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Street Protest Against Dilma Rousseff's Administration and Corruption in Brazil: The "Higher Education Effect"

Protestos contra o governo Dilma Rousseff e contra a corrupção no Brasil: o "efeito da educação de nível superior"

Marcelo Justus[1]
Institute of Economics,University of Campinas, São Paulo, Brasil

Gustavo Oliveira Aggio[2]
Institute of Economics, University of Campinas, São Paulo, Brasil

RESUMO

O principal objetivo deste estudo é responder a pergunta: qual é o papel da educação de nível superior na dimensão dos protestos contra o governo Dilma Rousseff e contra a corrupção, ocorridos no Brasil entre março de 2015 e março de 2016? Encontramos uma relação positiva entre o percentual de pessoas com 25 anos ou mais de idade com diploma de ensino superior na população e a taxa de manifestação popular por mil habitantes.

Palavras-chave: protesto popular, manifestação popular, Governo Dilma, corrupção.

JEL: I23, P16, Z13, D74

ABSTRACT

This paper is mainly intended to answer the following question: what role did higher education play in determining the scale of street protests against the administration of president Dilma Rousseff and against cases of corruption in the federal administration that were held in Brazil from March, 2015 to March, 2016? We found a positive relationship between the percentage of higher education graduates in the population aged 25 or older and the demonstration rate per 1,000 population.

Keywords: street protests, demonstrations, Dilma Rousseff's administration, corruption

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[1] E-mail: mjustus@g.unicamp.br
[2] E-mail: aggio@unicamp.br

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1. Introduction

From a political point of view, the beginning of the Dilma Rousseff's administration inherited part of former President Lula's popularity and maintained the main party alliances that laid the foundation for the Workers Party's governability in the so-called Brazil's coalitional presidentialism. However, the favorable governance scenario of Rousseff's government changed with a setback in her apparent popular support triggered by two factors. The first was a wave of demonstrations that took place in June 2013 and received great media coverage, which led the federal government to announce a series of measures to improve public services, such as the launch of the Mais Médicos (More Doctors) Program. The second, in early 2014, consisted in the first news reports about the *Lava Jato* (Car Wash) operation run by the Federal Police, which identified several corruption schemes involving federal administration officials, major political party members and state-owned enterprises – mainly Petrobras, which led a huge process of investments over the past years.

Plea bargain agreements signed with the first suspects arrested in the *Lava Jato* operation allowed the task force to broaden the scope of investigations to include famous politicians and businessmen. The accusations and public disclosure of facts did not prevent President Dilma Rousseff – who has not been personally implicated in any of the cases so far – from winning reelection, but led to great public dissatisfaction, especially from 2015 on.

On the economic side, macroeconomic variables have been gradually deteriorating over the years. On the one hand, inflation reached 6% or more in mid-2012, exceeding the inflation target ceiling of 6.5% and surpassing the 10 percent mark in the twelve-month period which ended on December 31, 2015. On the other hand, economic activity took a sharp downturn in early 2014, leading to a significant increase in the unemployment rate in 2015. In short, it became clear that there was an imbalance in the relationship between output, employment, and inflation.

In keeping with her campaign promise, in 2015, President Dilma Rousseff replaced a Keynesian Finance Minister with a new one with a different profile to rebalance public accounts and adjust government-regulated prices. These prices were lagging behind other prices in the economy, as they were used to prevent inflation from rising, thus distorting relative prices. While a significant number of the specialized public demanded adjustment measures, their contractionary effects led to a decline in support for the president, including among her own constituency.

In this context, several demonstrations broke out against Rousseff's government and against corruption. As the numbers of protesters estimated by the Military Police and by the demonstrations' organizers were widely disseminated by the media, an important question came up: which of the two estimates is the "best one?" While this question is unquestionably relevant, it is not essential for understanding the phenomenon. In this paper, we found a strong correlation between the two estimates. The key question for us is: what is the explanation (besides the population size) behind the difference in the number of protesters in different

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cities? Assuming that the corruption allegations and economic crisis have affected the entire Brazilian society, we sought to answer the following question: what role did higher education play in determining the scale of those street protests?

