Appendix for "Buying Power: Electoral Strategy before the Secret Vote"

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June 7, 2020

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1 Impact of Brokers under Alternative Electoral Technologies - Conceptual Discussion

To appreciate the implications of electoral technology for the marginal impact of brokers on votes, it is instructive to consider the difference between an AB system and the *cédula avulsa* when in both settings brokers are responsible for transporting voters to the polls.

Consider first the situation under the AB. In this context, some non-negligible portion of the voters brought to the polls by a broker will not vote for the broker's candidate. This is because the ballot is uniform (permitting one to vote for any candidate), available at the polling station, and secret. As a consequence, voters transported by a broker to the polls can cast a vote for an alternative candidate at no cost and with minimal risk. Additionally, note that some portion of voters not brought to the polls will vote for the broker's candidate anyway. This is potentially the case for voters for whom viable alternative modes of transportation are available. Such voters do not need the intervention of the broker to vote for the broker's candidate since they arrive to the polls on their own accord and cast their votes using ballots that are not under the broker's control.

Now consider the situation under the *cédula avulsa*. In this context, nearly all voters brought to the polls will vote for the broker's candidate. This is because the broker will provide these voters only with the ballot of his favored candidate and he can exploit control over the movement of these voters to ensure that alternative ballots do not reach their hands. Furthermore, note that exceptionally few voters not brought to the polls will vote for the broker's candidate. This is because the broker himself is the access point for the candidate's ballots. Even if some set of voters can get to the polls on their own, they cannot vote for the candidate without physically receiving the ballot from the broker (or his ward heelers).

All else equal, the discussion above implies that the link between broker effort and talent in transporting voters and a candidate's vote count is stronger under the *cédula avulsa* than under the AB. Under the *cédula avulsa*, having the charisma, organizational acumen, and local resources to transport large contingents of voters to the polls is basically all that is needed to

run up the vote tally for one's candidate. Under the AB, even brokers who are willing and able to deploy such assets may nevertheless generate disappointing electoral returns, since the mapping between the voters they mobilize and the final vote tally is far from than perfect.

2 Up-Front Nature of Exchange with Brokers

The paper's formal model and the exposition in the main text stress the fact that payments to brokers were expected to be made up-front, i.e. prior to elections. This observation motivates the incomplete contracts approach of the paper and the theoretical and empirical emphasis on learning about broker ability. This section of the Appendix presents additional qualitative evidence on the up-front nature of exchange with brokers based on documents contained in the Capanema archive.

It was clear to Capanema's campaign staff that they needed money in hand to cement agreements with local-level PSD power brokers. For instance, in a letter dated August 28, 1954, José Capanema (Gustavo's brother) described an opportunity to court the PSD mayor of the municipality Mar de Espanha, an individual who had a considerable number of votes he could mobilize should an agreement be reached. José went on to emphasize that an agreement needed to be reached as soon as possible, and that Gustavo needed to make sure his finances were in order to cover these types of expenditures. Referring obliquely to the suicide four days earlier of Gustavo's political patron and then-president of Brazil, Getúlio Vargas, José acknowledged the loss of "a solid base on which one could rely" but insisted that Gustavo face squarely the financial needs of the campaign (GC K 1953.02.27, I-53). José's point was clear: Gustavo Capanema needed to get his money ready for immediate, i.e. before election, payments to brokers.

In several cases, brokers communicated directly to Capanema about their need for benefits to be delivered before the election. In a letter sent prior to the 1954 election, the secretary of the Abadia Football Club, Clóvis de Oliveira Faria, informed Capanema that he was ready to distribute ballots on his behalf. According to de Faria, he had "great prestige," making it

easy for him "to arrange a certain number of votes" (GC K 1953.02.27, II-53). However, this would require Capanema to send money in order to extend the wall around the football club's stadium. Timing was everything: "the money [*auxilio*] had to arrive *prior to the coming election of October 3*" (.ibid, emphasis mine). Other evidence similarly suggests such club directors only drummed up votes for Capanema once they had received his money. The Directorship of the Sparta Football Club distributed a flyer, dated September 14, 1954, that thanked Capanema for recently obtaining funding for a new soccer stadium and publicly announced him as the "official candidate" in the municipality of Campo Belo (GC K 1953.02.27, I-78). In a telegram sent from the municipality of Baependi prior to the 1958 elections, club director Antonio Julio Pereira Pelucio acknowledged the receipt of a donation submitted through the bank Bancomercio and declared that Capanema would enjoy "the integral support of the social club and other sectors" (GC L 1957.11.16, XV-197).

Even when what was being asked of Capanema was the provision of local public works, which could require substantial construction times, there was a demand that these at least begin prior to the coming election. This was the case for the PSD municipal directorate in Brasilia, Minas Gerais. In a letter dated August 18, 1954, the president of the directorate, Lindolfo Gonçalves Rocha, informed Capanema that the directorate had had a meeting to discuss which candidate to support in the upcoming election in October. It was decided that the directorate would be inclined to mobilize the vote for Capanema–an effort Rocha estimated would produce at least 1500 votes–if and only if Capanema would see to it that work on the installation of a telegraph line in the municipality would begin prior to the upcoming elections (GC K 1953.02.27, I-46A1). (There was also some generic discussion of a *dobradinha* in the letter, with Rocha stating that the details would be communicated to Capanema by an intermediary.)

An agreement to provide resources to brokers sufficiently before an election was treated as a binding contract. Failure to do was grounds for the broker and his machine to switch his allegiance to another politician. This is evident in a letter sent to Capanema on September 29, 1958, in which a broker from the municipality Ibiraci laid out the consequences of a failure to finalize a loan agreement sufficiently ahead of the upcoming election. Since the loan had

not yet been signed, the members of the municipal directorate decided to mobilize the vote for another candidate. As expressed in the letter, the sentiment was that "if it does not happen before the election, it will never get done" (GC L 1957.11.16, I-50).

3 Proof of Proposition 1

To establish the Perfect Bayesian Equilibrium, we proceed by solving backward. First consider the brokers' effort levels in period 2. With their payments already disbursed and the game ending, they have no incentive to exert any effort. Thus,

$a_z^{2*} = 0$ for $z = i, j$.

