**Online Appendix**

**to**

# STRATEGIC PARTISAN TRANSFERS IN A FISCAL FEDERATION: EVIDENCE FROM A NEW BRAZILIAN DATABASE

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This online appendix details the robustness chcks that are discussed in SECTION V in the main paper, as well as details on the technical rules for calculation of the mandatory transfers (FPM) and the detailed ideological classification of parties throughout the period 1997-2012.

## A. Robustness check

### A1. Per capita variables

Our main econometric study used the per capita, per GDP discretionary transfers as the dependent variable. Alternatively, we could have used simply the per capita discretionary transfers, rather than dividing by GDP. In that case, we would also use the per capita measurements of *Local taxes* and *Mandatory transfers*. Furthermore, we use GDP (in billions of Brazilian reals) as an additional explanatory variable. Table A1 below presents the corresponding regressions. A comparison with Table 5 and the average marginal effects' Table 6 is in order. The main result remains significant at 1%: when the Mayor and the President are aligned and the municipality is in an unaligned state, then the local government receives an additional 14.18 reals, about 7.23 US dollars in 2012 terms. Although the estimates are smaller than those in Table 6 (about 12 US dollars), it strongly supports the SPTH. The main

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novelty here is that even when the municipality belongs to an aligned state, it receives an extra 3.7 reals (1.89 US dollars) if the Mayor is aligned with the President. However, this holds only at the 10% confidence level in Model 6 and it is much smaller in absolute values, which also supports the SPTH against the TPTH.

Table A1. Robust and instrumental variable fixed effects regression estimates of the effects of political identification on discretionary transfers in Brazil, 1997-2012, using per capita discretionary transfers, local taxes and mandatory transfers

| VARIABLES | Model 1' FE r | Model 2' FE r | Model 3' FE r | Model 4' FE r | Model 5' FE r | Model 6' FE IV |
|---|---|---|---|---|---|---|
| *Mayor-President-Only* | 16.96*** | 15.53*** | 15.34*** | 15.34*** | 14.45*** | 14.18*** |
| | (1.765) | (1.771) | (1.825) | (1.825) | (1.810) | (1.773) |
| *Mayor-Governor-President* | 5.638*** | 4.778*** | 5.385*** | 5.385*** | 5.169*** | 3.698* |
| | (1.492) | (1.552) | (1.703) | (1.703) | (1.744) | (2.148) |
| *Mayor-President's Coalition* | -2.404* | 3.979*** | 4.261* | 4.261* | 4.817** | 4.724*** |
| | (1.241) | (1.347) | (2.312) | (2.312) | (2.452) | (1.773) |
| *National GDP* | 0.0175*** | 0.0114*** | 0.0149*** | 0.0217*** | 0.0178*** | 0.0322*** |
| | (0.000447) | (0.000651) | (0.00128) | (0.00124) | (0.00192) | (0.00164) |
| *PT ideological bias* | | | -0.684 | -0.684 | -1.276** | -1.314** |
| | | | (0.635) | (0.635) | (0.633) | (0.546) |
| *PSDB ideological bias* | | | 1.489** | 1.489** | 0.845 | 0.767 |
| | | | (0.663) | (0.663) | (0.664) | (0.642) |
| *Presidential election year* | | | | 2.353* | 33.19*** | 20.09*** |
| | | | | (1.333) | (3.190) | (2.022) |
| *Municipal election year* | | | | -25.56*** | 19.82*** | -27.65*** |
| | | | | (3.283) | (1.687) | (2.154) |
| *Per capita Local Tax* (IPTU+ITR+ITBI) | | | | | 0.0420 | 0.892*** |
| | | | | | (0.0576) | (0.330) |
| *Per capita Mandatory transfers* | | | | | 0.00496 | -0.00103 |
| | | | | | (0.00351) | (0.00250) |
| *Illiteracy rate* (%) | | | | | 3.016*** | 3.264*** |
| | | | | | (0.532) | (0.261) |
| *Unemployment rate* (%) | | | | | 1.266*** | 1.272*** |
| | | | | | (0.355) | (0.197) |
| *Working age population* (1000) | | | | | -0.162 | -0.306** |
| | | | | | (0.164) | (0.143) |
| *Population* (1000) | | | | | -0.141 | -0.0462 |
| | | | | | (0.103) | (0.100) |
| *Gini coefficient* (0,1) | | | | | -26.32 | -25.91* |
| | | | | | (24.61) | (15.16) |
| *Constant* | 0.559 | 1.567 | -9.692** | -16.19*** | -76.77*** | -103.7*** |
| | (1.180) | (1.232) | (4.435) | (4.227) | (21.91) | (13.16) |
| Observations | 88,720 | 88,720 | 69,744 | 69,744 | 65,231 | 65,231 |
| R-squared | 0.053 | 0.073 | 0.067 | 0.067 | 0.073 | |
| Number of Municipalities | 5,561 | 5,561 | 5,507 | 5,507 | 5,498 | 5,498 |
| Year dummies | No | Yes | Yes | Yes | Yes | Yes |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source: Authors' calculations

