

# Retrospective Voting in Brazil: long run effects of São Paulo's smart card policy

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## Motivations

- “Bilhete Único” was the first smart card for public transportation in Brazil.
- Today, it is the second largest smart card policy in daily travels. Only Hong Kong's smart card is bigger.
- Interview with politicians and bureaucrats show that before the policy was implemented many politicians thought that it was a very risky policy. The implementation would be very complex and electoral benefits were not clear.
- Politicians could not target core voters, instead the policy had to be broadly implemented in the whole city.
- The policy started to be implemented on January 2004 and mayoral elections were held on October 2004.
- As “Bilhete Único” was becoming widely spread, the policy became one of the main campaign advertisements for the incumbent Marta Suplicy (workers party -PT)

## Research questions

- Did benefited voters reward Marta because of her smart card policy? In other words, is there any evidence of a retrospective voting for such an urban policy?
- Do the effects of the smart card persist in the subsequent elections? Are voters myopic?
- What are the implications for democratic accountability in Brazil?

## Hypothesis

- 1) The smart card allows users to catch up to four different buses for the price of just one fare. The money saved can be substantial for low income users. Therefore, they may reward the incumbent.
- 2) Distant areas of the city are more affected by the policy because users usually must catch more than one bus to get to work, school or access public services.
- 3) According to some authors (Achen & Bartels, 2008; Gerber & Green, 1998), voters are myopic. They have a bias towards more recent policies and tend to forget older ones.

## Methods

I use a growth model to test to what extent the percentage of beneficiaries in city zones at the baseline year (2000) has any effect on Marta's performance on subsequent elections (2004 and 2008). The model:

$$\Delta\%Votes\ Marta\ (PT)_z\ (04-00) = \delta_1 SmartCard_z^{97} + \beta X_z^{2000} + \gamma W_z^{2004} + \mu_z$$

Where z accounts for zones. The vector  $\beta$  are coefficients for the census covariates X,  $\delta$  is the coefficient for the smart-card variable,  $\gamma$  are coefficients for public policies implemented between 2001 and May 2004. I consider the SmartCard variable to be exogenous to political influences that could work as potential biases towards targeted populations in the city regions. However, peripheral areas are more benefited - areas that usually support PT. Additionally, I employ interviews with politicians and bureaucrats to explore further heterogeneities in the models.

## Results

	Dependent variable:							
	Var. %Marta's 1st round voting (2004)				Var. %Marta's 1st round voting (2008)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
SmartCard (extensive)	0.564*** (0.067)	0.203*** (0.052)	2.208*** (0.780)	1.979** (0.950)	0.850*** (0.095)	0.232*** (0.065)	3.193*** (1.158)	2.891*** (1.367)
%Marta's vote in 2000		0.058 (0.068)	0.082 (0.066)	0.070 (0.066)		0.122 (0.100)	0.153 (0.097)	0.138 (0.097)
%Workers paid by employers				0.072** (0.031)				0.104** (0.042)
%Students				-0.029 (0.025)				-0.023 (0.032)
Average nominal income (log)		0.010 (0.006)	0.015** (0.007)	0.018*** (0.007)		0.010 (0.009)	0.018* (0.010)	0.022** (0.010)
%illiterate		0.860*** (0.103)	0.810*** (0.105)	0.825*** (0.105)		1.503*** (0.152)	1.432*** (0.158)	1.449*** (0.159)
Distance to Rapid Transit		0.0003 (0.002)	0.0003 (0.002)	0.0003 (0.002)		0.0002 (0.003)	0.0002 (0.003)	0.0002 (0.003)
Dummy CEU		0.061*** (0.015)	0.035** (0.013)	0.033** (0.013)		0.066*** (0.017)	0.032* (0.017)	0.031* (0.016)
Distance to bus corridor		-0.001 (0.001)	-0.002** (0.001)	-0.001* (0.001)		-0.002*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)
SmartCard x income			-0.308*** (0.108)	-0.305** (0.125)			-0.446*** (0.164)	-0.454*** (0.183)
SmartCard x Dummy CEU			0.284*** (0.143)	0.340*** (0.123)			0.354*** (0.152)	0.400*** (0.150)
SmartCard x Distance to bus corridor			0.014 (0.009)	0.010 (0.009)			0.013 (0.010)	0.011 (0.011)
SmartCard x %Workers paid by employers				-0.316 (0.575)				-0.205 (0.771)
SmartCard x %Students				0.841** (0.403)				0.745 (0.498)
Constant	-0.050*** (0.003)	-0.241*** (0.061)	-0.270*** (0.063)	-0.293*** (0.062)	-0.113*** (0.005)	-0.385*** (0.090)	-0.436*** (0.092)	-0.471*** (0.091)
F-test statistic			15.929 (4,605)	10.234 (6,603)			14.675 (4,605)	8.935 (6,603)
Observations	612	612	612	612	612	612	612	612
R <sup>2</sup>	0.161	0.487	0.521	0.526	0.164	0.604	0.630	0.634
Adjusted R <sup>2</sup>	0.160	0.481	0.513	0.515	0.163	0.599	0.624	0.625

Note: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

## Conclusion

On the preferred model (4) a 1 p.p increase in SmartCard represents an increase of 0.068 p.p in Marta's voting difference. Standard deviation of the dependent variable is 0.075. Therefore, smart card substantially increased Marta's performance in 2004. Effects last in 2008, but not as strong. Model (8) smart card effect is 0.05 pp. for a 1p.p. increase. Evidence shows democratic accountability working in São Paulo.