The social movements against Rousseff's government reflect the great polarization between her voters and those of candidate Aécio Neves seen in the demonstrations and public and virtual events that took place mainly (but not only) in the 2014 presidential run-off. Thus, it should be noted that the number of protesters who took to the streets in a wave of demonstrations – according to the definition by Alonso and Mische (2016) – In June 2013 was unusual for this type of event. The demonstrations, which started as a wave of protests against public transportation fare hikes, soon included a wide range of demands and sparked national outrage, making it impossible to identify one or more organized social movements. In such a scenario, the issues of corruption, high costs of the World Cup and Olympics, and low quality of public services became the main sources of complaints against the federal government. Thus, the profile of the protesters who took to the streets in the June 2013 street protests was similar to that of the groups that would be set up to initiate a grassroots campaign against Dilma Rousseff's government in 2014-2015.[3]

According to the Datafolha polling institute, the demonstration that took place on March 13, 2016 – the biggest street protest in Brazil's history – gathered 500,000 protesters on the popular *Paulista* Avenue in São Paulo, among whom 77% were college graduates and the rest had either high-school education (18%) or primary education (4%).[4] These estimates support the hypothesis that a high number of college graduates attended the protests against Rousseff's administration and corruption. Singer (2013) had already suggested that many college graduates participated in the demonstrations that broke out in June 2013. Our conjecture is that most people in this group took an anti-Rousseff position after the 2014-2015 polarization. Thus, the hypothesis is that there is a positive relationship between higher education and the scale of the demonstrations.

The rest of the paper is organized as follows: Section 2 provides the most relevant details about the method and data used; Section 3 presents the results and a brief discussion about the relationship between education and political/civic engagement; Section 4 provides our concluding remarks.

[3] Of course, in the 2014 presidential elections there was a group of political parties aligned with the main opposition candidate that encouraged those who disapproved of the Dilma Rousseff's administration to protest against it. Just as after the elections there was a strong presence of members of the Free Brazil Movement and the iconoclastic "Fiesp Duck" alongside a more voluntary participation of the public in the demonstrations against President Dilma Rousseff.

[4] Available at http://media.folha.uol.com.br/datafolha/2016/03/14/manifestacao_13_03_2016.pdf.

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2. Method

2.1. Street protest rate

We used the estimates provided by the Military Police and by the organizers of the protests to measure the total number of people who participated in the demonstrations that took place in 278 Brazilian municipalities.[5]

We calculated the average total number of people in each municipality where there was at least one demonstration between March 15, 2015 and March 18, 2016 (there were between 1 and 6 events in 12 months). Hence, we reduced any possible bias in these estimates.

The next step was to calculate the average percentage differences between the estimates made by the two sources in each of the municipalities by applying:

$$\frac{1}{m}\sum_{j=1}^{m}\left(\frac{O_j - P_j}{P_j}\right) \times 100$$

where m is the number of events; O_j and P_j are the estimated total numbers of demonstrators in street protest j according to the organizers (henceforth, Org) and the Military Police (henceforth, MP), respectively.

We found that the shape of the distribution curve for the average percentage differences is similar to the log-normal distribution. Thus, as shown in Figure 1, the estimated density function of the distribution of the log of this variable approximates to a normal distribution.

Next, we produced a rate for measuring the participation per thousand inhabitants in the protests against Rousseff's government considering the population size in the 278 municipalities. This demonstration rate per thousand inhabitants was calculated using the data from both sources, that is: the Military Police (DR-MP) and the organizers (DR-Org). The population data was taken from the 2010 Census.

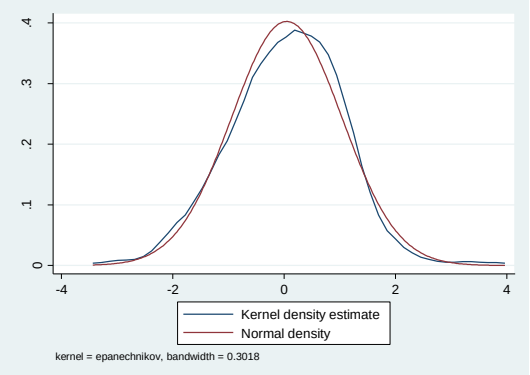


Figure 1 - Estimate of the density function of the distribution of the log of the average percentage differences between the total number of demonstrators according to the organizers and the Military Police

[5] Data taken from http://especiais.g1.globo.com/politica/mapa-manifestacoes-no-brasil/16-12-2015/.

