# Supporting Information

# Controlling the Airwaves: Incumbency Advantage and Community Radio in Brazil

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# 1 Descriptive Statistics

Descriptive statistics for the sample used to estimate the effect of incumbency on license approval and rejection are in table 1; those for the sample used to estimate the effect of license approval on electoral outcomes are in table 2. These descriptive statistics underscore that the political control of community radio is largely a small-town phenomenon. In table 1, containing the variables used in balance testing for the RD analysis, coalition votes and the size of the municipal electorate are markedly skewed to the right, as is the absolute value of the raw vote margin. In table 2, containing the variables used in matching, size of the electorate and the number of applications from a given municipality are similarly skewed to the right.

# 2 Alternative Forcing Variables

## 2.1 Standardized Vote Margin

As discussed on page 13, we have a theoretical preference for using raw vote margin as the forcing variable in the RD analysis. However, as a robustness test, we re-ran the analysis using vote margin as a share of total valid votes as our forcing variable. Bandwidth for the local linear regression was determined via a new application of the cross-validation algorithm; discontinuity sample bandwidths were chosen to give similar sample sizes as in the main analysis. Treatment effects (table 4) using this alternate forcing variable do not differ markedly from those obtained when using raw vote margin; all four specifications give positive effect estimates for application approval and negative effect estimates for application rejection. The major difference is that fewer estimates obtain conventional levels of statistical significance.

Despite the similar results, balance statistics for this alternative forcing variable (table 3) give strong reason to prefer raw vote margin. On average across the four specifications, 3 of 18 covariates differ significantly between treatment and control groups at the .05 level, far more than would be expected by chance. Moreover, one of these specifications fails our placebo test (the effect of

incumbency on application approval *before* the election). These findings argue strongly against the "as if" random assumption of the RD design. Finally, two specifications show significant treatment effects on the decision to apply for a license, suggesting that conditioning on this variable induces post-treatment bias. Taken together, these balance statistics should cast doubt upon the treatment effect estimates in table 4. None of these problems arises when using raw vote margin as the forcing variable.

## 2.2 Inflated Vote Margin

As discussed in endnote 11, using raw vote margin as a forcing variable has the disadvantage that, in small municipalities, the window used for the RD analysis may sometimes be large relative to the total number of votes received. Losing by one vote is a bare loss in any election; losing by 40 might be a bare loss for a candidate who received 20,000 votes, but not for one who only received 80. The latter outcome is likely in small towns. Thus, as a robustness check, we re-ran the analysis using an "inflated vote margin," where raw vote margin $M_{ij}$ was multiplied by $v_{ij}/(v_{ij} - M_{ij})$ for winning candidates, and $(v_{ij} - M_{ij})/v_{ij}$ for losing candidates. The value of this inflation factor is always greater than 1, and bandwidths remain the same as in the main analysis, so this transformation has the effect of removing some observations from each sample without introducing any new ones.

Using inflated vote margin, we obtain good balance for all specifications except the smallest discontinuity sample, and there are no significant results for the placebo test or the effect of incumbency on applying for a license (table 5). Except for the smallest discontinuity sample, which may suffer from bias due to confounding, effect estimates are similar to those obtained in the main analysis (table 6).

# 3 Heterogeneous Treatment Effects by Municipality Size

As discussed on page 13, we expect that the effect of incumbency on the fate of community radio license applications should be greatest in small towns. This expectation underlies our preference

for raw rather than standardized vote margin as a forcing variable, since the latter overrepresents large municipalities (see endnote 11). We find some evidence to support this conjecture when examining heterogeneous treatment effects by municipality size, with the sample split by the median municipal population of towns served by community radio (14,149). Table 7 presents the heterogeneous treatment effect estimates using our alternative forcing variable, standardized vote margin. In the low population municipalities, treatment effects are larger and more consistently significant than in the full sample, especially for application rejection. In the high population municipalities, we obtain small and insignificant effect estimates, despite the fact that these samples are larger in three out of four specifications.

When using raw vote margin as a forcing variable (table 8), we see less of a stark difference between low and high population municipalities. Estimated effects are mostly insignificant, presumably because of the reduced statistical power with these smaller sample sizes.

On the whole, these results do seem to support our hypothesis that treatment effects should be larger in small towns. However, this question is one that should be revisited when more data are available, especially given the insignificant results when splitting the raw vote margin sample by municipality size.

# 4 Matching with Covariate Adjustment

As discussed on page 21, the only covariate remaining slightly imbalanced after matching (indicated by a KS test or t-test $p$-value of less than 0.1) was the log of candidate assets. As a robustness check, we used regression adjustment after matching to correct for the remaining imbalance. ATT estimates, reported in the top panel of table 9, are nearly identical to those obtained in the main analysis.

# 5 Matching with Alternate Control Groups

As discussed in endnote 14, our initial control group consists primarily of candidates who applied for a radio license before the election and were rejected at some point prior to data collection. Many of these applications will have been rejected before the election, though we cannot identify them because we do not have rejection dates. Unobserved factors leading an application to be rejected before the election, such as a politician's incompetence or political biases against him/her, might also influence the outcome of the election. If so, our estimates could suffer from confounding.