Anticipating this, P knows that the number of votes mobilized by broker z in period 2 will be equal to $V_z^2 = \ln(1 + (1-\tau)w_z^2)\theta_z + \epsilon_z^2$. Consequently, his choice of payments to the brokers in period 2 is the solution to:

$$(1) \qquad \begin{array}{cc} \max & \{\ln(1+(1-\tau)w_i^2)E[\theta_i|V_i^1] + \ln(1+(1-\tau)w_j^2)E[\theta_j|V_j^1]\}, \\ w_i^2, w_j^2 & \text{s.t.} w_i^2 + w_j^2 = \pi \text{ and } w_i^2 \geq 0,\ w_j^2 \geq 0 \end{array}$$

where the above makes use of the fact that $E[\epsilon_z^2] = 0$ for $z = i, j$. The solution to P's choice problem is:

$$(2) \qquad \begin{array}{cc} w_i^{2*} = 0, w_j^{2*} = \pi & \text{if } r < \underline{r} \equiv \frac{1}{(1-\tau)\pi+2} \\ w_i^{2*} = r(\pi + \frac{2}{1-\tau}) - \frac{1}{1-\tau}, w_j^{2*} = -r(\pi + \frac{2}{1-\tau}) + \frac{1}{1-\tau} + \pi & \text{if } r \in [\underline{r}, \overline{r}] \\ w_i^{2*} = \pi, w_j^{2*} = 0 & \text{if } r > \overline{r} \equiv \frac{\pi + 1/(1-\tau)}{\pi + 2/(1-\tau)} \end{array}$$

where

$$(3) \qquad r = \frac{E[\theta_i|V_i^1]}{E[\theta_i|V_i^1] + E[\theta_j|V_j^1]}.$$

In choosing effort levels in the first period, the brokers will incorporate the fact that P 's beliefs about their abilities determine the period 2 payments they receive. Thus, for a given

broker z, the period 1 choice problem is the following:

$$\max_{a_z^1} \quad \{\tau w_z^1 - \alpha\frac{\left(a_z^1\right)^2}{2} + \delta\tau w_z^{2*}\}, \tag{4}$$

where w_z^{2*} is as defined previously. To fully characterize this problem, we must first describe how expectations about ability are updated given observed votes. In this regard, we can write:

$$E[\theta_z|V_z^1] = \frac{V_z^1}{\ln(1+(1-\tau)w_z^1)} - \beta E[a_z^1], \tag{5}$$

where $E[a_z^1]$ represents the level of effort P expects broker z to exert in period 1. Inserting the expression for the vote total and taking expectations gives:

$$E[\theta_z|V_z^1] = \mu + \beta(a_z^1 - E[a_z^1]). \tag{6}$$

The above equation captures the opportunities for so-called *signal jamming*. Knowing that P will update his belief about z's ability by using the (spending-deflated) vote total, z can manipulate the belief updating process by choosing a level of effort that increases this quantity.

Using the interior solution for w_z^{2*}, the first order condition that defines a_z^{1*} is equal to:

$$-\alpha a_z^{1*} + \delta\tau\beta(\pi + \frac{2}{1-\tau})\left[\frac{E[\theta_{\sim z}|V_{\sim z}^1]}{(E[\theta_z|V_z^1] + E[\theta_{\sim z}|V_{\sim z}^1])^2}\right] = 0. \tag{7}$$

Since in equilibrium P's expectations are rational (i.e. correct), we set $a_z^{1*} = E[a_z^1]$ for $z = i, j$. This gives:

$$a_z^{1*} = \frac{\delta\tau\beta(\pi + 2/(1-\tau))}{4\alpha\mu}. \tag{8}$$

Note that concentrating on the interior solution for the broker payments is appropriate since ex-ante (i.e. before vote totals are known), the brokers would expect $r = 1/2$. At this

value of r, the interior solution would always be utilized by P.

Finally, we solve for the initial payments made by P. These are the solution to:

$$\begin{array}{cc} \max & \left\{\ln(1+(1-\tau)w_i^1)\left(\mu+\beta a_i^{1*}\right)+\ln(1+(1-\tau)w_j^1)\left(\mu+\beta a_j^{1*}\right)\right\}. \\ w_i^1, w_j^1 & \text{s.t. } w_i^1+w_j^1=\pi \text{ and } w_i^1\geq 0,\ w_j^1\geq 0 \end{array} \tag{9}$$

Since $a_i^{1*}=a_j^{1*}$, the first order condition can be written:

$$\frac{\mu+\beta a_i^{1*}}{1+(1-\tau)w_i^{1*}}-\frac{\mu+\beta a_i^{1*}}{1+(1-\tau)(\pi-w_i^{1*})}=0, \tag{10}$$

which gives $w_i^{1*}=w_j^{1*}=\pi/2$.

4 Performance Shocks and Differences in Brokers' Wages

Recall that for any broker z, P's belief about that broker's ability upon observing the period 1 electoral return in that broker's jurisdiction is equal to:

$$E[\theta_z|V_z^1]=\frac{V_z^1-E[\epsilon_z^1]}{\ln(1+(1-\tau)\frac{\pi}{2})}-\beta E[a_z^1] \tag{11}$$

Using the fact that $E[\epsilon_z^1]=0$ and that, in equilibrium, $E[a_z^1]=a^{1*}$, we have:

$$E[\theta_z|V_z^1]=\frac{V_z^1}{\ln(1+(1-\tau)\frac{\pi}{2})}-\beta a^{1*} \tag{12}$$

Now, since $V_i^1=E[V^{1*}]+d$ and $V_j^1=E[V^{1*}]-d$ and using the expression for $E[V^{1*}]$ in the main text, we have:

$$\begin{aligned} E[\theta_i|V_i^1]&=\mu+\frac{d}{\ln(1+(1-\tau)\frac{\pi}{2})} \\ E[\theta_j|V_j^1]&=\mu-\frac{d}{\ln(1+(1-\tau)\frac{\pi}{2})}. \end{aligned} \tag{13}$$

Inserting the quantities above into the expressions for w_i^{2*} and w_j^{2*} shown in proposition 1, then

taking the difference between them gives:

$$w_i^{2*} - w_j^{2*} = \frac{d}{\mu \ln(1 + (1-\tau)\frac{\pi}{2})} \tag{14}$$

5 Differences in Wages with an Asymmetric Shock

Suppose now that the deviation from expectations in period 1 is potentially asymmetric, such that $V_i^1 = E[V^{1*}] + d$ and $V_j^1 = E[V^{1*}] - \sigma d$, where $\sigma \in (0, +\infty)$. In this formulation, broker i continues to outperform expectations and broker j continues to underperform, but the magnitude of j's underperformance can be arbitrarily smaller or greater than the magnitude of i's outperformance. Given this framework, the equilibrium difference in wages is equal to:

$$w_i^{2*} - w_j^{2*} = \left[\frac{2\mu + \frac{2d}{\ln(1+(1-\tau)\frac{\pi}{2})}}{2\mu + \frac{(1-\sigma)d}{\ln(1+(1-\tau)\frac{\pi}{2})}}\right]\left(\pi + \frac{2}{1-\tau}\right) - \frac{2}{1-\tau} - \pi. \tag{15}$$

Taking the partial derivative of the above with respect to d, one finds the first component of proposition 2 remains unchanged. Subsequently taking the cross-partial derivative with respect to μ, one finds that the second component of proposition 2 remains unchanged so long as μ is sufficiently large.

6 Expected Returns to Wealth - Derivations

The effect of increasing P's campaign war chest (wealth) on on expected votes is equal to:

$$\frac{\partial E[V^{1*}]}{\partial \pi} = \frac{(1-\tau)(\mu + \beta a^{1*})}{2(1 + (1-\tau)\frac{\pi}{2})} + \frac{\ln(1 + (1-\tau)\frac{\pi}{2})\beta^2\delta\tau}{4\alpha\mu} \geq 0, \tag{16}$$

where the first component of the expression is the effect of wealth on votes through greater spending, holding broker effort constant, and the second component is the effect of wealth on votes through greater broker effort, holding spending constant.