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2.2. Regression analysis

The test hypothesis is that there is a positive relationship between higher education and the scale of the demonstrations. To test this hypothesis we estimated a regression model in which higher education is the variable of interest.

The prevalence of higher education is measured by the percentage of people aged 25 or above with a college degree. Our expectation, which was mainly founded on reports from DataFolha surveys, was that the relationship between this variable and demonstration rate would be positive.

The specification of our empirical model contains some social, economic, and political variables that are repeatedly found to be factors that influence the scale of popular demonstrations that have taken place.

Apart from higher education, we controlled for any possible effects on the five large Brazilian regions using four binary variables. We also controlled for the size of the pro-government constituency by using the percentage of valid votes cast for Dilma in the 2014 presidential election run-off .[6]

Still on the subject of her political strength, we used a binary variable to control for any possible influence of the governors of the states where the protests took place. This variable was given the value 1 if the governor elected in 2014 was, at the time, a member of the Workers' Party (PT in Brazilian acronym) or of a coalition party and 0 otherwise.[7]

To control for the support of the very low-income population – another conjecture that has been repeatedly defended – we used the total amount transferred by the Bolsa Família (Family Grant) Program per thousand inhabitants. This conditional cash transfer is the most wide-ranging and successful program against poverty ever implemented in Brazil. It has directly and indirectly had several other positive effects on the social well-being of the Brazilian population (see Glewwe and Kassouf, 2012; Chioda et al., 2015, and others). With respect to the inclusion of this variable in the empirical model, two points deserve special mention: i) this is a comprehensive program, as most of the eligible families receive its cash transfer, so there is a strong correlation between this variable and poverty measures; ii) contrary to the common-sense view that the implementation of cash transfer programs guarantees a stock of votes that are insensitive to economic downturns and lenient with the phenomenon of corruption, there is empirical evidence showing that the programs implemented in Latin America do not have this adverse effect (Pavão, 2016). The PBF data are from the Ministry of Social Development and Hunger Alleviation (MDS).

The victory of the "yes" vote in the House of Representatives in favor of initiating an impeachment process against president Dilma Rousseff has led to an interruption, at least

[6] Data taken from http: www.tse.jus.br.

[7] Information taken from http://g1.globo.com/politica/eleicoes/2014/coligacoes-partidarias/infografico/ and http://www.eleicoes2012.info/.

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temporarily, in the PT government at the federal executive level and in the so-called "Lulism" (former president Lula's way of governing), which, represented the class that hoped for "a State that was strong enough to reduce inequality, but would not threaten the established order" (Singer, 2009, p.84). According to Singer, in the 2006 elections, the very low-income voters voted in mass for Lula's re-election. Assuming that this support remained for the election, re-election and sustenance of president Dilma Rousseff, since she replicated the policies that were focused on this lower income group, we controlled for i) per capita household income, ii) the percentage of people living in extreme poverty, and iii) income inequalities, as measured by the ratio of the per capita household income of the richest 10% and the poorest 40% in the distribution. We alternatively used the Theil and Gini indexes for a sensitivity analysis. We also check the robustness, especially for the variable higher education, including three additional controls: urbanization rate, population density and a dummy for state's capital.

The data for socioeconomic and demographic variables were taken from the most recent Census of the Brazilian Institute for Geography and Statistics (IBGE), which was carried out in 2010. Table 1 provides descriptive statistics for all variables used in the four empirical model specifications.