As a robustness check, we re-ran the matching analysis using two different initial control groups, which each eliminate the 907 candidates who applied before the election and had their applications rejected. Doing so leaves far fewer control than treated observations, so in order to obtain acceptable balance, we were also forced to expand the initial control groups. In the first alternate control group, we included all candidates who applied for a radio license *after* the election, regardless of the fate of their application. In the second alternate control group, we include these post-electoral applicants, along with candidates who formally expressed interest in acquiring a radio station but had not yet applied, typically because a formal call for applications had not been issued.[1] Both groups of candidates should be more similar to the treated candidates (who applied and received their licenses before the election) than those who never applied or expressed interest.

These alternate control groups do suffer from some drawbacks, though of a different sort from our main control group. The results of the election might influence candidates' subsequent decision to apply for a radio station, or they might influence regulators' decisions about their license applications. The latter problem affects the newly included post-electoral applicants, but also the pre-electoral applicants who ended up rejected and were cut from the control group; some of these licensing decisions will have occurred after the election. In other words, the outcome of the analysis might partially affect the composition of our alternate initial control groups, which could bias

[1]The Ministry of Communications' website contains a separate database of proposed radio stations falling into this second category. Interested parties can file a *demostração de interesse*, effectively indicating that there is local demand for community radio and requesting that the Ministry of Communications issue a call for applications. We excluded candidates whose *demostração de interesse* was rejected, typically on technical or administrative grounds.

our results in a way not possible with our main control group. We seek to mitigate this sort of bias by including post-electoral applicants regardless of the fate of their applications.

For the first alternate control group, our estimand is average treatment effect on the treated, but unfortunately, common support was impossible to achieve without dropping some treated units. To obtain covariate balance, we exactly matched (or used a caliper) on election year, vote share in the previous election, education, media-related occupation, PSDB party membership, and municipal vote share for the PSDB in 2000. This matching strategy resulted in a sample of treated units—when compared to treated units in the full sample—that were slightly less educated, received lower prior vote shares, were less likely to belong to the PSDB or work for the media, and came from municipalities that were less supportive of the PSDB in 2000. On the whole, however, the differences between the matched treatment group and the full sample treatment group were small.

Balance statistics for the first alternate control group are reported in table 10. By using a caliper, we were able to obtain good balance on all covariates except the log of the number of competing applications, which, as discussed in the text, seems unlikely to have a direct effect on election outcomes. This variable depends partially on municipality size, which could matter directly for electoral results, though we do obtain balance on the log of the municipal electorate, so population should not be a confounder.

For the second alternate control group, the inclusion of additional pre-matching control units—those who expressed interest in acquiring a radio station without formally applying—means that we were not forced to drop treated units to obtain decent balance. As with the first alternate control group, excellent balanced is obtained on all covariates except the log of the number of competing applications (table 11).

Results obtained when using these alternate control groups are reported in the bottom two panels of table 9. Three of the four effect estimates are slightly larger than those obtained when using the main control group, and they achieve similar levels of statistical significance. For probability of election with the first alternate control group, the estimated effect is still positive, though smaller and statistically insignificant.

**Table 1.** Effect of Incumbency: Descriptive Statistics

| Variable | n | Min | Median | Mean | Max | SD |
|---|---|---|---|---|---|---|
| Abs(Vote Margin) | 713 | 1.00 | 146.00 | 971.21 | 25758.00 | 3189.00 |
| Coalition Votes | 711 | 198.00 | 2396.00 | 20551.16 | 1940615.00 | 106499.59 |
| Elected | 713 | 0.00 | 0.00 | 0.20 | 1.00 | 0.40 |
| Electorate | 713 | 744.00 | 8950.00 | 173504.29 | 4717620.00 | 682072.20 |
| HDI (2000) | 713 | 0.51 | 0.74 | 0.72 | 0.89 | 0.08 |
| Income Gini (2000) | 713 | 0.41 | 0.56 | 0.56 | 0.75 | 0.06 |
| Occupation: Agriculture | 713 | 0.00 | 0.00 | 0.07 | 1.00 | 0.25 |
| Occupation: Bureaucrat | 713 | 0.00 | 0.00 | 0.10 | 1.00 | 0.31 |
| Occupation: Business | 713 | 0.00 | 0.00 | 0.11 | 1.00 | 0.31 |
| Party: PFL | 713 | 0.00 | 0.00 | 0.08 | 1.00 | 0.27 |
| Party: PMDB | 713 | 0.00 | 0.00 | 0.13 | 1.00 | 0.34 |
| Party: PSDB | 713 | 0.00 | 0.00 | 0.10 | 1.00 | 0.30 |
| Party: PT | 713 | 0.00 | 0.00 | 0.14 | 1.00 | 0.34 |
| Primary Education | 713 | 0.00 | 1.00 | 0.80 | 1.00 | 0.40 |
| PSDB (2000) | 712 | 0.00 | 0.00 | 0.12 | 0.67 | 0.18 |
| PT Mayor (2000) | 712 | 0.00 | 0.00 | 0.05 | 1.00 | 0.22 |
| PT President Vote Share (1998) | 712 | 0.01 | 0.14 | 0.17 | 0.48 | 0.11 |
| State: BA | 713 | 0.00 | 0.00 | 0.05 | 1.00 | 0.23 |
| State: MG | 713 | 0.00 | 0.00 | 0.13 | 1.00 | 0.34 |
| State: SP | 713 | 0.00 | 0.00 | 0.12 | 1.00 | 0.32 |
| Time Since Application | 713 | 460.00 | 1181.00 | 1151.25 | 1981.00 | 421.80 |
| Year of Birth | 713 | 1925.00 | 1961.00 | 1960.60 | 1994.00 | 9.99 |