To examine the how ballot technology mediates the returns to wealth, we further differentiate

with respect to β,

$$\frac{\partial^2 E[V^{1*}]}{\partial\pi\partial\beta} = \frac{(1-\tau)\delta\tau\beta(\pi+\frac{2}{1-\tau})}{4\alpha\mu(1+(1-\tau)\frac{\pi}{2})} + \frac{\ln(1+(1-\tau)\frac{\pi}{2})\beta\delta\tau}{2\alpha\mu} \geq 0, \tag{17}$$

which demonstrates that electoral technologies that strengthen the elasticity of votes to broker effort increase the electoral returns to wealth.

Similarly, to examine how broker time horizons mediate the returns to wealth we take the cross partial derivative,

$$\frac{\partial^2 E[V^{1*}]}{\partial\pi\partial\delta} = \frac{(1-\tau)\tau\beta^2(\pi+\frac{2}{1-\tau})}{8\alpha\mu(1+(1-\tau)\frac{\pi}{2})} + \frac{\ln(1+(1-\tau)\frac{\pi}{2})\beta^2\tau}{4\alpha\mu} \geq 0, \tag{18}$$

which reveals that the more weight brokers place on future exchanges with P, the greater the electoral returns to wealth.

Finally, to examine how broker time horizons mediate the effects of ballot technology on the returns to wealth we differentiate the cross partial derivative, giving:

$$\frac{\partial^3 E[V^{1*}]}{\partial\pi\partial\beta\partial\delta} = \frac{(1-\tau)\tau\beta(\pi+\frac{2}{1-\tau})}{4\alpha\mu(1+(1-\tau)\frac{\pi}{2})} + \frac{\ln(1+(1-\tau)\frac{\pi}{2})\beta\tau}{2\alpha\mu} \geq 0 \tag{19}$$

The above demonstrates that electoral technology more strongly augments the returns to wealth on votes if broker time horizons are long.

7 Capanema's Effort to Limit the Implementation of the AB

The penultimate section of the main text of the paper outlines Gustavo Capanema's broad opposition to the secret ballot. Here we elaborate on an episode described at the end of that section: an attempt by Capanema to prevent the use of the AB in a particular municipality in Minas Gerais.

Prior to the legislative elections of 1966, Brazil's military government promulgated Complementary Act 20. According to the Act, all municipalities with more than 100,000 inhabitants

were required to use the AB in the federal deputy elections of that year. The Act did not specify the names of the municipalities meeting this threshold and left implementation to the National Electoral Court (TSE). In a subsequent resolution, the TSE declared that population estimates provided by Brazil's Institute of Geography and Statistics (IBGE) would determine the list of municipalities assigned to use the AB. Among the mid-sized municipalities identified by the IBGE as just satisfying the 100,000 inhabitant threshold was Montes Claros, Minas Gerais.

Upon learning of the municipality's designation, Capanema immediately worked behind the scenes to have it removed from the list of municipalities that would employ the AB. In particular, he drafted a letter to the President of the TSE contesting IBGE's calculations and therefore the assignment of Montes Claros to the AB. Notably, the letter was sent to the TSE under the name of the mayor of Montes Claros, in spite of the fact that Capanema was its true author. Capanema's authorship is clear, since he drafted the original letter in longhand on congressional stationary and both the original and the typewritten letter are located next to one another in his papers. The first and last pages of the original and typewritten letters are presented in Figure A6, which makes the point about authorship plainly evident.

Capanema drafted similar letters which were sent to the director of the IBGE under the names of the vice-governor of Minas Gerais and the aforementioned mayor. Despite these efforts, the TSE ultimately refused to reverse its decision to utilize the AB in Montes Claros (Boletim Eleitoral, November 1966, p.227). Although Capanema was unsuccessful in this endeavor, the episode reveals the considerable efforts he was willing to make to minimize the implementation of the AB in his state.

8 Supplementary Tables

Table A1: Summary Statistics for Gustavo Capanema's Votes in Municipalities with and without Payments to Brokers (hundreds of votes)

	1958		1962	
	payments	no payments	payments	no payments
mean	2.784	0.196	2.461	0.092
s.d.	2.862	1.579	2.810	0.353
25%	1.490	0.000	0.470	0.000
50%	2.400	0.000	1.570	0.000
75%	2.973	0.030	3.250	0.040
min	0.010	0.000	0.010	0.000
max	15.880	28.310	12.790	4.160
N	30	454	53	431

Note: Belo Horizonte is excluded, since it did not employ the *cédula avulsa* during this period.

Table A2: Summary Statistics for Overtime Changes in Gustavo Capanema's Votes across Municipalities (hundreds of votes) according to Changes in Spending on Brokers (1958-1962)

	increase in payments	decrease in payments	no change
mean	1.212	-1.455	-0.045
s.d.	3.537	1.719	1.461
25%	0.140	-2.297	0.000
50%	0.865	-1.325	0.000
75%	1.778	-0.238	0.010
min	-11.960	-5.380	-28.250
max	12.260	1.070	3.900
N	40	22	422

Note: Belo Horizonte is excluded, since it did not employ the *cédula avulsa* during this period.

Table A3: Descriptive Statistics for Variables Used in Regression Analyses

variable	N	mean	s.d.	min	max
Δ spending (prop.)	484	0.000	1.030	-6.113	10.019
Δ spending (raw)	484	0.189	1.818	-7.324	21.623
deviation (hundreds)	484	-0.049	0.749	-5.320	8.310
GC votes_1958 (hundreds)	484	0.356	1.794	0.000	28.310
GC votes_1954 (hundreds)	484	0.460	2.131	0.000	19.720
PSD mayor_1958	483	0.592	0.492	0.000	1.000
PSD vote share_1958	481	0.475	0.186	0.008	0.940
PSD mayor_1954	450	0.662	0.473	0.000	1.000
PSD vote share_1954	460	0.502	0.183	0.027	0.986
log(registered voters)	478	7.943	0.766	5.361	10.276
literacy rate (%)	482	49.820	12.490	13.099	74.666
log(population)	482	9.495	0.802	7.650	12.108
log(area)	482	6.451	1.059	3.932	9.845
running water (%)	482	13.418	12.509	0.000	69.206
electricity (%)	482	25.493	17.351	0.122	90.393
radio (%)	482	20.794	13.084	0.400	73.693
refrigerator (%)	482	2.669	2.869	0.000	20.387
landholding inequality (gini)	482	0.649	0.076	0.345	0.888
log(avg. size_landholding)	482	4.402	0.771	2.272	7.664
farmworkers (%)	482	18.210	14.033	0.000	100.122
industrial workers (%)	482	2.190	4.401	0.000	48.470

Note: Raw spending scaled as tens of thousands of cruzeiros.