Table 1 - Definition, mean and standard deviation of the variables used in the empirical models (N = 278)

Variable	Definition	Mean	Std. Dev.
Dependent			
DR-MP	Log of the demonstration rate per 1,000 population (from Military Police)	1.897	1.279
Regressor of interest			
Higher education	Log of the percentage of people aged 25 or above with a college degree	2.510	0.338
Controls			
Political ally	1 if the governor elected in 2014 was, at the time, a member of the Workers' Party or of a coalition party and 0 otherwise	0.198	0.399
Votes	Log of the percentage of valid votes cast for Dilma in the 2014 presidential election run-off	–0.980	0.339
Household income	Log of the per capita household income	6.757	0.273
Poverty	Log of the percentage of people living in extreme poverty	3.180	0.609
Cash transfer	Log of the total amount transferred through the *Bolsa Família* Program per 1,000 population	11.007	0.677
South	1 if the municipality is in the south region and 0 otherwise	0.216	0.412
Southeast	1 if the municipality is in the southeast region and 0 otherwise	0.525	0.500
Midwest	1 if the municipality is in the midwest region and 0 otherwise	0.108	0.319
North	1 if the municipality is in the north region and 0 otherwise	0.054	0.226
Northeast	1 if the municipality is in the northeast region and 0 otherwise	0.097	0.297
Income inequality	Log of the ratio between the per capita household income of the richest 10% and that of the poorest 40%	2.613	0.290
Irbanization rate	Log of the percentage of the population living in urban areas	4.518	0.111
Population density	Log of the ratio between the population and the area of their municipality	4.965	1.637
State's capital	1 if the municipality is the state's capital and 0 otherwise	0.097	0.297
Alternative measures for income inequality			
Theil	Log of the Theil index for household income	–0.767	0.220
Gini	Log of the Gini index for household income	–0.673	0.101

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3. Results and discussion

In this section, we performed three simple exercises using the method and data described in the previous section. We also present some theoretical issues about the relationship between education and political/civic engagement.

First, we compared the demonstration rate and the result of the National Congress impeachment vote. Table 2 shows DR-MP and DR-Org in decreasing order by Brazilian region. In the South region, the rate is 26.4 people per thousand inhabitants according to the police estimate, and approximately 39 based on the organizers' estimates. Hence, DR-Org is around 1.5 times DR-MP in this region. In the Midwest, Southeast and Northeast regions, the ratio between the two measures is almost equal, somewhere around 1.7. This ratio is only slightly higher in the North region.

On April 17, 2016, the Brazilian House of Representatives voted by 367 votes to 137 to continue the impeachment process against Dilma Rousseff in the National Congress. We compared the percentages of votes in favor of referring the process to the Federal Senate with the rates in Table 2. Curiously, it can be seen that the voting followed almost the same classification as that of the DR-MP or DR-Org. There is a moderate correlation between the percentage of votes and DR-MP, for example – around 0.6.

Table 2 - Demonstration rate according to the organizers and the Military Police, ratio of the two measures, and percentage of representatives who voted in favor of continuing the impeachment process against Dilma in the National Congress, by Brazilian region

Region	DR-MP (a)	DR-Org (b)	(b)/(a)	% Vote
South	26.40	39.06	1.48	80.52
Midwest	13.21	21.91	1.66	82.92
Southeast	10.55	18.30	1.73	78.21
North	8.62	15.77	1.83	70.76
Northeast	6.82	11.32	1.66	56.29
Brazil	13.79	22.36	1.62	72.82

Second, we estimated the correlation between DR-MP and DR-Org. In this exercise, we used 278 observations relating to the measures calculated based on the estimates from the two sources. Surprisingly, we found a high correlation between DR-MP and DR-Org – around 0.83. Figure 2 clearly shows this strong correlation between the two sources' estimates. Based on this evidence, the choice of measure is not relevant for analyzing any variation between the municipalities. We chose the logarithm of DR-MP as the dependent variable for the classical linear regression model that we will specify, estimate and analyze below.

Third, we performed a regression analysis. Table 3 shows the OLS estimates of the coefficients, standard errors, and the hypothesis tests on the residuals of the four specifications. Column I shows the results of our benchmark model. Column II shows the model's results that contain additional variables for checking robustness, especially for the variable of interest in this paper, namely, higher education.