**A2. Per GDP variables**

Our main econometric study used the per capita, per GDP discretionary transfers as the dependent variable. Alternatively, we could have used simply the discretionary transfers per GDP, rather than dividing by the municipality's population. In that case, we would also use the *Local taxes* and the *Mandatory transfers* variables divided only by GDP. Table A2 below shows that the main qualitative results are unaltered when we run the corresponding regressions.

Table A2. Robust and instrumental variable fixed effects regression estimates of the effects of political identification on discretionary transfers in Brazil, 1997-2012, using per GDP discretionary transfers, local taxes and mandatory transfers

| VARIABLES | Model 1" FE r | Model 2" FE r | Model 3" FE r | Model 4" FE r | Model 5" FE r | Model 6" FE IV |
|---|---|---|---|---|---|---|
| *Mayor-President-Only* | 0.251*** | 0.243*** | 0.175*** | 0.175*** | 0.159*** | 0.156*** |
| | (0.0351) | (0.0373) | (0.0354) | (0.0354) | (0.0338) | (0.0264) |
| *Mayor-Governor-President* | 0.0242 | 0.0369* | 0.0124 | 0.0124 | 0.0332 | 0.0345 |
| | (0.0190) | (0.0214) | (0.0233) | (0.0233) | (0.0240) | (0.0310) |
| *Mayor-President's Coalition* | -0.0217* | 0.00499 | -0.0327 | -0.0327 | -0.0247 | -0.0280 |
| | (0.0115) | (0.0134) | (0.0230) | (0.0230) | (0.0237) | (0.0264) |
| *PT ideological bias* | | | -0.0343*** | -0.0343*** | -0.0295*** | -0.0284*** |
| | | | (0.00792) | (0.00792) | (0.00726) | (0.00815) |
| *PSDB ideological bias* | | | 0.0354*** | 0.0354*** | 0.0270** | 0.0251*** |
| | | | (0.0124) | (0.0124) | (0.0111) | (0.00959) |
| *Presidential election year* | | | | 0.404*** | 0.353*** | 0.307*** |
| | | | | (0.0941) | (0.0749) | (0.0769) |
| *Municipal election year* | | | | 0.307*** | 0.255*** | 0.262*** |
| | | | | (0.0930) | (0.0754) | (0.0845) |
| *Local Tax* (IPTU+ITR+ITBI) *per GDP* | | | | | -0.0223 | 0.0559 |
| *Mandatory transfers per GDP* | | | | | (0.0459) | (0.0534) |
| *Illiteracy rate* (%) | | | | | 0.0111 | 0.00309 |
| | | | | | (0.00859) | (0.00631) |
| *Unemployment rate (%)* | | | | | 0.0150*** | 0.0146*** |
| | | | | | (0.00263) | (0.00384) |
| *Working age population* (1000) | | | | | -0.00381 | -0.00329 |
| | | | | | (0.00257) | (0.00293) |
| *Population* (1000) | | | | | -0.0251** | -0.0294*** |
| | | | | | (0.0116) | (0.00345) |
| *Gini coefficient* (0,1) | | | | | 0.0309*** | 0.0348*** |
| | | | | | (0.119) | (0.226) |
| *Constant* | 0.322*** | 0.254*** | 0.0887 | 0.0887 | -0.818*** | -0.911*** |
| | (0.00315) | (0.0122) | (0.0613) | (0.0613) | (0.181) | (0.183) |
| Observations | 88,720 | 88,720 | 69,744 | 69,744 | 65,231 | 65,231 |
| R-squared | 0.002 | 0.011 | 0.011 | 0.011 | 0.027 | |
| Number of Municipalities | 5,561 | 5,561 | 5,507 | 5,507 | 5,498 | 5,498 |
| Year dummies | No | Yes | Yes | Yes | Yes | Yes |

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

Source: Authors' calculations

**A3. Regional effects**

Encompassing an area of 8.5 million square meters, Brazil is the fifth biggest country in world. It is also one of the most unequal societies, with a Gini coefficient above 50. It is a highly decentralized federation with huge regional gaps. Therefore, it is only natural to ask if the partisan transfers hypothesis is also confirmed at the regional level. This is the objective of the present section.

Brazilian states are grouped into five regions with different patterns of immigration, history, development and GDP, among others. In order to disaggregate the analysis at the regional level we first created five regional dummy variables, as described below.