Table A4: Impact of Deviations from Expected Vote Totals on Capanema's Allocation of Campaign Resources, 1958-1962, Interactive Models with Binary Moderators

	Proportion of spending (change) (percentage points)						Amount of spending (change) (tens of thousands of cruzeiros)					
	high support > 100 votes			high support > 250 votes			high support > 100 votes			high support > 250 votes		
	model 1	model 2	model 3	model 4	model 5	model 6	model 7	model 8	model 9	model 10	model 11	model 12
Constant	-0.630	-0.678	-1.510	-0.507	-0.503	-1.467	-0.683	-0.916	-2.638	-0.534	-0.699	-2.508
	(-1.361)	(-1.269)	(-1.252)	(-1.135)	(-0.974)	(-1.254)	(-0.789)	(-0.914)	(-1.154)	(-0.627)	(-0.710)	(-1.110)
Deviation	0.741***	0.741***	0.786***	0.895***	0.894***	0.955***	0.714***	0.714***	0.759***	1.084***	1.082***	1.155***
	(7.023)	(6.982)	(6.931)	(9.159)	(9.088)	(9.093)	(3.614)	(3.590)	(3.529)	(5.828)	(5.777)	(5.686)
GC.votes_54_high	-0.347*	-0.360*	-0.096	-0.530**	-0.541**	-0.257	0.118	0.098	0.455	0.029	0.014	0.384
	(-1.894)	(-1.949)	(-0.433)	(-2.371)	(-2.400)	(-0.903)	(-0.344)	(0.283)	(1.087)	(0.069)	(0.034)	(0.699)
Deviation × GC.votes_54_high	-0.577***	-0.571***	-0.558***	-0.930***	-0.923***	-0.935***	-0.381	-0.371	-0.298	-1.065***	-1.052***	-1.021***
	(-4.440)	(-4.362)	(-3.967)	(-7.353)	(-7.238)	(-6.771)	(-1.568)	(-1.513)	(-1.118)	(-4.425)	(-4.334)	(-3.827)
covariates?	Core	Limited	Full	Core	Limited	Full	Core	Limited	Full	Core	Limited	Full
R^2	0.146	0.149	0.174	0.203	0.205	0.230	0.039	0.041	0.083	0.072	0.074	0.113
N	478	474	418	478	474	418	478	474	418	478	474	418

Note: t-statistics in parentheses; *90% significance level; **95% significance level; ***99% significance level. Deviation and vote counts are scaled as hundreds of votes.

Table A5: Impact of Deviations from Expected Vote Totals (Conditioning on Measures of Voter Preferences), 1958-1962

	Proportion of spending (change) (percentage points)						
	model 1	model 2	model 3	model 4	model 5	model 6	model 7
Deviation	0.399***	0.328***	0.336***	0.304***	0.365***	0.365***	0.432***
	(6.263)	(4.462)	(5.544)	(4.647)	(6.068)	(5.822)	(5.988)
GC.votes_58	-0.143***	_	_	_	_	_	0.018
	(-5.398)						(0.381)
GC.votes_58 - GC.votes_54	_	-0.030	_	_	_	_	-0.118**
		(-1.226)					(-2.376)
GC.vote.share_58	_	_	-4.438	_	_	_	1.432
			(0.808)				(0.394)
GC.v.share_58 - GC.v.share_54	_	_	_	0.095	_	_	8.944***
				(0.739)			(5.256)
GC.PSD.share_58	_	_	_	_	-2.709***	_	-3.367*
					(-6.892)		(-1.929)
GC.PSD.share_58 - GC.PSD.share_54	_	_	_	_	_	-1.069***	-2.291***
						(-3.761)	(-5.397)
R^2	0.096	0.0439	0.098	0.052	0.128	0.080	0.196
N	484	484	484	484	484	484	484

Note: t-statistics in parentheses; *90% significance level; **95% significance level; ***99% significance level. Deviation and vote counts are scaled as hundreds of votes.

Table A6: Impact of Deviations from Expected Vote Totals (Conditioning on Measures of Voter Preferences), 1958-1962

	Amount of spending (change) (tens of thousands of cruzeiros)						
	model 1	model 2	model 3	model 4	model 5	model 6	model 7
Deviation	0.454***	0.453***	0.396***	0.390***	0.423***	0.538***	0.596***
	(3.900)	(3.463)	(3.557)	(3.280)	(3.777)	(4.709)	(4.487)
GC.votes_58	-0.068	_	_	_	_	_	0.004
	(-1.394)						(0.051)
GC.votes_58 - GC.votes_54	_	-0.034	_	_	_	_	-0.207**
		(-0.776)					(-2.251)
GC.vote.share_58	_	_	0.106	_	_	_	7.986
			(1.480)				(1.192)
GC.v.share_58 - GC.v.share_54	_	_	_	1.585	_	_	16.912***
				(1.180)			(5.396)
GC.PSD.share_58	_	_	_	_	-0.799	_	-3.901
					(-1.092)		(-1.214)
GC.PSD.share_58 - GC.PSD.share_54	_	_	_	_	_	-1.864***	-5.289***
						(-3.600)	(-6.767)
R^2	0.031	0.028	0.027	0.035	0.029	0.059	0.159
N	484	484	484	484	484	484	484

Note: t-statistics in parentheses; *90% significance level; **95% significance level; ***99% significance level. Deviation and vote counts are scaled as hundreds of votes.

Table A7: Impact of Deviations from Expected Vote Totals on Capanema's Allocation of Campaign Resources, 1958-1962 (Municipalities with brokers in contact with Capanema in 1958)

	Proportion of spending (change) (percentage points)						Amount of spending (change) (tens of thousands of cruzeiros)					
	model 1	model 1.A	model 2	model 2.A	model 3	model 3.A	model 4	model 4.A	model 5	model 5.A	model 6	model 6.A
Constant	-1.359	-0.468	-1.989	-0.899	-2.030	-2.029	-0.016	1.027	-1.310	-0.088	-1.511	-1.058
	(-1.261)	(-0.469)	(-1.548)	(-0.756)	(-0.660)	(-0.736)	(-0.009)	(0.581)	(-0.608)	(-0.042)	(-0.289)	(-0.211)
Deviation	0.398***	0.959***	0.414***	0.974***	0.454***	1.113***	0.484***	1.170***	0.502***	1.195***	0.571***	1.417***
	(4.318)	(6.911)	(4.400)	(6.916)	(4.526)	(7.235)	(3.136)	(4.767)	(3.177)	(4.795)	(3.349)	(5.054)
GC.votes_54	_	-0.062*	_	-0.068*	_	-0.060	_	-0.032	_	-0.033	_	-0.012
		(-1.674)		(-1.773)		(-1.283)		(-0.490)		(-0.068)		(-0.138)
Deviation × GC.votes_54	_	-0.075***	_	-0.076***	_	-0.084***	_	-0.085***	_	-0.086***	_	-0.098***
		(-5.883)		(-5.821)		(-6.174)		(-3.766)		(-3.746)		(-3.950)
covariates?	Core	Core	Limited	Limited	Full	Full	Core	Core	Limited	Limited	Full	Full
R^2	0.128	0.279	0.138	0.289	0.196	0.375	0.055	0.130	0.065	0.140	0.142	0.234
N	173	173	171	171	154	154	173	173	171	171	154	154

Note: t-statistics in parentheses; *90% significance level; **95% significance level; ***99% significance level. Deviation and vote counts are scaled as hundreds of votes. The dataset analyzed in this table is limited to municipalities for which the documentary record provides evidence of contact between Capanema and a broker in the municipality in 1958. Evidence of contact was deemed to exist if shipments of ballots were sent to the municipality, there were promises of votes or future support by brokers, there were recorded exchanges (in terms of public goods or private benefits), or there was sufficient communication to identify the status of the broker (mayor, party directorate president, candidate, local employer or other figure).