**Table 2.** Effect of Radio Control: Descriptive Statistics

| Variable | n | Min | Median | Mean | Max | SD |
|---|---|---|---|---|---|---|
| Education: Some Superior or More | 1455 | 0.00 | 0.00 | 0.30 | 1.00 | 0.46 |
| GDP per capita (2000) | 1455 | 30.43 | 159.75 | 180.58 | 809.18 | 107.17 |
| HDI (2000) | 1455 | 0.47 | 0.72 | 0.70 | 0.89 | 0.08 |
| Incumbent | 1455 | 0.00 | 0.00 | 0.19 | 1.00 | 0.39 |
| Latitude | 1455 | -32.22 | -16.26 | -15.38 | 3.84 | 8.38 |
| Electorate | 1455 | 1203 | 17880 | 87200 | 2765000 | 232929.6 |
| Number of Applications | 1455 | 1 | 2 | 3.1 | 52 | 4.24 |
| Total Asset Value | 1455 | 0 | 0 | 47879 | 1936000 | 1349235.4 |
| Longitude | 1455 | -72.58 | -45.40 | -45.44 | -34.83 | 6.33 |
| Male | 1455 | 0.00 | 1.00 | 0.89 | 1.00 | 0.31 |
| Occupation: Blue Collar | 1455 | 0.00 | 0.00 | 0.09 | 1.00 | 0.29 |
| Occupation: Education | 1455 | 0.00 | 0.00 | 0.09 | 1.00 | 0.28 |
| Occupation: Government | 1455 | 0.00 | 0.00 | 0.13 | 1.00 | 0.34 |
| Occupation: Media | 1455 | 0.00 | 0.00 | 0.05 | 1.00 | 0.22 |
| Occupation: None | 1455 | 0.00 | 0.00 | 0.05 | 1.00 | 0.21 |
| Occupation: Other | 1455 | 0.00 | 0.00 | 0.16 | 1.00 | 0.37 |
| Occupation: Politician | 1455 | 0.00 | 0.00 | 0.06 | 1.00 | 0.24 |
| Occupation: White Collar | 1455 | 0.00 | 0.00 | 0.27 | 1.00 | 0.45 |
| Party: PFL | 1455 | 0.00 | 0.00 | 0.05 | 1.00 | 0.23 |
| Party: PSDB | 1455 | 0.00 | 0.00 | 0.11 | 1.00 | 0.32 |
| Party: PMDB | 1455 | 0.00 | 0.00 | 0.11 | 1.00 | 0.31 |
| Party's Prior Vote Share | 1455 | 0.00 | 7.88 | 11.07 | 100.00 | 12.34 |
| Prior Vote Share | 1455 | 0.00 | 0.30 | 1.53 | 15.97 | 2.17 |
| PSDB Mayoral Vote Share (2000) | 1455 | 0.00 | 0.00 | 0.13 | 0.70 | 0.19 |
| PT Mayoral Vote Share (2000) | 1455 | 0.00 | 0.00 | 0.04 | 0.53 | 0.10 |
| PT Presidential Vote Share (1998) | 1455 | 0.01 | 0.13 | 0.16 | 0.50 | 0.09 |
| Ran Previously | 1455 | 0.00 | 1.00 | 0.53 | 1.00 | 0.50 |
| State: BA | 1455 | 0.00 | 0.00 | 0.08 | 1.00 | 0.27 |
| State: MG | 1455 | 0.00 | 0.00 | 0.16 | 1.00 | 0.37 |
| State: RS | 1455 | 0.00 | 0.00 | 0.05 | 1.00 | 0.23 |
| State: SP | 1455 | 0.00 | 0.00 | 0.13 | 1.00 | 0.33 |
| Year of Birth | 1455 | 1929.00 | 1962.00 | 1961.36 | 1989.00 | 9.48 |

**Table 3.** Alternative Forcing Variable Results: Vote Margin as a Share of Valid Votes (see endnote 11). Balance Statistics for Four Different Specifications. Heteroskedasticity-consistent standard errors in parentheses.