NO: Northern region; includes the states of Acre, Amapá, Amazonas, Pará, Rondônia, Roraima and Tocantins.

NE: Northeastern region; includes the states of Alagoas, Bahia, Ceará, Maranhão, Paraíba, Pernambuco, Piauí, Rio Grande do Norte and Sergipe.

CO: Center western region; includes the states of Mato Grosso, Mato Grosso do Sul, Goiás and the Federal District.

SE: Southeastern region; includes the states of São Paulo, Rio de Janeiro, Espírito Santo and Minas Gerais.

SU: Southern region; includes the states of Paraná, Rio Grande do Sul and Santa Catarina.

Next, we created the regional partisan identification variables by multiplying the original (national) *Mayor-President Id*, *Mayor-President's Coalition Id* and *Mayor-Governor-President Id* by the regional dummies and rerun models 5 and 6. Table A3 presents the corresponding regression results.

Table A3. Robust and instrumental variable fixed effects regression estimates of the effects of political identification on discretionary transfers in Brazil, by administrative region, 1997-2012

| VARIABLES | Model 1''' FE r | Model 2''' FE r | Model 3''' FE r | Model 4''' FE r | Model 5''' FE r | Model 6''' FE IV |
|---|---|---|---|---|---|---|
| *NO Mayor-President Only* | 11.94*** | 11.28*** | 10.91** | 10.91** | 10.84** | 10.73*** |
| | (4.081) | (3.999) | (4.422) | (4.422) | (4.462) | (1.961) |
| *NE Mayor-President Only* | 9.119*** | 7.093*** | 6.937*** | 6.937*** | 5.780*** | 5.797*** |
| | (1.330) | (1.299) | (1.328) | (1.328) | (1.393) | (1.182) |
| *CO Mayor-President Only* | 7.129*** | 5.269** | 5.134* | 5.134* | 4.693* | 4.645** |
| | (2.594) | (2.590) | (2.822) | (2.822) | (2.685) | (1.962) |
| *SE Mayor-President Only* | 6.757*** | 5.777*** | 4.919*** | 4.919*** | 4.715*** | 4.766*** |
| | (0.806) | (0.809) | (0.853) | (0.853) | (0.854) | (0.935) |
| *SU Mayor-President Only* | 10.63*** | 9.088*** | 8.622*** | 8.622*** | 8.100*** | 8.119*** |

