491	1854	0.809	0.394	2863	0.147	0.354
Complied 30% rule in 2015	4717	0.450	0.498	1854	0.832	0.374	2863	0.203	0.403
Complied 30% rule in 2016	4717	0.434	0.496	1854	0.796	0.403	2863	0.199	0.400
Complied 30% rule (mean from 2013 to 2016)	4717	0.393	0.488	1854	1.000	0.000	2863	0.000	0.000
PT mayor	4717	0.119	0.323	1854	0.130	0.336	2863	0.111	0.314
Temperature	4717	25.884	3.064	1854	25.168	2.766	2863	26.348	3.158
Agriculture production (log) in 2013	4649	9.814	2.402	1838	10.030	2.050	2811	9.673	2.597
Agriculture production (log) in 2014	4650	9.858	2.293	1838	10.034	1.985	2812	9.743	2.468
Agriculture production (log) in 2015	4655	9.792	2.382	1839	10.002	2.048	2816	9.655	2.568
Agriculture production (log) in 2016	4660	9.679	2.462	1840	9.918	2.106	2820	9.524	2.657
Agro GDP in 2013	4717	0.197	0.154	1854	0.212	0.160	2863	0.187	0.149
Agro GDP in 2014	4717	0.191	0.148	1854	0.207	0.153	2863	0.181	0.143
Agro GDP in 2015	4717	0.185	0.146	1854	0.200	0.152	2863	0.175	0.141
Agro GDP in 2016	4717	0.196	0.153	1854	0.212	0.159	2863	0.185	0.148
Agro GDP (mean from 2013 to 2016)	4717	0.048	0.037	1854	0.052	0.038	2863	0.045	0.036
Area (log)	4717	6.190	1.253	1854	5.993	1.132	2863	6.318	1.310
Educ. budget under mayor resp.	4717	0.342	0.474	1854	0.289	0.453	2863	0.376	0.485
Educ. budget under educ. organ resp.	4717	0.497	0.500	1854	0.564	0.496	2863	0.453	0.498
Number of SFC meetings	4578	6.725	4.968	1809	6.534	4.583	2769	6.850	5.202
Population (log) in 2013	4717	9.468	1.152	1854	9.386	1.142	2863	9.522	1.156
Population (log) in 2014	4717	9.473	1.155	1854	9.390	1.146	2863	9.527	1.158
Population (log) in 2015	4717	9.478	1.158	1854	9.394	1.149	2863	9.532	1.161

Population (log) in 2016	4717	9.482	1.161	1854	9.398	1.152	2863	9.537	1.164
Population (mean from 2013 to 2016)	4717	8.089	1.157	1854	8.006	1.147	2863	8.143	1.160
Population density 2013	4717	99.663	444.067	1854	74.921	319.782	2863	115.686	508.013
Population density 2014	4717	100.530	447.620	1854	75.545	322.203	2863	116.710	512.130
Population density 2015	4717	101.380	451.075	1854	76.148	324.570	2863	117.719	516.130
Population density 2016	4717	102.235	454.841	1854	76.739	326.890	2863	118.747	520.595
Population density (mean from 2013 to 2016)	4717	25.238	112.349	1854	18.960	80.839	2863	29.304	128.552
SFC year of creation	4548	11.356	5.419	1798	11.232	5.409	2750	11.438	5.426

Source: research data

Table 3 - Probit and IV regressions for procurement family farmers products percentage in 2013 as dependent variable

	Probit	IV First stage	IV Second stage
PT mayor	0.120**		2.965***
	(0.0605)		-0.104
Temperature		-0.00718***	
		-0.00164	
Agriculture production (log) in 2013	0.0175*	-0.00454**	0.0231***
	(0.00962)	-0.0023	-0.00768
Agro GDP in 2013	0.836***	0.00498	0.238
	(0.179)	-0.043	-0.159
Area (log)	-0.200***	0.00752	-0.0707***
	(0.0222)	-0.00542	-0.024
Educ. budget under mayor resp.	-0.0615	0.00547	-0.0291
	(0.0604)	-0.0136	-0.0458
Educ. budget under educ. organ resp.	0.223***	0.0368***	-0.0215
	(0.0565)	-0.0132	-0.0498
Number of SFC meetings	-0.00159	-0.000306	0.00106
	(0.00448)	-0.00121	-0.00411
Population (log) in 2013	0.0304	0.0151**	-0.0530**
	(0.0320)	-0.00756	-0.0253
Population density in 2013	-0.000472***	0.0000172	-0.000187**
	(0.000139)	-0.0000232	-0.0000928
SFC year of creation	-0.00184	0.0000882	-0.00105
	(0.00363)	-0.000916	-0.00304
Constant	0.175	0.137*	0.215
	(0.235)	-0.071	-0.182
Kleinberger-Paap F-statistic	19.17**		
Observations	4,457	4457	4457

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source: research data

In Table 4, we show the results for the year 2016. In 2016 we have similar results to 2013 in terms of significance and signals, lack of learning can be possibly why there was not much difference between the years, among many other explanations.