| Variable | Full Sample | Local Linear ($\frac{\lvert M_{ij}\rvert}{\sum_{j=1}^{J} v_j} \leq 0.0097$) | Discont. Sample ($\frac{\lvert M_{ij}\rvert}{\sum_{j=1}^{J} v_j} \leq 0.006$) | Discont. Sample ($\frac{\lvert M_{ij}\rvert}{\sum_{j=1}^{J} v_j} \leq 0.004$) | Discont. Sample ($\frac{\lvert M_{ij}\rvert}{\sum_{j=1}^{J} v_j} \leq 0.002$) |
|---|---|---|---|---|---|
| Apply For a License | $1.32\times10^{-4}$ | $-8.66\times10^{-4}$* | $-5.43\times10^{-4}$ | $-6.58\times10^{-4}$* | $-3.31\times10^{-4}$ |
| | ($1.2\times10^{-4}$) | ($3.65\times10^{-4}$) | ($3.99\times10^{-4}$) | ($2.95\times10^{-4}$) | ($2.36\times10^{-4}$) |
| Prior Approval | $3.73\times10^{-4}$* | $4.48\times10^{-6}$ | $7.16\times10^{-5}$ | $1.04\times10^{-4}$ | $-4.71\times10^{-4}$* |
| | ($8.62\times10^{-5}$) | ($2.23\times10^{-4}$) | ($2.21\times10^{-4}$) | ($1.86\times10^{-4}$) | ($1.45\times10^{-4}$) |
| n (all candidates) | 583897 | 178652 | 101795 | 63940 | 29778 |
| Year of Birth | 0.61 | 3.48 | 2.49 | 2.85 | 2.73 |
| | (0.84) | (3.01) | (3.56) | (2.12) | (1.7) |
| Log Coalition Votes | -0.63* | -1.39* | -1.55* | -1.09* | -0.45 |
| | (0.1) | (0.5) | (0.66) | (0.38) | (0.28) |
| Primary Education | 0.04 | -0.19 | -0.09 | -0.15 | -0.34* |
| | (0.04) | (0.13) | (0.16) | (0.1) | (0.07) |
| Sao Paulo | -0.03 | -0.17 | -0.15 | -0.06 | 0.01 |
| | (0.03) | (0.11) | (0.13) | (0.07) | (0.06) |
| Minas Gerais | -0.06* | 0.03 | -0.02 | 0.03 | 0.05 |
| | (0.03) | (0.12) | (0.12) | (0.08) | (0.06) |
| Occupation: Agriculture | 0.02 | 0.03 | 0.04 | 0.02 | 0.07† |
| | (0.03) | (0.07) | (0.07) | (0.04) | (0.04) |
| Occupation: Business | 0.05 | 0.03 | 0.02 | 0.04 | -0.02 |
| | (0.03) | (0.1) | (0.1) | (0.08) | (0.07) |
| Party: PMDB | 0.05 | 0.03 | 0.06 | 0.08 | -0.05 |
| | (0.03) | (0.08) | (0.05) | (0.07) | (0.06) |
| Party: PSDB | 0.04 | -0.04 | -0.03 | 0.02 | 0.01 |
| | (0.03) | (0.11) | (0.13) | (0.07) | (0.05) |
| Party: PFL | 0.01 | 0.1 | 0.06 | 0.06 | 0.12* |
| | (0.03) | (0.11) | (0.13) | (0.08) | (0.06) |
| Lula Vote Share, 1998 | 0 | 0.01 | -0.01 | -0.01 | 0.05* |
| | (0.01) | (0.03) | (0.03) | (0.03) | (0.02) |
| Gini (2000) | -0.01† | 0.02 | 0.01 | 0.01 | 0.03* |
| | (0.01) | (0.02) | (0.02) | (0.01) | (0.01) |
| Latitude | -1.15 | -0.57 | 0.46 | -0.29 | -3.02† |
| | (0.84) | (2.58) | (3.1) | (2.05) | (1.66) |
| Longitude | 0.62 | 0.69 | 0.74 | 1.31 | 0.9 |
| | (0.57) | (1.8) | (1.95) | (1.44) | (1.18) |
| HDI (2000) | -0.01 | -0.03 | -0.04 | -0.03 | 0.03† |
| | (0.01) | (0.02) | (0.03) | (0.02) | (0.01) |
| PT Mayor (2000) | -0.04* | -0.06 | -0.08* | -0.06* | 0 |
| | (0.02) | (0.04) | (0) | (0.03) | (0.03) |
| Log Electorate | -1.02* | -1.64* | -1.95* | -1.39* | -0.43 |
| | (0.13) | (0.62) | (0.8) | (0.48) | (0.35) |
| Time Since Application | 132.37* | 90.86 | 95.03 | 83.51 | 34.07 |
| | (45.18) | (138.04) | (167.46) | (99.22) | (81.59) |
| n (radio applicants) | 713 | 263 | 148 | 93 | 36 |

† p<0.1; * p<.05

**Table 4.** Alternative Forcing Variable Results: Vote Margin as a Share of Valid Votes (see endnote 11). Does incumbency affect the likelihood of application approval or rejection? The estimated local average treatment effect of winning office on having a community radio license application approved or rejected, under four different specifications. Standard errors are heteroskedasticity-consistent.

| DV | | Local Linear $(\frac{\lvert M_{ij}\rvert}{\sum_{j=1}^{J} v_j} \leq 0.0097)$ | Discont. Sample $(\frac{\lvert M_{ij}\rvert}{\sum_{j=1}^{J} v_j} \leq 0.006)$ | Discont. Sample $(\frac{\lvert M_{ij}\rvert}{\sum_{j=1}^{J} v_j} \leq 0.004)$ | Discont. Sample $(\frac{\lvert M_{ij}\rvert}{\sum_{j=1}^{J} v_j} \leq 0.002)$ |
|---|---|---|---|---|---|
| Approval | $\hat{\tau}_{RD}$ | 0.12 | 0.12* | 0.12 | 0.2 |
| | SE | 0.11 | 0.063 | 0.079 | 0.13 |
| | *n* | 263 | 148 | 93 | 36 |
| Rejection | $\hat{\tau}_{RD}$ | -0.21 | -0.17* | -0.17† | -0.17 |
| | SE | 0.14 | 0.085 | 0.11 | 0.17 |
| | *n* | 263 | 148 | 93 | 36 |