| | | | | | | |
|---|---|---|---|---|---|---|
| | (1.298) | (1.296) | (1.379) | (1.379) | (1.322) | (1.099) |
| *NO Mayor-Governor-President* | 0.885 | -2.018 | -2.277 | -2.277 | -2.860 | -2.792 |
| | (1.752) | (1.712) | (1.653) | (1.653) | (1.861) | (2.256) |
| *NE Mayor-Governor-President* | 1.422 | -0.827 | -1.395 | -1.395 | -2.894*** | -2.922** |
| | (0.897) | (0.911) | (1.023) | (1.023) | (1.059) | (1.351) |
| *CO Mayor-Governor-President* | 3.818 | 0.375 | 0.963 | 0.963 | 0.809 | 0.827 |
| | (2.354) | (2.373) | (2.462) | (2.462) | (2.406) | (1.915) |
| *SE Mayor-Governor-President* | 0.307 | -1.076 | -0.952 | -0.952 | 0.314 | 0.551 |
| | (0.777) | (0.816) | (0.872) | (0.872) | (0.861) | (1.061) |
| *SU Mayor-Governor-President* | 13.64*** | 17.23*** | 14.30*** | 14.30*** | 9.587** | 9.630*** |
| | (3.604) | (3.621) | (3.844) | (3.844) | (3.785) | (3.293) |
| *NO Mayor-President's Coalition* | -1.068 | -0.149 | -7.137*** | -7.137*** | -7.822*** | -7.812*** |
| | (2.070) | (2.066) | (2.498) | (2.498) | (2.790) | (1.639) |
| *NE Mayor-President's Coalition* | 0.175 | 1.070* | -0.790 | -0.790 | -0.730 | -0.746 |
| | (0.588) | (0.614) | (0.917) | (0.917) | (1.016) | (0.821) |
| *CO Mayor-President's Coalition* | 1.515 | 2.757 | 2.887 | 2.887 | 3.868 | 3.889** |
| | (1.772) | (1.783) | (2.572) | (2.572) | (2.704) | (1.571) |
| *SE Mayor-President's Coalition* | -0.476 | 0.169 | -0.764 | -0.764 | -0.224 | -0.162 |
| | (0.490) | (0.516) | (0.777) | (0.777) | (0.779) | (0.928) |
| *SU Mayor-President's Coalition* | 0.148 | 0.375 | 4.431*** | 4.431*** | 3.305** | 3.336*** |
| | (0.824) | (0.868) | (1.434) | (1.434) | (1.434) | (1.032) |
| *PT ideological bias* | | | -0.362* | -0.362* | -0.572*** | -0.575*** |
| | | | (0.213) | (0.213) | (0.214) | (0.184) |
| *PSDB ideological bias* | | | 1.140*** | 1.140*** | 0.800*** | 0.802*** |
| | | | (0.253) | (0.253) | (0.259) | (0.214) |
| *Presidential election year* | | | | 2.756*** | 16.03*** | 23.04*** |
| | | | | (0.649) | (1.892) | (1.700) |
| *Municipal election year* | | | | 8.026*** | 7.247*** | 15.49*** |
| | | | | (0.647) | (1.706) | (1.868) |
| *Per capita Local Tax (IPTU+ITR+ITBI) per GDP* | | | | | 9.978 | -41.49 |
| | | | | | (8.319) | (92.82) |
| *Per capita Mandatory transfers per GDP* | | | | | 0.0279 | 0.830 |
| | | | | | (0.301) | (1.484) |
| *Illiteracy rate (%)* | | | | | 1.211*** | 1.197*** |
| | | | | | (0.145) | (0.0901) |
| *Gini coefficient (0,1)* | | | | | -12.38 | -12.41** |
| | | | | | (8.367) | (5.044) |
| *Unemployment rate (%)* | | | | | 0.0573 | 0.0627 |
| | | | | | (0.107) | (0.0658) |
| *Working age population (1000)* | | | | | 0.0561 | 0.0627 |
| | | | | | (0.0357) | (0.0440) |
| *Population (1000)* | | | | | -0.0844** | -0.0901*** |
| | | | | | (0.0334) | (0.0325) |
| *Constant* | 17.54*** | 14.76*** | 9.538*** | 9.538*** | -10.69 | -9.934** |
| | (0.0854) | (0.365) | (1.296) | (1.296) | (6.703) | (4.097) |
| Observations | 88,720 | 88,720 | 69,744 | 69,744 | 65,231 | 65,231 |
| R-squared | 0.004 | 0.040 | 0.041 | 0.041 | 0.045 | |
| Number of Municipalities | 5,561 | 5,561 | 5,507 | 5,507 | 5,498 | 5,498 |
| Year dummies | No | Yes | Yes | Yes | Yes | Yes |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source: Authors' calculations

The regionalized regressions confirm the partisan transfers hypothesis against the WMH for all regions: all regional *Mayor-President Only* variables have positive statistically significant signs. The coefficients of the regions southeastern (SE), northeastern (NE) and center western (CO) are statically identical and the coefficients of the

northern (NO) and southern (SU) regions are also statistically undistinguishable. The former coefficients are below the national mean whereas the latter are above. In other words, the partisan motive in discretionary transfers appears to manifest most strongly at the extreme northern and southern regions. Note that the northern region is the least developed of the five and encompasses most of Brazilian Amazon rain forest, whereas the southern region is one of the most developed and richest of the country.

Three out of five regional *Mayor-Governor-President* are statistically non-significant (NO, CO, SE), and the two that are significant (the Northeastern and the Southern regions) have opposite sign. The *NE Mayor-Governor-President* variable's sign is negative and, together with the *NO, CO* and *SE*, supports the SPTH against the TPTH. Only the *SU Mayor-Governor-President* variable does not support the SPTH against the TPTH. Further investigation is need to better understand this result for the Southern region.

The regional *Mayor-President's coalition* variables are now significant for three out of 5 regions, but with conflicting signs: It is negative for the NO region and positive for the CO and SU regions. This result suggests further investigations on subnational politics to better understand those signs.

The remaining variables, including the president's party ideological bias and the political cycle variables closely reflect the previous estimations, as expected.

**A4. Actual transfers**

We discussed in section III.A that there are basically two ways to measure discretionary transfers from our new database. The first one, used in this paper, consists of computing the amounts of transfers agreed upon between the federal government and the municipalities when they signed a grant contract, a "Convênio". We argued that these amounts better reflect the possible use of the grants for political promotion purposes. An alternative way is to compute the amounts that are effectively transferred to the municipalities.

Table A4 presents the corresponding regressions when the actual transfers dependent variable is used. Comparing Table A4 with Table 5 we confirm that the results we found remain essentially unchanged, corroborating the robustness of the analysis.