Table A8: Impact of Deviations from Expected Vote Totals on Capanema's Allocation of Campaign Resources, 1958-1962 (Municipalities whose brokers had no contact with Capanema in 1958)

	Proportion of spending (change) (percentage points)						Amount of spending (change) (tens of thousands of cruzeiros)					
	model 1	model 1.A	model 2	model 2.A	model 3	model 3.A	model 4	model 4.A	model 5	model 5.A	model 6	model 6.A
Constant	-0.593	-0.606	-0.494	-0.496	-0.905	-0.912	-1.280	-1.307	-1.066	-1.071	-1.954	-1.969
	(-1.373)	(-1.391)	(-0.967)	(-0.967)	(-0.789)	(-0.790)	(-1.373)	(-1.391)	(-0.967)	(-0.967)	(-0.789)	(-0.790)
Deviation	-0.282	0.278	-0.251	-0.253	-0.276	-0.274	-0.609	-0.601	0.541	-0.545	-0.596	-0.590
	(-0.429)	(-0.421)	(-0.378)	(-0.378)	(0.378)	(-0.372)	(1.418)	(-0.421)	(-0.378)	(-0.378)	(-0.378)	(-0.372)
GC.votes_54	_	-0.012	_	-0.016	_	-0.012	_	-0.026	_	-0.034	_	-0.025
		(-0.291)		(-0.379)		(-0.256)		(-0.291)		(-0.379)		(-0.256)
Deviation × GC.votes_54	_	-1.664	_	1.407	_	-0.605	_	-3.591	_	3.036	_	-1.305
		(-0.065)		(0.054)		(-0.010)		(-0.065)		(0.054)		(-0.010)
covariates?	Core	Core	Limited	Limited	Full	Full	Core	Core	Limited	Limited	Full	Full
R^2	0.009	0.009	0.013	0.013	0.042	0.043	0.009	0.009	0.013	0.013	0.042	0.043
N	305	305	303	303	264	264	305	305	303	303	264	264

Note: t-statistics in parentheses; *90% significance level; **95% significance level; ***99% significance level. Deviation and vote counts are scaled as hundreds of votes. The dataset analyzed in this table is limited to municipalities for which the documentary record provides no evidence of contact between Capanema and a broker in the municipality in 1958. Evidence of contact was deemed to exist if shipments of ballots were sent to the municipality, there were promises of votes or future support by brokers, there were recorded exchanges (in terms of public goods or private benefits), or there was sufficient communication to identify the status of the broker (mayor, party directorate president, candidate, local employer or other figure).

Table A9: Impact of Deviations from Expected Vote Totals on Capanema's Allocation of Campaign Resources, 1958-1962 (Municipalities that received spending from Capanema in 1958)

	Proportion of spending (change) (percentage points)				Amount of spending (change) (tens of thousands of cruzeiros)			
	model 1	model 1.A	model 2	model 2.A	model 3	model 3.A	model 4	model 4.A
Constant	-3.236	-2.641	-4.442	-1.816	-3.474	-2.025	-8.644	-4.036
	(-0.452)	(-0.395)	(-0.591)	(-0.248)	(0.281)	(-0.176)	(-0.667)	(-0.320)
Deviation	0.495*	0.806**	0.753**	1.081***	0.775	1.382**	1.253**	1.825***
	(1.705)	(2.364)	(2.424)	(3.005)	(1.544)	(2.354)	(2.338)	(2.943)
GC.votes_54	_	-0.327*	_	-0.206	_	-0.539*	_	-0.348
		(-2.003)		(-1.223)		(-1.915)		(-1.198)
Deviation × GC.votes_54	_	-0.092**	_	-0.081**	_	-0.163**	_	-0.139**
		(-2.580)		(-2.283)		(-2.663)		(-2.279)
covariates?	Core	Core	Limited	Limited	Core	Core	Limited	Limited
R^2	0.119	0.315	0.299	0.440	0.114	0.319	0.299	0.440
N	30	30	30	30	30	30	30	30

Note: t-statistics in parentheses; *90% significance level; **95% significance level; ***99% significance level. Deviation and vote counts are scaled as hundreds of votes. The dataset analyzed in this table is limited to municipalities that received positive (non-zero) levels of spending from Capanema in 1958. Due to the small number of observations, the models condition on the core and limited covariate sets only.

Table A10: Impact of Deviations from Expected Vote Totals on Capanema's Allocation of Campaign Resources, 1958-1962 (Municipalities that did not receive spending from Capanema in 1958)

	Proportion of spending (change) (percentage points)				Amount of spending (change) (tens of thousands of cruzeiros)			
	model 1	model 1.A	model 2	model 2.A	model 3	model 3.A	model 4	model 4.A
Constant	-0.212	-0.204	-0.208	-0.207	-0.457	-0.441	-0.450	-0.446
	(-0.602)	(-0.578)	(-0.512)	(-0.507)	(-0.602)	(-0.578)	(-0.512)	(-0.507)
Deviation	-0.088	-0.137	-0.082	-0.136	-0.191	-0.295	-0.178	-0.294
	(-1.167)	(-0.784)	(-1.072)	(-0.773)	(-1.167)	(-0.784)	(-1.072)	(-0.773)
GC.votes_54	_	0.008	_	0.008	_	0.018	_	0.017
		(0.356)		(0.336)		(0.356)		(0.336)
Deviation × GC.votes_54	_	0.007	_	0.008	_	0.015	_	0.016
		(0.395)		(0.420)		(0.395)		(0.420)
covariates?	Core	Core	Limited	Limited	Core	Core	Limited	Limited
R^2	0.010	0.010	0.011	0.011	0.010	0.010	0.011	0.011
N	448	448	444	444	448	448	444	444

Note: t-statistics in parentheses; *90% significance level; **95% significance level; ***99% significance level. Deviation and vote counts are scaled as hundreds of votes. The dataset analyzed in this table is limited to municipalities that did not receive any spending from Capanema in 1958. To ensure comparability with the results in the previous table, the models condition on the core and limited covariate sets only.