† p<0.1; * p<.05

**Table 5.** Alternative Forcing Variable Results: Inflated Vote Margin (see endnote 11). Balance Statistics for Four Different Specifications. Heteroskedasticity-consistent standard errors in parentheses.

| Variable | Full Sample | Local Linear $(\frac{M_{ij}\cdot v_{ij}}{v_{ij}-M_{ij}} \leq 165 \mid i \leq s_j, \frac{M_{ij}(v_{ij}-M_{ij})}{v_{ij}} \leq 165 \mid i > s_j)$ | Discont. Sample $(\frac{M_{ij}\cdot v_{ij}}{v_{ij}-M_{ij}} \leq 40 \mid i \leq s_j, \frac{M_{ij}(v_{ij}-M_{ij})}{v_{ij}} \leq 40 \mid i > s_j)$ | Discont. Sample $(\frac{M_{ij}\cdot v_{ij}}{v_{ij}-M_{ij}} \leq 20 \mid i \leq s_j, \frac{M_{ij}(v_{ij}-M_{ij})}{v_{ij}} \leq 20 \mid i > s_j)$ | Discont. Sample $(\frac{M_{ij}\cdot v_{ij}}{v_{ij}-M_{ij}} \leq 10 \mid i \leq s_j, \frac{M_{ij}(v_{ij}-M_{ij})}{v_{ij}} \leq 10 \mid i > s_j)$ |
|---|---|---|---|---|---|
| Apply for a License | $1.3\times10^{-4}$ | $-2.9\times10^{-5}$ | $-1.8\times10^{-4}$ | $-3.9\times10^{-4}$ | $-2.0\times10^{-4}$ |
| | $(1.2\times10^{-4})$ | $(3.0\times10^{-4})$ | $(2.9\times10^{-4})$ | $(3.8\times10^{-4})$ | $(5.3\times10^{-4})$ |
| Prior Approval | $3.7\times10^{-4*}$ | $-1.4\times10^{-4}$ | $-8.9\times10^{-5}$ | $-4.0\times10^{-5}$ | $-1.6\times10^{-4}$ |
| | $(8.6\times10^{-5})$ | $(1.7\times10^{-4})$ | $(1.6\times10^{-4})$ | $(2.3\times10^{-4})$ | $(3.1\times10^{-4})$ |
| n (all candidates) | 583897 | 180963 | 69953 | 38965 | 20205 |
| Year of Birth | 0.61 | -0.33 | -0.37 | -1.37 | 1.48 |
| | (0.84) | (2.13) | (1.86) | (2.71) | (3.88) |
| Log Coalition Votes | -0.63* | -0.21 | -0.17 | 0.03 | -0.03 |
| | (0.1) | (0.17) | (0.15) | (0.18) | (0.25) |
| Primary Education | 0.04 | -0.11 | -0.02 | -0.16 | -0.44* |
| | (0.04) | (0.09) | (0.09) | (0.13) | (0.17) |
| Sao Paulo | -0.03 | -0.006 | -0.01 | -0.03 | 0.1 |
| | (0.03) | (0.06) | (0.06) | (0.09) | (0.13) |
| Minas Gerais | -0.06* | -0.06 | -0.09 | -0.11 | 0.04 |
| | (0.03) | (0.07) | (0.06) | (0.1) | (0.15) |
| Occupation: Agriculture | 0.02 | 0.09 | 0.08 | 0.03 | 0.08 |
| | (0.03) | (0.07) | (0.07) | (0.08) | (0.09) |
| Occupation: Business | 0.05 | -0.005 | 0.06 | 0.06 | 0 |
| | (0.03) | (0.07) | (0.06) | (0.07) | (0) |
| Party: PMDB | 0.05 | -0.02 | -0.02 | -0.09 | -0.04 |
| | (0.03) | (0.08) | (0.08) | (0.09) | (0.12) |
| Party: PSDB | 0.04 | 0.05 | 0.04 | 0 | 0.04 |
| | (0.03) | (0.07) | (0.07) | (0.08) | (0.15) |
| Party: PFL | 0.01 | -0.02 | -0.01 | 0.06 | -0.1 |
| | (0.03) | (0.08) | (0.08) | (0.1) | (0.14) |
| Lula Vote Share, 1998 | 0 | 0.04† | 0.03 | 0.05† | 0.1* |
| | (0.01) | (0.03) | (0.02) | (0.03) | (0.05) |
| Gini (2000) | -0.01† | 0.007 | 0.01 | 0 | -0.01 |
| | (0.01) | (0.01) | (0.01) | (0.02) | (0.02) |
| Latitude | -1.15 | -1.92 | -0.37 | -1.16 | -7.3* |
| | (0.84) | (1.97) | (1.84) | (2.4) | (2.98) |
| Longitude | 0.62 | 0.76 | 0.37 | -0.11 | 2.12 |
| | (0.57) | (1.40) | (1.31) | (1.72) | (2.33) |
| HDI (2000) | -0.01 | 0 | 0 | 0 | 0.04 |
| | (0.01) | (0.02) | (0.02) | (0.02) | (0.03) |
| PT Mayor (2000) | -0.04* | -0.05† | -0.03 | -0.06 | 0 |
| | (0.02) | (0.03) | (0.02) | (0.04) | (0) |
| Log Electorate | -1.02* | -0.31 | -0.14 | 0.01 | -0.04 |
| | (0.13) | (0.19) | (0.17) | (0.21) | (0.31) |
| Time Since Application | 132.37* | 128.30 | 143.07 | 97.9 | -225.33 |
| | (45.18) | (80.22) | (121.23) | (153.03) | (216.97) |
| n (radio applicants) | 713 | 251 | 98 | 56 | 28 |