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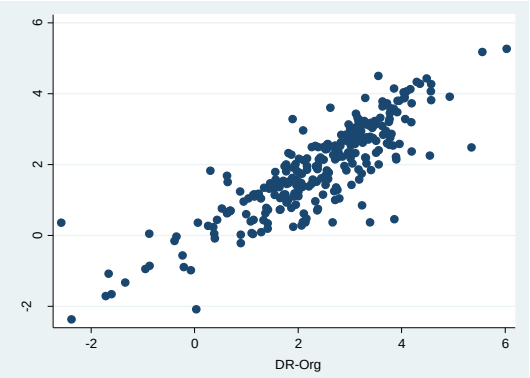


Figure 2 - Correlation between the two sources' estimates (in log)

Table 3 - OLS estimates from log-log models
Dependent variable: DR-MP (demonstration rate from Military Police)

	I	II	III	IV
Regressor of interest				
Higher education	1.590***	1.636***	1.653***	1.594***
	(0.375)	(0.390)	(0.387)	(0.392)
Control variables				
Constant	11.51**	12.34*	19.10**	19.48**
	(5.658)	(6.305)	(8.371)	(8.133)
Political ally	0.425**	0.417**	0.429**	0.420**
	(0.183)	(0.181)	(0.181)	(0.181)
Votes	–0.791***	–0.679***	–0.684***	–0.692***
	(0.248)	(0.248)	(0.248)	(0.248)
Household income	–1.796**	–1.181	–1.447	–1.348
	(0.852)	(0.946)	(1.020)	(0.945)
Poverty	–0.995**	–0.913*	–1.034**	–0.994**
	(0.443)	(0.467)	(0.502)	(0.462)
Cash transfer	–0.241	–0.295	–0.291	– 0.289
	(0.201)	(0.200)	(0.200)	(0.200)
South	0.800**	0.508	0.533	0.538
	(0.330)	(0.357)	(0.359)	(0.355)
Southeast	–0.254	–0.406	–0.383	–0.386
	(0.301)	(0.320)	(0.322)	(0.315)
Midwest	0.581*	0.0723	0.0982	0.0859
	(0.322)	(0.370)	(0.372)	(0.368)
North	0.426	0.0361	0.0653	0.0586
	(0.323)	(0.352)	(0.351)	(0.351)
Income inequality	1.290**	1.139		
	(0.574)	(0.605)		
Urbanization rate		–0.743	–0.856	–0.848
		(0.727)	(0.706)	(0.703)
Population density		–0.143**	–0.137**	–0.135**
		(0.0607)	(0.0603)	(0.0601)
State's capital		0.235	0.318	0.339
		(0.310)	(0.319)	(0.319)
Alternative measures for income inequality				
Theil			1.635**	
			(0.830)	
Gini				3.488**
				(1.632)
Number of observations	278	278	278	278
Adj. R-Squared	0.42	0.43	0.43	0.43
Variance inflation factor	6.83	6.76	7.34	6.64
Breusch-Pagan test (*p*-value)	0.25	0.63	0.54	0.55
Shapiro-Wilk test (*p*-value)	0.22	0.10	0.11	0.14

Notes: Stardard errors in parentheses. ***, ** and * denote significance at 1%, 5% and 10%, respectively.

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Notwithstanding the simplicity of the model and the estimation method, our results are statistically robust. First, because there are no potentially endogenous regressors, and second because, as can be seen at the bottom of the table, the residuals are homoscedastic and are normally distributed.

In short, we found statistically significant relationships between demonstration rate and the control variables that made up the estimated empirical models. For example, the high positive elasticity found for percentage of valid votes cast for Dilma in the 2014 presidential election run-off (Votes) – around 0.8 – supports the assumption that a large part of Dilma Rousseff's constituency remained loyal to her. Only the variables controlling for the income and PBF program were not significant.[8] However, we noticed that this conditional cash transfer program becomes statistically significant when the variable that controls for poverty is excluded from the specification. As we have already mentioned, these variables are correlated, but we chose to keep them together because they are both relevant controls and the value of the variance inflation factor is of no concern.

With regard to higher education, we found statistical evidence that backs up the hypothesis laid down in Section 1: the relationship between higher education and the scale of the demonstrations against Dilma Rousseff and corruption is positive. It is noteworthy that this conclusion remained even when additional controls and others income inequality measures were used (see specifications II-IV).