Table A11: Impact of Spending on Brokers on Votes, Municipalities with Non-Zero Changes in Spending

	Number of Votes (change)			
	model 1	model 2	model 3	model 4
spending (change)	0.245*** (3.081)	0.205*** (2.893)	0.248*** (3.163)	0.262** (2.518)
covariates?	None	Core	Limited	Full
R^2	0.137	0.479	0.581	0.634
N	62	62	56	56

Note: t-statistics in parentheses; *90% significance level; **95% significance level; ***99% significance level. Vote counts are scaled as hundreds of votes; spending scaled as tens of thousands of cruzeiros.

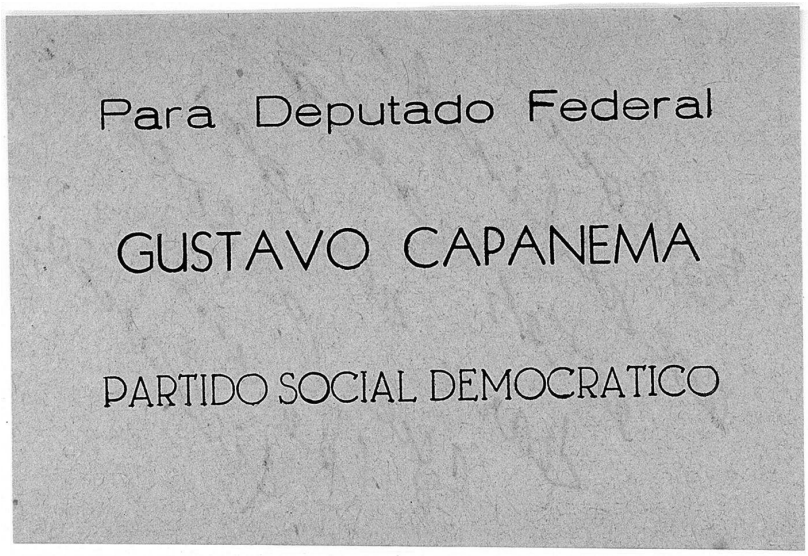
Table A12: Placebo Regressions of Prior Vote Trends on Spending, Municipalities with Non-Zero Changes in Spending

	Number of Votes (change, 1954-1958)			
	model 1	model 2	model 3	model 4
spending	0.090	-0.020	-0.009	0.029
(change)	(1.048)	(-0.292)	(-0.125)	(0.295)
covariates?	None	Core	Limited	Full
R^2	0.018	0.535	0.559	0.616
N	62	62	56	56

Note: t-statistics in parentheses; *90% significance level; **95% significance level; ***99% significance level. Vote counts are scaled as hundreds of votes; spending scaled as tens of thousands of cruzeiros.

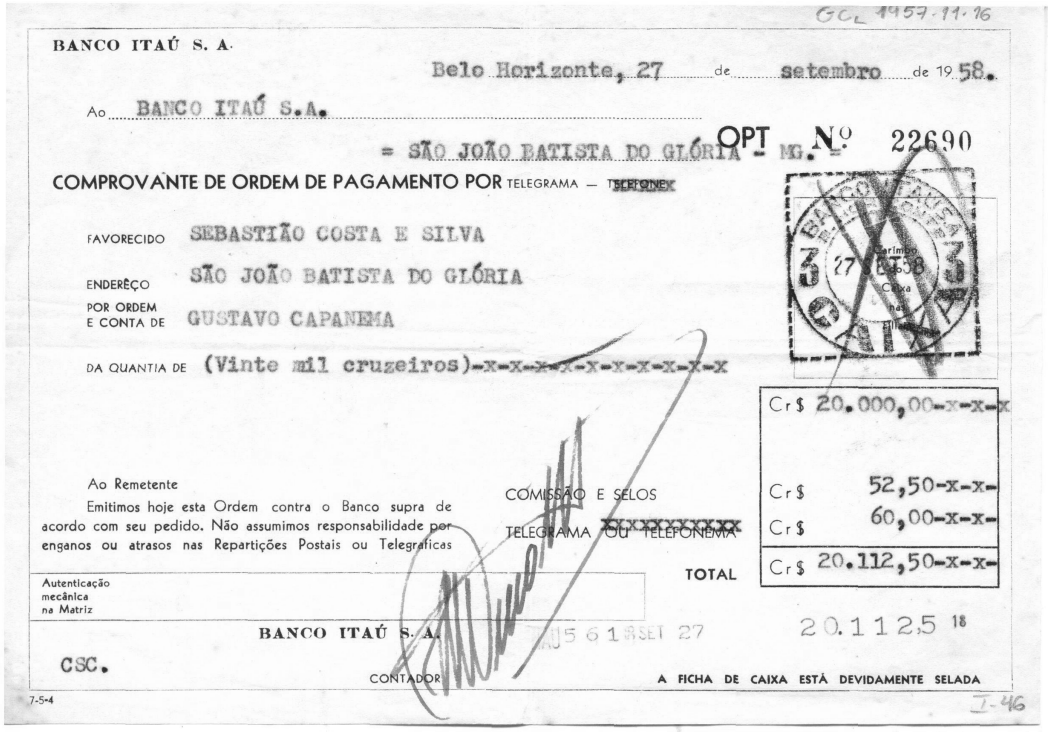
9 Supplementary Figures

Figure A1: Ballot for Gustavo Capanema, Federal Deputy Elections of 1954, Minas Gerais, Brazil



source: CP-DOC Capanema archive, GC K 1953.02.27, II-54.

Figure A2: Receipt for a Bank Deposit Made by Capanema to Purchase the Support of a PSD Mayor in 1958 Federal Deputy Elections



GC L 1957.11.16

BANCO ITAÚ S. A.

Belo Horizonte, 27 de setembro de 1958.

Ao BANCO ITAÚ S.A.

= SÃO JOÃO BATISTA DO GLÓRIA - MG. OPT Nº 22690

COMPROVANTE DE ORDEM DE PAGAMENTO POR TELEGRAMA — TELEFONEX

FAVORECIDO SEBASTIÃO COSTA E SILVA

ENDEREÇO SÃO JOÃO BATISTA DO GLÓRIA

POR ORDEM E CONTA DE GUSTAVO CAPANEMA

DA QUANTIA DE (Vinte mil cruzeiros)-x-x-x-x-x-x-x-x-x-x-x

Cr$ 20.000,00-x-x-x

Ao Remetente

Emitimos hoje esta Ordem contra o Banco supra de acordo com seu pedido. Não assumimos responsabilidade por enganos ou atrasos nas Repartições Postais ou Telegraficas

COMISSÃO E SELOS Cr$ 52,50-x-x-

TELEGRAMA OU TELEFONEMA Cr$ 60,00-x-x-

TOTAL Cr$ 20.112,50-x-x-

Autenticação mecânica na Matriz

BANCO ITAÚ S. A. 20.112,50 18

CSC. CONTADOR

A FICHA DE CAIXA ESTÁ DEVIDAMENTE SELADA

7-5-4

I-46

source: CP-DOC Capanema archive, GC L 1957.11.16, I-46.