† p<0.1; * p<.05

**Table 6.** Alternative Forcing Variable Results: Inflated Vote Margin (see endnote 11). Does incumbency affect the likelihood of application approval or rejection? The estimated local average treatment effect of winning office on having a community radio license application approved or rejected, under four different specifications. Standard errors are heteroskedasticity-consistent.

| DV | | Local Linear $(\frac{M_{ij} \cdot v_{ij}}{v_{ij} - M_{ij}} \leq 165 \mid i \leq s_j, \frac{M_{ij}(v_{ij} - M_{ij})}{v_{ij}} \leq 165 \mid i > s_j)$ | Discont. Sample $(\frac{M_{ij} \cdot v_{ij}}{v_{ij} - M_{ij}} \leq 40 \mid i \leq s_j, \frac{M_{ij}(v_{ij} - M_{ij})}{v_{ij}} \leq 40 \mid i > s_j)$ | Discont. Sample $(\frac{M_{ij} \cdot v_{ij}}{v_{ij} - M_{ij}} \leq 20 \mid i \leq s_j, \frac{M_{ij}(v_{ij} - M_{ij})}{v_{ij}} \leq 20 \mid i > s_j)$ | Discont. Sample $(\frac{M_{ij} \cdot v_{ij}}{v_{ij} - M_{ij}} \leq 10 \mid i \leq s_j, \frac{M_{ij}(v_{ij} - M_{ij})}{v_{ij}} \leq 10 \mid i > s_j)$ |
|---|---|---|---|---|---|
| Approval | $\hat{\tau}_{RD}$ | 0.18* | 0.12 | 0.29* | 0.15 |
| | SE | 0.09 | 0.08 | 0.11 | 0.17 |
| | *n* | 251 | 98 | 56 | 28 |
| Rejection | $\hat{\tau}_{RD}$ | -0.23* | -0.11 | -0.28* | -0.29 |
| | SE | 0.11 | 0.10 | 0.13 | 0.19 |
| | *n* | 251 | 98 | 56 | 28 |

† p<0.1; * p<.05

**Table 7.** Heterogeneity by Population in the Effect of Incumbency on Application Approval and Rejection, using Alternative Forcing Variable (Vote Margin as a Share of Valid Votes). The estimated local average treatment effect of winning office on having a community radio license application approved or rejected, under four different specifications, with sample split by median population of municipalities with community radio stations (14,149). Standard errors are heteroskedasticity-consistent.

| DV | | Local Linear ($\frac{\lvert M_{ij}\rvert}{\sum_{j=1}^{J} v_j} \leq 0.0097$) | Discont. Sample ($\frac{\lvert M_{ij}\rvert}{\sum_{j=1}^{J} v_j} \leq 0.006$) | Discont. Sample ($\frac{\lvert M_{ij}\rvert}{\sum_{j=1}^{J} v_j} \leq 0.004$) | Discont. Sample ($\frac{\lvert M_{ij}\rvert}{\sum_{j=1}^{J} v_j} \leq 0.002$) |
|---|---|---|---|---|---|
| Approval (Low Population) | $\hat{\tau}_{RD}$ | 0.26 | 0.24* | 0.22 | 0.26 |
| | SE | 0.18 | 0.11 | 0.14 | 0.18 |
| | *n* | 111 | 64 | 39 | 19 |
| Approval (High Population) | $\hat{\tau}_{RD}$ | 0.04 | 0.02 | 0.05 | 0.14 |
| | SE | 0.13 | 0.07 | 0.09 | 0.19 |
| | *n* | 152 | 84 | 54 | 17 |
| Rejection (Low Population) | $\hat{\tau}_{RD}$ | -0.45* | -0.30* | -0.31† | -0.36 |
| | SE | 0.23 | 0.13 | 0.17 | 0.24 |
| | *n* | 111 | 64 | 39 | 19 |
| Rejection (High Population) | $\hat{\tau}_{RD}$ | -0.08 | -0.03 | -0.08 | -0.04 |
| | SE | 0.18 | 0.10 | 0.13 | 0.25 |
| | *n* | 152 | 84 | 54 | 17 |