The results show that the prevalence of higher education played a major role in the scale of the demonstrations that broke out in the period covered by this sample. At least a part of the difference in DR-MP between the municipalities was the result of the different rates of higher education between municipalities. In other words, the higher the percentage of the population aged 25 or over with a college degree, the greater the number of people per thousand inhabitants that took to the streets to express their position against Rousseff's government and against corruption. We estimate an elasticity of 1.6% in demonstration rate per 1,000 population in response to a 1% variation in higher education. In other words, the more people with a college degree, the more people per 1,000 population took to the streets to protest against the Dilma Rousseff's administration and corruption.

Last but not least, there is a vast theoretical and empirical literature linking education to political/civic engagement in different activities such as voting in an election, being a member of a political party, attending political meetings, donating to a political party, taking part in community actions or participating in demonstrations or protests, among others. Originally, this literature was mainly characterized by its defense of a causal relationship between education and political participation, but other possibilities such as, for example, education being only a proxy that makes it possible to identify individual characteristics that increase both the likelihood of a person having more formal education and the likelihood of this person engaging in political activities were considered. It was also seen that although there is a positive relationship between the variables at the individual level, at the collective level voter

[8] The household income per capita is significant at 5% in the benchmark model.

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turnout (the easiest-to-observe variable) declined despite the increase observed in the average formal education of the population in several countries in the second half of the 20th century. This led to a second critical hypothesis according to which the absolute level of education could be less important than its relative level, as education (especially higher education) would be a way of achieving a certain social status, one that would allow greater political participation. For a vast compendium of this literature see Berinsky and Lenz (2011), Campbell (2006), Kam and Palmer (2008), Mayer (2011) and Persson (2013). Other authors, such as Lake and Huckfeldt (1998), also identify a relationship between education and social capital, a variable that cannot be completely reduced to the level of the agent and one that favors political participation.[9]

Summarizing Persson's (2013, p. 689) presentation of literature, the causal relationship between education and political participation has been supported in the literature from a theoretical point of view either because increased education (i) improves skills and knowledge that are useful for political activities, (ii) increases interest in civic participation and commitment and, presumably, is (iii) a source of "good values."

With respect to the critical literature, we can separate them into more individual comparisons and more collective ones. At the individual level of the investigation into whether the hypothesis of education leading to greater political participation should be rejected or not, it will be useful to check the literature that employs the matching technique. Kam and Palmer (2008) used two sets of panel data (Political Socialization Panel Study and High School and Beyond Study) to match individuals with closely similar characteristics – one of whom received treatment (attended a college) and the other one didn't – and compare their individual political participation. This method is known as propensity-score matching. According to the authors, "[b]efore matching, the college-educated engaged in significantly more political acts than the noncollege educated. After matching, the effects of higher education disappear, with no significant differences in political activity separating the two groups." (Kam and Palmer, 2008, p. 613). Mayer (2011), however, demonstrated that Kam and Palmer's estimates were biased, as there was a significant difference between the control and treatment groups, supporting with additional analysis the thesis that there is a causal relationship between postsecondary education and a comprehensive set of forms of political participation. Finally, using the technique applied by Kam and Palmer but following Mayer's suggestions, Persson (2014) based his study on a panel initially composed of all children born in the United Kingdom between 5 and 11 April 1970 (17,278 individuals). The variables for political participation were the following ones: "[...] reported voting in the 2001 election and whether the respondent had signed a petition, contacted a member of parliament (MP), attended a public meeting or rally, and/or participated in a demonstration during the last 12 months" (Persson, 2014, pp. 884-885). The treatment variable chosen by the author was that of having a bachelor's or higher degree. The results indicate that there was no significant difference between the matched subjects who received treatment and those who did not. The author, however, does not defend the universality of his results in the conclusions of his study, recognizing that other works that used databases from other localities found evidence of

[9] On the relation between social capital and education, see Brem and Rahn (1997).

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causality between education and political participation, arguing that the effect of education may be context-dependent (Persson, 2014, pp. 893-894).