Table A4. Robust and instrumental variable fixed effects regression estimates of the effects of political identification on actual discretionary transfers in Brazil, 1997-2012

| VARIABLES | Model 1<br>FE r | Model 2<br>FE r | Model 3<br>FE r | Model 4<br>FE r | Model 5<br>FE r | Model 6<br>FE IV |
|---|---|---|---|---|---|---|
| *Mayor-President-Only* | 7.916*** | 6.936*** | 6.243*** | 6.243*** | 5.809*** | 5.830*** |
| | (0.634) | (0.628) | (0.700) | (0.700) | (0.677) | (0.551) |
| *Mayor-Governor-President* | 0.833 | -0.484 | -0.535 | -0.535 | -0.535 | -0.387 |
| | (0.536) | (0.562) | (0.612) | (0.612) | (0.603) | (0.680) |
| *Mayor-President's Coalition* | -1.892*** | 0.145 | -0.982 | -0.982 | -0.888 | -0.862 |
| | (0.330) | (0.373) | (0.601) | (0.601) | (0.603) | (0.552) |
| *PT ideological bias* | | | -0.458** | -0.458** | -0.611*** | -0.610*** |
| | | | (0.194) | (0.194) | (0.194) | (0.170) |
| *PSDB ideological bias* | | | 1.142*** | 1.142*** | 0.819*** | 0.823*** |
| | | | (0.229) | (0.229) | (0.230) | (0.199) |
| *Presidential election year* | | | | 10.05*** | 17.03*** | 23.82*** |
| | | | | (1.408) | (1.798) | (1.571) |
| *Municipal election year* | | | | 2.556* | 8.339*** | 12.49*** |
| | | | | (1.366) | (1.620) | (1.721) |
| *Per capita Local Tax (IPTU+ITR+ITBI)* | | | | | 7.709 | -54.91 |
| *per national GDP* (instrumented in Model 6) | | | | | (5.682) | (85.72) |
| *Per capita Mandatory transfers per national GDP* | | | | | 0.00875 | 0.983 |
| | | | | | (0.242) | (1.370) |
| *Illiteracy rate* (%) | | | | | 1.171*** | 1.153*** |
| | | | | | (0.132) | (0.0838) |
| *Unemployment rate* (%) | | | | | 0.0258 | 0.0327 |
| | | | | | (0.0990) | (0.0614) |
| *Gini coefficient* (0,1) | | | | | 0.0587* | 0.0668 |
| | | | | | (0.0346) | (0.0411) |
| *Working age population* (1000) | | | | | -0.0852*** | -0.0920*** |
| | | | | | (0.0326) | (0.0303) |
| *Population* (1000) | | | | | -12.04 | -12.08** |
| | | | | | (7.776) | (4.709) |
| *Constant* | 16.57*** | 13.61*** | 8.396*** | 8.396*** | -10.68* | -9.716** |
| | (0.0780) | (0.334) | (1.159) | (1.159) | (6.221) | (3.827) |
| Observations | 88,720 | 88,720 | 69,744 | 69,744 | 65,231 | 65,231 |
| R-squared | 0.004 | 0.047 | 0.049 | 0.049 | 0.053 | |
| Number of Municipalities | 5,561 | 5,561 | 5,507 | 5,507 | 5,498 | 5,498 |
| Year dummies | No | Yes | Yes | Yes | Yes | Yes |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source: Authors' calculations

**A5. Alternative proxies for local taxation**

Our main econometric study used the sum of the three main property taxes: urban (IPTU), rural (ITR) and ownership transfer (ITBR) as the proxy for local taxation. However, the most relevant local tax is the urban property tax IPTU. Furthermore, we discussed a fourth main source of local income, the tax on services, ISS. In order to check the

robustness of our results, we rerun the models first using only IPTU as the proxy for local taxation, and then using all four main taxes, IPTU, ITR, ITBI and ISS. For the sake of space, we present in Table A5 below only the fixed effects IV regression of the three proxies we used. Each IV regression used the corresponding neighboring municipalities' proxy for local taxation as instrument.

Table A5. Robust and instrumental-variable fixed-effects regression estimates of the effects of political identification on discretionary transfers in Brazil, 1997-2012