† p<0.1; * p<.05

**Table 8.** Heterogeneity by Population in the Effect of Incumbency on Application Approval and Rejection. The estimated local average treatment effect of winning office on having a community radio license application approved or rejected, under four different specifications, with sample split by median population of municipalities with community radio stations (14,149). Standard errors are heteroskedasticity-consistent.

| DV | | Local Linear ($\lvert M_{ij}\rvert \leq 165$) | Discont. Sample ($\lvert M_{ij}\rvert \leq 40$) | Discont. Sample ($\lvert M_{ij}\rvert \leq 20$) | Discont. Sample ($\lvert M_{ij}\rvert \leq 10$) |
|---|---|---|---|---|---|
| Approval (Low Population) | $\hat{\tau}_{RD}$ | 0.13 | 0.14 | 0.19 | 0.22 |
| | SE | 0.09 | 0.08 | 0.12 | 0.18 |
| | *n* | 285 | 107 | 53 | 27 |
| Approval (High Population) | $\hat{\tau}_{RD}$ | 0.24 | 0.13 | 0.40 | 0.50 |
| | SE | 0.16 | 0.17 | 0.28 | 0.43 |
| | *n* | 99 | 24 | 9 | 6 |
| Rejection (Low Population) | $\hat{\tau}_{RD}$ | -0.17 | -0.11 | -0.22 | -0.41* |
| | SE | 0.11 | 0.10 | 0.14 | 0.19 |
| | *n* | 285 | 107 | 53 | 27 |
| Rejection (High Population) | $\hat{\tau}_{RD}$ | -0.41* | -0.19 | -0.10 | -0.25 |
| | SE | 0.20 | 0.22 | 0.38 | 0.48 |
| | *n* | 99 | 24 | 9 | 6 |

† p<0.1; * p<.05

**Table 9.** Matching with Covariate Adjustment and Two Alternate Control Groups. ATT estimates for the effect of obtaining a community radio license on electoral outcomes. Covariate adjustment uses the log of the value of the candidate's assets.

| | | Pct.Valid.Votes | Elected |
|---|---|---|---|
| Covariate Adjustment | ATT Estimate | 0.39* | 0.07† |
| | SE | 0.17 | 0.039 |
| | n | 622 | 622 |
| Alt. Control Group 1 | ATT Estimate | 0.42* | 0.024 |
| | SE | 0.16 | 0.035 |
| | n | 508 | 508 |
| Alt. Control Group 2 | ATT Estimate | 0.42* | 0.074† |
| | SE | 0.18 | 0.04 |
| | n | 624 | 624 |

† p<0.1; * p<.05

**Table 10.** Balance Statistics before and after matching using the first alternate control group. Standardized difference is the mean difference divided by the standard deviation of the treatment units, multiplied by 100. *p*-values are from t-tests (two-sample before matching, paired after matching) and, for non-binary variables, bootstrapped Kolmogorov-Smirnov tests.

| | Standardized Difference | | T-test *p*-Value | | KS test *p*-Value | |
|---|---|---|---|---|---|---|
| Variable | Before Matching | After Matching | Before Matching | After Matching | Before Matching | After Matching |
| Log Number of Applications | -161 | -133 | 0 | 0 | 0 | 0 |
| Election Year | 81 | 0 | 0 | 1 | | |
| Total Assets | 62 | -2.8 | 0 | 0.53 | 0 | 0.19 |
| State: Rio Grande do Sul | -59 | -11 | 0 | 0.28 | | |
| PT Pres Vote Share (1998) | -31 | -1.9 | 0.000036 | 0.76 | 0 | 0.77 |
| Prior Vote Share | 26 | 1.9 | 0.000055 | 0.23 | 0 | 0.77 |
| Education: Some Superior or More | 20 | 0 | 0.0025 | 1 | | |
| Occupation: Media | 20 | 0 | 0.0011 | 1 | | |
| Ran Previously | 20 | 0 | 0.0036 | 1 | | |
| Incumbency | 18 | -2.3 | 0.0062 | 0.73 | | |
| State: Minas Gerais | 16 | 11 | 0.012 | 0.14 | | |
| Party: PSDB | 15 | 0 | 0.016 | 1 | | |
| Year of Birth | -15 | -5.3 | 0.026 | 0.15 | 0.03 | 0.34 |
| Party: PT | -15 | 2.1 | 0.037 | 0.81 | | |
| PT Mayor Vote Share (2000) | -13 | 6.9 | 0.078 | 0.38 | 0.082 | 0.56 |
| HDI (2000) | -11 | 8.1 | 0.093 | 0.24 | 0.13 | 0.14 |
| Occupation: Politician | 11 | 6.4 | 0.078 | 0.41 | | |
| PSDB Mayor Vote Share (2000) | -11 | -3 | 0.1 | 0.3 | 0.076 | 0.6 |
| State: Bahia | 11 | 9.2 | 0.085 | 0.19 | | |
| Longitude | 11 | -7.7 | 0.11 | 0.14 | 0.05 | 0.31 |
| Log Electorate | 10 | -11 | 0.17 | 0.19 | 0 | 0.18 |
| Latitude | 9.5 | -0.9 | 0.18 | 0.88 | 0.002 | 0.64 |
| State: Sao Paulo | 7.3 | 11 | 0.27 | 0.17 | | |
| Party: PMDB | -6.7 | -8.8 | 0.33 | 0.33 | | |
| Party Prior Vote Share | 6.7 | -6.8 | 0.33 | 0.39 | 0.31 | 0.2 |
| Party: PFL | -6.6 | -17 | 0.35 | 0.1 | | |
| Occupation: White Collar | 6.4 | 8.4 | 0.34 | 0.19 | | |
| Male | 4.7 | 16 | 0.49 | 0.12 | | |
| Occupation: None | -4.6 | 2 | 0.51 | 0.82 | | |
| 2000 Gini | 4.6 | -2.1 | 0.49 | 0.78 | 0.53 | 0.27 |
| Occupation: Government | -4.4 | -10 | 0.52 | 0.23 | | |
| GDP Per Capita (2000) | -4 | 3.8 | 0.56 | 0.6 | 0.74 | 0.076 |
| Occupation: Blue Collar | -3.5 | -5.8 | 0.61 | 0.54 | | |
| Occupation: Other | -3.2 | 2.1 | 0.64 | 0.81 | | |
| Occupation: Education | 0.93 | 6.6 | 0.89 | 0.41 | | |