Figure A3: Gustavo Capanema's Vote Totals by Municipality, 1954-1962

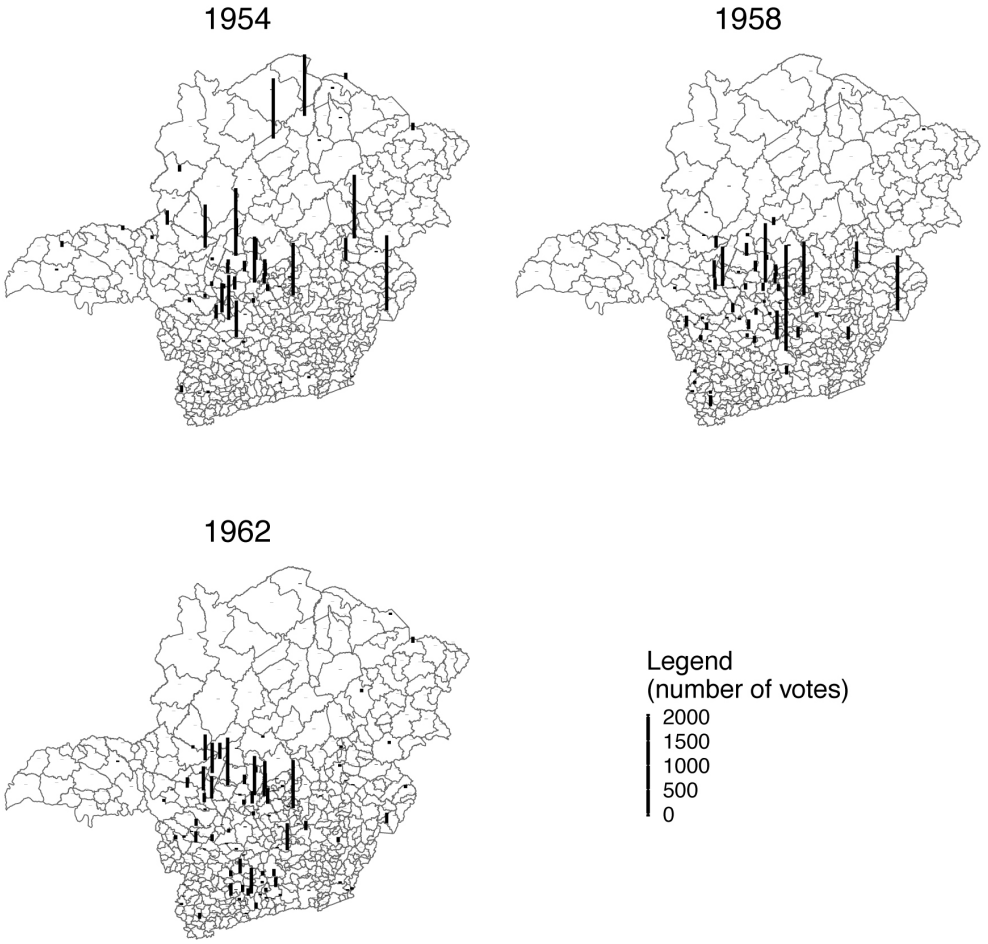


Figure A4: The Composition of Capanema's Spending on Brokers, 1958-1962

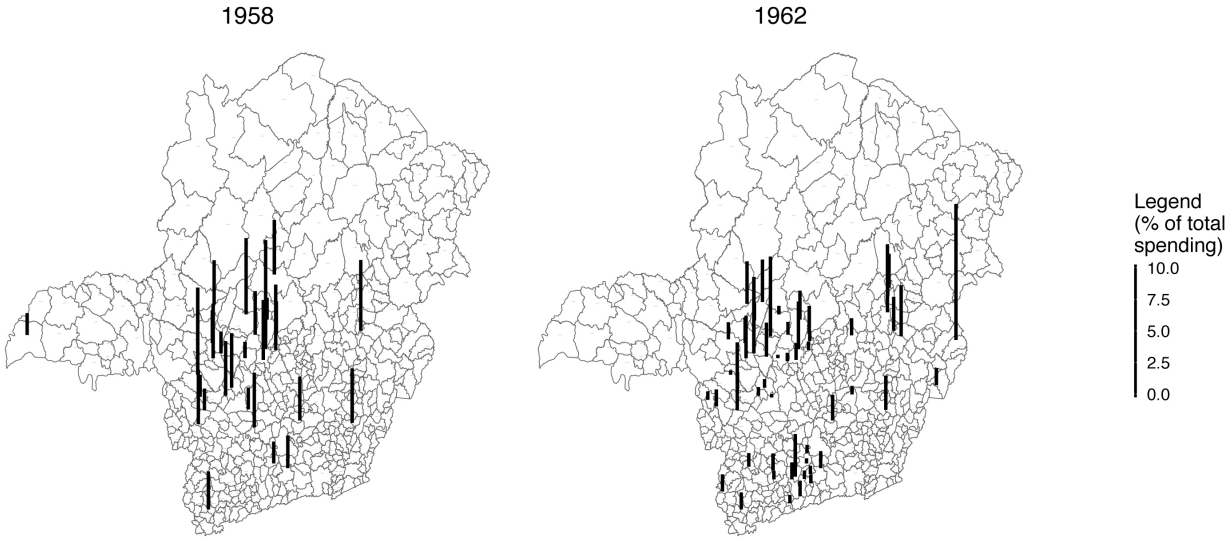


Figure A5: Gustavo Capanema's Total Vote Share and Registered Voters in Municipalities With and Without Payments to Brokers, 1958-1962