For an example of a study of more collective behaviors we will cite an experiment carried out by Campbell (2006). In that study, the author used data from the European Social Survey to simultaneously test three possible explanatory models for the positive relationship between education and political/civic participation: the sorting model, where the relative level of education is more important, the absolute education model, where the level of individual education is more important and, finally, the cumulative education model, where the average level of education in a country is what would be important for political participation. The author's results indicate that political interactions that fit well into a zero-sum game (strictly competitive rather than cooperative) are better explained by the sorting model and by the idea that the education-related status is the one that determines political participation. On the other hand, activities or behaviors such as expressive political activity, voting, voluntary associations and institutional trust are better explained by the absolute model. The cumulative education model provides a better explanation for interpersonal trust situations (Campbell, 2006, pp. 44-53).

Another branch of research attempted to identify the role of economic inequality in political/civic engagement. Uslaner and Brown (2005) tested the direct and indirect effects of inequality and trust on five measures of participation for the aggregate level of US states and for the 1970s, 1980s and 1990s: "volunteering, giving to charity, voting, signing petitions and working for a political party" (p. 870). The working hypothesis of the authors is that the level of inequality reduces trust and, consequently, the level of civic participation. However, the authors argue that political activity is more related to confrontations than to cooperative activities and behaviors, which are more related to trust (p. 875). The result of the estimates confirms the latter hypothesis: "None of the three measures of political participation are shaped by economic inequality. The lack of significant coefficients from trust rule out an indirect effect as well" (Uslaner and Brown 2005, p. 887).

Any attempt to establish a direct relationship between our results and those summarized in this subsection should take into account the fact that both the object of analysis and the methods employed are considerably different. Nevertheless, the phenomenon we are studying obviously refers to political participation of the most conflicting type or of the zero-sum game type. Additional studies, however, would be necessary to identify whether the effect of education is due to relative or absolute differences and to the role played by inequality in these forms of participation.

4. Concluding remarks

We found a very high correlation between the numbers of demonstrators on the streets estimated by Military Police and by the organizers of the protests. We also found a moderate correlation between the percentage of votes in favor of president Rousseff's impeachment

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process and demonstration rate, regardless of the source used to construct this measure. We also found that, on average, the estimate given by the organizers was 62% greater than the official police estimate.

Our results confirm that there is a positive relationship between the higher education variable and the magnitude of street protests against Rousseff's administration and against corruption. The results suggests that the elasticity of higher education with respect to the outrage seen in the demonstrations staged against the Dilma Rousseff's administration and against federal corruption is high and most likely rooted in the enthusiasm of June 2013, when a fairly uncommon profile for such events took the lead in these demonstrations.

Future studies should focus on the economic, social, and historical relationships that led the population with a college degree to be more willing to take to the streets to protest against governors and corruption. We believe that we have taken the first step in this direction, but the data did not allow us to make progress toward identifying causal relationships. Our greatest limitation was the impossibility of controlling for the unobservable fixed effects that are relevant for determining the scale of the demonstrations. The main unobservable variable is the level of confidence that the population has in Brazilian institutions. Another limitation concerns the temporal distance between some of the control variables and the dependent variable. We use data from the last Brazilian census for most variables. This survey was conducted in 2010, while the demonstrations occurred between 2015 and 2016. Nevertheless, the estimation of the coefficients uses only cross-section variability among municipalities. Therefore, we are assuming that there was no significant difference in terms of socioeconomic change between 2010 and 2015-2016 among the 278 municipalities which compose the sample that was used in the estimations. It is also worth noting that, on the one hand, the fact that the majority of the municipalities in the sample are not contiguous does not allow us to control for a possible source of autocorrelation and/or spatial heterogeneity, but on the other hand it substantially reduces this type of problem.

There are still some questions that could be addressed in future studies, such as controlling for the size of the population in neighboring municipalities assuming that residents in other municipalities would go and participate in demonstrations in large cities. Notwithstanding the above-mentioned weak points, we believe that the results shown in this paper are useful for discussions about the recent demonstrations that took place in Brazil against the Dilma Rousseff's administration and against corruption based on empirical evidence. Needless to say, our results are valid only under the hypotheses we assumed in the empirical model.

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