Using three different proxies for local taxation

| VARIABLES | Model 6<br>IPTU+ITR+ITBI<br>FE IV | Model 7<br>IPTU<br>FE IV | Model 8<br>IPTU+ITR+ITBI+ISS<br>FE IV |
|---|---|---|---|
| *Mayor-President-Only* | 6.206*** | 6.213*** | 6.341*** |
| | (0.590) | (0.591) | (0.606) |
| *Mayor-Governor-President* | -0.0580 | -0.0597 | 0.146 |
| | (0.728) | (0.717) | (0.719) |
| *Mayor-President's Coalition* | 0.00788 | 0.0166 | -0.0766 |
| | (0.591) | (0.594) | (0.605) |
| *PT ideological bias* | -0.562*** | -0.562*** | -0.579*** |
| | (0.182) | (0.182) | (0.186) |
| *PSDB ideological bias* | 0.842*** | 0.841*** | 0.864*** |
| | (0.213) | (0.213) | (0.218) |
| *Presidential election year* | 23.48*** | 23.44*** | 25.34*** |
| | (1.682) | (1.702) | (1.865) |
| *Municipal election year* | 16.20*** | 16.15*** | 18.34*** |
| | (1.843) | (1.870) | (2.063) |
| *Per capita Mandatory transfers per GDP* | 0.471 | 0.180 | 5.429** |
| | (1.467) | (0.344) | (2.139) |
| *Illiteracy rate (%)* | 1.228*** | 1.225*** | 1.189*** |
| | (0.0898) | (0.0920) | (0.0898) |
| *Gini coefficient (0,1)* | -12.29** | -12.32** | -12.47** |
| | (5.043) | (5.045) | (5.167) |
| *Unemployment rate (%)* | 0.0766 | 0.0799 | 0.0557 |
| | (0.0658) | (0.0685) | (0.0670) |
| *Working age population (1000)* | 0.0605 | 0.0600 | 0.112** |
| | (0.0440) | (0.0432) | (0.0485) |
| *Population (1000)* | -0.0879*** | -0.0880*** | -0.123*** |
| | (0.0325) | (0.0321) | (0.0350) |
| *Per capita Local land (IPTU) tax per GDP* | | -26.23 | |
| | | (101.6) | |
| *Per capita Local Tax (IPTU+ITR+ITBI) per GDP* | -20.25 | | |
| | (91.79) | | |
| *Per capita Local Tax (IPTU+ITR+ITBI+ISS) per GDP* | | | -212.5** |
| | | | (85.08) |
| *Constant* | -11.32*** | -11.24*** | -7.386* |
| | (4.098) | (4.127) | (4.290) |
| Observations | 65,231 | 65,231 | 65,231 |
| Number of Municipalities | 5,498 | 5,498 | 5,498 |
| Year dummies | Yes | Yes | Yes |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source: Authors' calculations

Table A5 shows that the original regression results are robust. The main estimates are similar in sign, magnitude and significance. There are, however, three novelties in the last regression, when we use all four local taxes. First, mandatory transfers become significant at 5% and positive; this suggests that municipalities that receive higher per capita mandatory transfers also receive higher per capita discretionary transfers, which might contradict hypothesis that mandatory transfers are not manipulable. We discuss further the exogeneity of mandatory transfers in the following section. Second, in Model 8 local taxes are also significant at 5% and negative, which supports the redistributive hypothesis, i.e., municipalities that are able to collect more taxes are richer and, therefore, the federal government does not prioritize them for discretionary transfers.

**A6. Mandatory transfers as a dependent variable**

In order to confirm that the FPM is indeed an endogenous proxy for mandatory transfers, we performed the following exercise: we rerun our regressions using mandatory transfers as the dependent variable. Table A6 below presents the results of the fixed effects IV regressions for the three proxies for local tax discussed in the previous section.

Table A6. Robust and instrumental variable fixed effects regression estimates of the effects of political identification on mandatory transfers in Brazil, 1997-2012

Using three different proxies for local taxation

| VARIABLES | Model 9<br>IPTU<br>FE IV | Model 10<br>IPTU+ITR+ITBI<br>FE IV | Model 11<br>IPTU+ITR+ITBI+ISS<br>FE IV |
|---|---|---|---|
| *Mayor-President-Only* | 0.0146** | 0.0138* | 0.0118* |
| | (0.00729) | (0.00710) | (0.00703) |
| *Mayor-Governor-President* | 0.00440 | 0.000442 | 0.00111 |
| | (0.00884) | (0.00874) | (0.00831) |
| *Mayor-President's Coalition* | 0.0169** | 0.0158** | 0.0169** |
| | (0.00732) | (0.00712) | (0.00698) |
| *PT ideological bias* | 0.00280 | 0.00270 | 0.00283 |
| | (0.00224) | (0.00218) | (0.00215) |
| *PSDB ideological bias* | 0.00254 | 0.00236 | 0.00205 |
| | (0.00262) | (0.00256) | (0.00253) |
| *Presidential election year* | 0.0326 | 0.0343* | 0.00484 |
| | (0.0210) | (0.0202) | (0.0216) |
| *Municipal election year* | 0.0314 | 0.0325 | -0.000151 |
| | (0.0230) | (0.0221) | (0.0238) |