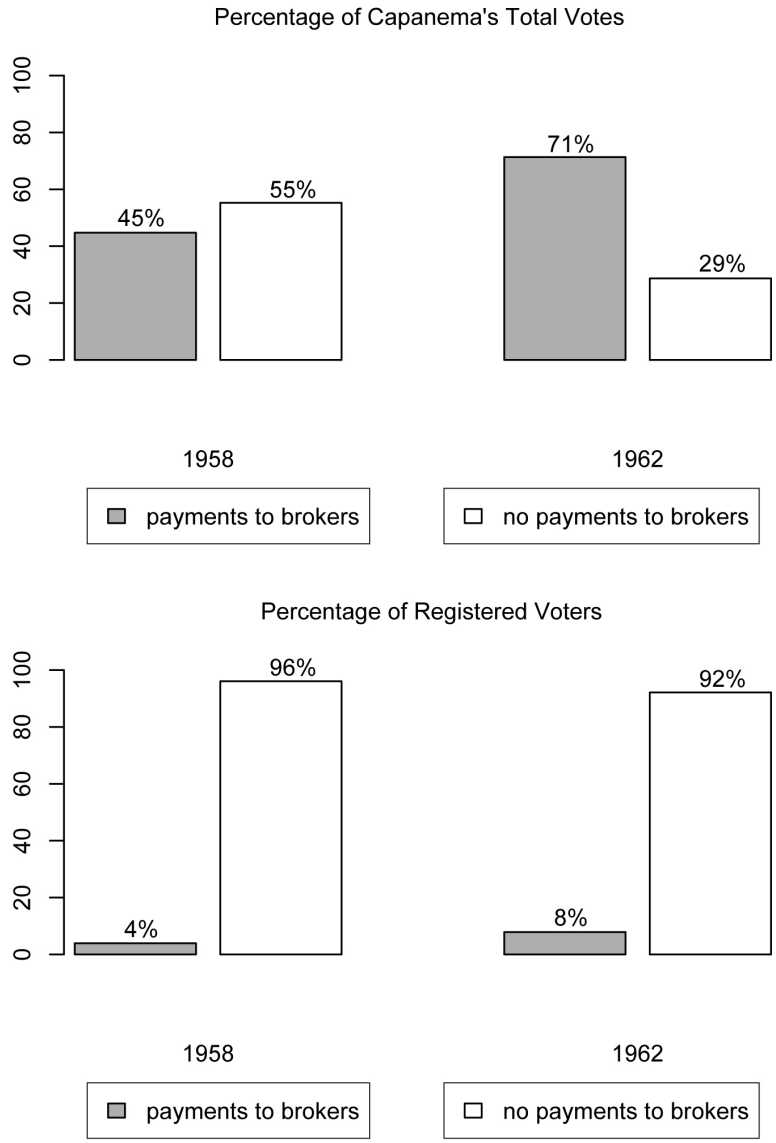
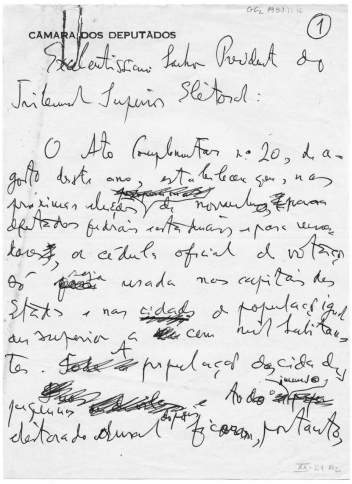
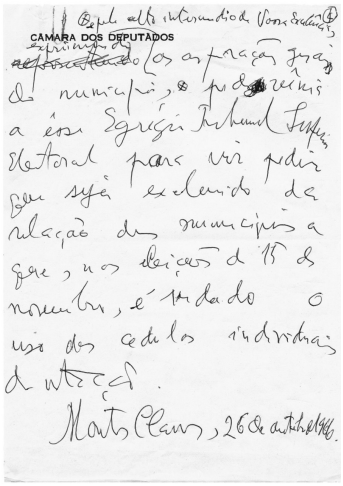


Figure A6: Letter Protesting Decision to Use the AB in Montes Claros, MG - longhand & typewritten formats

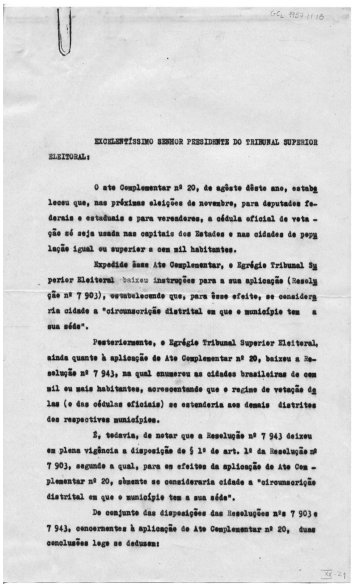
First page - longhand



Last page - longhand



First page - typewritten



EXCELENTÍSSIMO SENHOR PRESIDENTE DO TRIBUNAL SUPERIOR ELEITORAL:

O ato Complementar nº 20, de agôsto dêste ano, estabeleceu que, nas próximas eleições de novembro, para deputados federais e estaduais e para vereadores, a cédula oficial de votação só seja usada nas capitais dos Estados e nas cidades de população igual ou superior a cem mil habitantes.

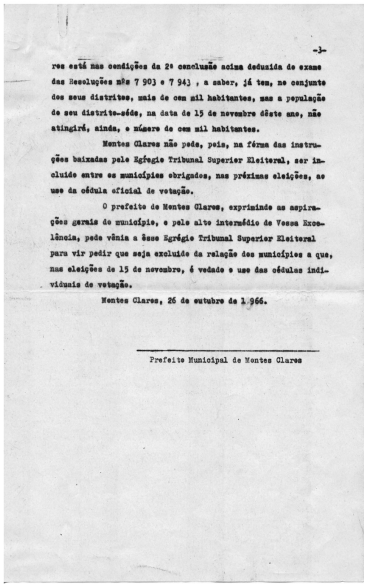
Expedido êsse Ato Complementar, o Egrégio Tribunal Superior Eleitoral baixou instruções para a sua aplicação (Resolução nº 7 903), verbis:"estabelecendo que, para êsse efeito, se consideraria cidade a "circunscrição distrital em que o município tem a sua séde".

Posteriormente, o Egrégio Tribunal Superior Eleitoral, ainda quanto à aplicação do Ato Complementar nº 20, baixou a Resolução nº 7 943, na qual enumerou as cidades brasileiras de cem mil ou mais habitantes, acrescentando que o regime de votação daquelas (o das cédulas oficiais) se estenderia aos demais distritos dos respectivos municípios.

E, todavia, de notar que a Resolução nº 7 943 deixou em plena vigência a disposição do § 1º do art. 1º da Resolução nº 7 903, segundo a qual, para os efeitos da aplicação do Ato Complementar nº 20, sòmente se consideraria cidade a "circunscrição distrital em que o município tem a sua séde".

Do conjunto das disposições das Resoluções nºs 7 903 e 7 943, concernentes à aplicação do Ato Complementar nº 20, duas conclusões logo se deduzem:

Last page - typewritten



-3-

res está nas condições da 2ª conclusão acima deduzida do exame das Resoluções nºs 7 903 e 7 943 , a saber, já tem, no conjunto dos seus distritos, mais de cem mil habitantes, mas a população de seu distrito-séde, na data de 15 de novembro dêste ano, não atingirá, ainda, o número de cem mil habitantes.

Montes Claros não pode, pois, na fórma das instruções baixadas pelo Egrégio Tribunal Superior Eleitoral, ser incluída entre os municípios obrigados, nas próximas eleições, ao uso da cédula oficial de votação.

O prefeito de Montes Claros, exprimindo as aspirações gerais do município, e pelo alto intermédio de Vossa Excelência, pede vênia a êsse Egrégio Tribunal Superior Eleitoral para vir pedir que seja excluída da relação dos municípios a que, nas eleições de 15 de novembro, é vedado o uso das cédulas individuais de votação.

Montes Claros, 26 de outubro de 1.966.

Prefeito Municipal de Montes Claros

Notes: Source is CP-DOC Capanema archive, GC L 1957.11.16, documents XX-21 & XX-21A2. The images in the top panel show the first and last pages of the original longform letter protesting the TSE's decision to utilize the AB in Montes Claros, MG. It is written in Gustavo Capanema's handwriting on official Chamber of Deputies stationary. The images in the bottom panel show the first and last pages of the typewritten version of the same letter. The signature line of the letter indicates that it is being sent by the mayor of Montes Claros.