**Table 11.** Balance Statistics before and after matching using the second alternate control group. Standardized difference is the mean difference divided by the standard deviation of the treatment units, multiplied by 100. $p$-values are from t-tests (two-sample before matching, paired after matching) and, for non-binary variables, bootstrapped Kolmogorov-Smirnov tests.

| | Standardized Difference | | T-test $p$-Value | | KS test $p$-Value | |
|---|---|---|---|---|---|---|
| Variable | Before Matching | After Matching | Before Matching | After Matching | Before Matching | After Matching |
| Log Number of Applications | -151 | 100 | 0 | 0 | 0 | 0 |
| Election Year | 77 | -0.66 | 0 | 0.32 | | |
| Total Assets | 59 | -2.7 | 0 | 0.6 | 0 | 0.65 |
| State: Rio Grande do Sul | -49 | 2.2 | 0.0000000018 | 0.32 | | |
| PT Pres Vote Share (1998) | -36 | 1.9 | 0.00000028 | 0.76 | 0 | 0.17 |
| Prior Vote Share | 29 | 5.3 | 0.000002 | 0.13 | 0 | 0.91 |
| Incumbency | 21 | 0.79 | 0.00048 | 0.32 | | |
| Education: Some Superior or More | 20 | 2.7 | 0.0017 | 0.59 | | |
| PT Mayor Vote Share (2000) | -19 | -6 | 0.0037 | 0.46 | 0.03 | 0.71 |
| Ran Previously | 18 | -4.5 | 0.0038 | 0.41 | | |
| GDP Per Capita (2000) | -17 | 2.8 | 0.0091 | 0.61 | 0.066 | 0.46 |
| State: Minas Gerais | 15 | 8.1 | 0.016 | 0.28 | | |
| HDI (2000) | -15 | -2.1 | 0.021 | 0.63 | 0.012 | 0.21 |
| Party: PSDB | 13 | 2.9 | 0.029 | 0.18 | | |
| Party Prior Vote Share | 12 | 6.2 | 0.053 | 0.35 | 0.024 | 0.68 |
| Occupation: Blue Collar | 11 | -0.68 | 0.075 | 0.88 | | |
| Party: PT | -10 | 1.8 | 0.11 | 0.32 | | |
| Year of Birth | -9.1 | -6 | 0.15 | 0.15 | 0.14 | 0.43 |
| Log Electorate | -8.6 | 6.1 | 0.22 | 0.2 | 0.006 | 0.65 |
| PSDB Mayor Vote Share (2000) | -8 | -6.4 | 0.21 | 0.25 | 0.08 | 0.3 |
| State: Sao Paulo | 6.6 | 5.9 | 0.29 | 0.39 | | |
| Male | 6.4 | 4.9 | 0.32 | 0.56 | | |
| Party: PFL | -6 | -7.5 | 0.36 | 0.35 | | |
| Latitude | 5.6 | 1.4 | 0.39 | 0.77 | 0.022 | 0.68 |
| Occupation: Media | 4.9 | 0 | 0.41 | 1 | | |
| 2000 Gini | -4.5 | -4.3 | 0.47 | 0.54 | 0.67 | 0.31 |
| State: Bahia | 3.6 | 6.5 | 0.57 | 0.34 | | |
| Occupation: Other | 3.5 | 6.9 | 0.57 | 0.28 | | |
| Occupation: None | -2.7 | 1.7 | 0.67 | 0.65 | | |
| Occupation: Politician | 1.8 | 0 | 0.77 | 1 | | |
| Longitude | 1.4 | -6 | 0.82 | 0.28 | 0.5 | 0.49 |
| Party: PMDB | -1.1 | 0 | 0.86 | 1 | | |
| Occupation: White Collar | -0.33 | -5.5 | 0.96 | 0.24 | | |
| Occupation: Government | -0.3 | 2.7 | 0.96 | 0.16 | | |
| Occupation: Education | -0.23 | 0 | 0.97 | 1 | | |