| | | | |
|---|---|---|---|
| *Illiteracy rate (%)* | 0.00148 | 0.00187* | 0.00190* |
| | (0.00113) | (0.00107) | (0.00103) |
| *Gini coefficient (0,1)* | -0.0299 | -0.0282 | -0.0255 |
| | (0.0622) | (0.0606) | (0.0597) |
| *Unemployment rate (%)* | -0.000699 | -0.000825 | -0.000346 |
| | (0.000843) | (0.000788) | (0.000775) |
| *Working age population (1000)* | 0.000401 | 0.000177 | -0.000340 |
| | (0.000532) | (0.000529) | (0.000557) |
| *Population (1000)* | -0.000454 | -0.000265 | 6.27e-05 |
| | (0.000395) | (0.000391) | (0.000403) |
| *Per capita Local land (IPTU) tax per GDP* | 0.264 | | |
| | (1.251) | | |
| *Per capita Local Tax (IPTU+ITR+ITBI) per GDP* | | 1.811* | |
| | | (1.072) | |
| *Per capita Local Tax (IPTU+ITR+ITBI+ISS) per GDP* | | | 2.876*** |
| | | | (0.913) |
| *Constant* | 0.138*** | 0.110** | 0.0742 |
| | (0.0509) | (0.0499) | (0.0503) |
| Observations | 65,231 | 65,231 | 65,231 |
| Number of Municipalities | 5,498 | 5,498 | 5,498 |
| Year dummies | Yes | Yes | Yes |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source: Authors' calculations

Table A6 shows clearly that our regressions have a very reduced power to explain mandatory transfers. Indeed, only in model (11) is there one variable statistically significant at 1%, Local tax. All other variables are either insignificant or have very low statistical significance. It is true that the main political variable *Mayor-President-Only* appears significant at 10% in models 10 and 11 and at 5% in model 9. However, their economic significance is extremely reduced. Indeed, by applying the same methodology we used in section IV.B for calculating the marginal effects of explanatory variables, we conclude that throughout the period 1997-2012 the estimated marginal effect of partisan identification was never higher than 4 cents of a US dollar (in 2012 values). The average marginal effect is 3 cents of a US dollar per capita, i.e., according to the most favorable model 9, when the Mayor and the President are members of the same party in a nonaligned state, the municipality receives an extra 3 cents of a (2012) US dollar in mandatory transfers. The authors believe that this result makes it clear that there is no economically significant role of political identification in the implementation of mandatory FPM constitutional transfers in Brazil.

**B. The Constitutional FPM fund's transfers rules**

In order to better understand the FPM constitutional transfers funds, we present here the rules that define the amount of resources each Brazilian municipality is entitled to receive. To form the fund, the federal government transfers

22.5% of the two main federal taxes: the income tax IR ("Imposto de Renda") and the industrial products tax IPI ("Imposto sobre Produtos Industrializados"). The Brazilian Federal Court of Accounts TCU ("Tribunal de Contas da União"), an independent body, calculates the share of each municipality every year, based on estimations of the municipalities' population counts and the states' per capita income updated yearly by the Brazilian Institute of Geography and Statistics, IBGE. There are three subcategories of the FPM fund, which we describe below.

(1) 10% of the fund's resources go to the states' capitals according to a sharing rule that is proportional to the capital's population as compared to the total population of all capitals and inversely proportional to the per capita income of the corresponding state. Therefore, a richer state's capital will receive fewer resources than a poorer state's capital with the same population. The population coefficient is calculated according to Table A1 and the per capita income coefficient is calculated according to Table A2. The final share coefficient is the product of the population coefficient times the per capita income coefficient.

Table B1. Population coefficient for the distribution of FPM, 10% share according to Law 5.172/1966.

| Municipality population/Total reference population | Population coefficient |
|---|---|
| Up to 2% | 2.0 |
| Above 2% up to 2.5% | 2.5 |
| Above 2.5% up to 3% | 3.0 |
| Above 3% up to 3.5% | 3.5 |
| Above 3.5% up to 4% | 4.0 |
| Above 4% up to 4.5% | 4.5 |
| Above 4.5% | 5.0 |

Source: Brazil. National Treasury Secretariat. 2012. (http://www3.tesouro.fazenda.gov.br/estados_municipios/download/CartilhaFPM.pdf)

Table B2. State per capita income coefficient for the distribution of FPM according to Law 5.172/1966.

| Inverse of state per capita income | Per capita income coefficient |
|---|---|
| Up to 0.0045 | 0.4 |
| Above 0.0045 up to 0.0055 | 0.5 |
| Above 0.0055 up to 0.0065 | 0.6 |
| Above 0.0065 up to 0.0075 | 0.7 |
| Above 0.0075 up to 0.0085 | 0.8 |
| Above 0.0085 up to 0.0095 | 0.9 |
| Above 0.0095 up to 0.0110 | 1.0 |
| Above 0.0110 up to 0.0130 | 1.2 |
| Above 0.0130 up to 0.0150 | 1.4 |

| | |
|---|---|
| Above 0.0150 up to 0.0170 | 1.6 |
| Above 0.0170 up to 0.0190 | 1.8 |
| Above 0.0190 up to 0.0220 | 2.0 |
| Above 0.0220 | 2.5 |