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Table 4 - Probit and IV regressions for procurement family farmers products percentage in 2016 as dependent variable

	Probit	IV First stage	IV Second stage
PT mayor	0.151**		3.019***
	(0.0590)		(0.0825)
Temperature		-0.00723***	
		(0.00165)	
Agriculture production (log) in 2016	-0.000773	-0.00379*	0.0156**
	(0.00921)	(0.00227)	(0.00722)
Agro GDP in 2016	1.088***	-0.00711	0.277*
	(0.176)	(0.0439)	(0.161)
Area (log)	-0.225***	0.00777	-0.0682***
	(0.0211)	(0.00552)	(0.0233)
Educ. budget under mayor resp.	-0.170***	0.00514	-0.0590
	(0.0583)	(0.0136)	(0.0457)
Educ. budget under educ. organ resp.	0.153***	0.0375***	-0.0577
	(0.0547)	(0.0132)	(0.0455)
Number of SFC meetings	0.000653	-0.000269	0.00164
	(0.00454)	(0.00121)	(0.00422)
Population (log) in 2016	0.188***	0.0130*	-0.00407
	(0.0301)	(0.00768)	(0.0284)
Population density in 2016	-0.000442***	2.24e-05	-0.000173**
	(0.000104)	(2.50e-05)	(8.68e-05)
SFC year of creation	-0.00171	0.000116	-0.00106
	(0.00353)	(0.000915)	(0.00289)
Constant	-0.746***	0.149**	-0.0867
	(0.226)	(0.0731)	(0.191)
Kleinberger-Paap F-statistic	19.06 ***		
Observations	4,470	4,469	4,469

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source: research data

The election of a PT mayor increased the likelihood of complying with the 30% food procurement rule by 5.7% in 2016 for the probit model and by 4.2% for the IV regression. The instrument succeeded Kleibergen-Paap Wald F statistic for this year, as it did for 2013. The instruments were sufficiently strong for predicting variation at the first stage (resulting in a joint Kleinberger-Paap F-statistic of 19.06), see table 5.

Table 5 - Effects of PT mayor elected on different years of the Outcome variable

Outcome Variables	Probit	IV
2013	4.20%	3.10%
2016	5.70%	4.20%

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Source: research data

Our results were aligned with Gomez et al (2007), as they found bad weather influences election outcomes. The effect of having a PT mayor on PNAE's 30% rule implementation could be explained by the mayor making efforts towards it as he or she politically identifies with this public policy. Another study that analyzed the effect of mayor's political party on PNAE's 30% rule has found no conclusive effect.

We highlight the impact of having a PT mayor on accomplishing PNAE's 30% rule was not tremendous. It was possibly due to the many other factors that could also explain the failure or success on this policy, like the ones we used as control and others. Chang et al (2018) has found that for party ideology to have an impact, there must be some resources already in place. It may not be the case of PNAE's 30% rule, possibly even with mayor efforts, if there is not a well-organized structure, the municipality may fail on implementing it.

4.1   CONCLUSION

Our analysis illuminated the implementation of a public policy is affected by the party in power. We did so based on the party alignment idea and the recent political Brazilian context using instrumental variable as methodology.

Based on theory, we assumed party ideology would be fundamental for public policy implementation specially when there is weak enforcement, no financial incentives, and the policy outcome is not easily noticed by voters. In this scenario, one of the main incentives for implementing such policy is ideology and party alignment. We also assumed PT voters would be more harmed and less willing to vote than other voters in very hot election days.

Combining these assumptions, we used countrywide quantitative data and ran logistic regressions using temperature on election day as instrumental variables. We found that in municipalities that experience hotter election days, less PT mayors are elected. And in the following years, these municipalities are more likely to comply with PNAE's 30% rule.

One of this research contributions relied mostly on the kind of data and methodology we use. It allows us to claim causality, which is innovative in school feeding context in Brazil. Previous research did not use originally all municipalities as sample (Grisa *et al*, 2020) or did not focus on the 30% procurement rule (BEZERRA and GONDINHO, 2021).

Another relevant contribution was for theory. We provided an alternative explanation for political drivers of a public policy implementation. Previous literature usually tested enforcement and reelection as motivations for it. We test another incentive that is political alignment and confirmed the hypothesis that it has an impact.

A limitation of this research was that we use only one election data. We only analyzed one country. Another is that we did not have rural GDP and other data specific for family farmers in Brazil, we used data for the whole rural production, that is traditional plus family farmers production.

A practical recommendation for the greater success for PNAE's 30% rule implementation is more transparency in public management at the municipality level. This could create voters' pressure and make mayors more willing to execute it regardless of their party. Another recommendation is creating incentives and enforcement for the municipalities that implement this policy.

For future research, we recommend looking for this phenomenon in other public policies associated with a specific party and investigating if it is exclusive to food and agriculture context in Brazil or broader. Researching other kinds of alignments between different levels, like municipality and state could be interesting as well.

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