Source: Brazil. National Treasury Secretariat. 2012.
(http://www3.tesouro.fazenda.gov.br/estados_municipios/download/CartilhaFPM.pdf)

(2) 3.6% (4% of the remaining 90%) of the fund's resources form a "Special Reserve" ("Reserva especial") that is distributed to all municipalities, other than the capitals, with population above 142,633 inhabitants, according to a rule similar to (1), i.e., proportional to the city's population as compared to the entire population of cities that qualify to that special reserve and inversely proportional to the per capita income of the state.

(3) 86.4% (96% of the remaining 90%) are distributed to all municipalities that are not state capitals. Each municipality's endowed resource is calculated in a three-step procedure.

a. First, the amount that goes to each state is calculated multiplying the total amount reserved for this distribution category (86.4% of FPM) by the state share coefficient, according to the table below, defined in Complementary Law no. 62/1989.

Table B3. Brazilian states' share coefficient of the 86.4% part of FPM

according to Complementary Law 62/1989

| State Name | Share coefficient |
|---|---|
| Acre | 0.2630 |
| Alagoas | 2.0883 |
| Amapá | 0.1392 |
| Amazonas | 1.2452 |
| Bahia | 9.2695 |
| Ceará | 4.5864 |
| Distrito Federal | 0.0000 |
| Espírito Santo | 1.7595 |
| Goiás | 3.7318 |
| Maranhão | 3.9715 |
| Mato Grosso | 1.8949 |
| Mato Grosso do Sul | 1.5004 |
| Minas Gerais | 4.1846 |
| Pará | 3.2948 |
| Paraíba | 3.1942 |
| Paraná | 7.2857 |
| Pernambuco | 4.7952 |
| Piauí | 2.4015 |
| Rio de Janeiro | 2.7379 |

| | |
|---|---|
| Rio Grande do Norte | 2.4324 |
| Rio Grande do Sul | 7.3011 |
| Rondônia | 0.7464 |
| Roraima | 0.0851 |
| Santa Catarina | 4.1997 |
| São Paulo | 4.2620 |
| Sergipe | 1.3342 |
| Tocantins | 1.2955 |

Source: Brazil. National Treasury Secretariat. 2012.
(http://www3.tesouro.fazenda.gov.br/estados_municipios/download/CartilhaFPM.pdf)

b. Next, each municipality receives a population coefficient according to the table below, defined in Law-Decree no. 1881/1981. Then, each municipality receives a relative population coefficient that is calculated dividing the city population coefficient by the sum of all city population coefficients in that state (except the capital). Therefore, the sum of the relative population coefficients of all cities in each state is one.

Table B4. Population coefficient for the distribution of FPM, 86.4% share according to Law-Decree no. 1881/1981.

| Municipality population (inhabitants) | Population coefficient |
|---|---|
| Up to 10188 | 0.6 |
| From 10189 to 13584 | 0.8 |
| From 13585 to 16980 | 1.0 |
| From 16981 to 23772 | 1.2 |
| From 23773 to 30564 | 1.4 |
| From 30565 to 37356 | 1.6 |
| From 37357 to 44148 | 1.8 |
| From 44149 to 50940 | 2.0 |
| From 50941 to 61128 | 2.2 |
| From 61129 to 71316 | 2.4 |
| From 71317 to 81504 | 2.6 |
| From 81505 to 91692 | 2.8 |
| From 91693 to 101880 | 3.0 |
| From 101881 to 115464 | 3.2 |
| From 115465 to 129048 | 3.4 |
| From 129049 to 142632 | 3.6 |
| From 142633 to 156216 | 3.8 |
| Above 156216 | 4.0 |

Source: Brazil. National Treasury Secretariat. 2012.
(http://www3.tesouro.fazenda.gov.br/estados_municipios/download/CartilhaFPM.pdf)

c. Finally, the amount each city receives corresponds to the product of the city relative population coefficient times the state share of the 86.4% part of the FPM fund.

**C. Brazilian parties' political ideology**

We transpose here a table from Lopez, Bugarin and Bugarin (2015) that contains the dynamic evolution of Brazilian party ideologies that was adapted from Zucco, Jr (2014).

Table C1. Brazilian party ideology estimates from 1997 to 2013

on a scale from 0 (extreme left) to 10 (extreme right)

| PARTY | YEAR | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| PCdoB | *1,53* | 1,60 | 1,66 | 1,73 | 1,79 | 1,92 | 2,06 | 2,19 | *2,32* | 2,31 | 2,31 | 2,30 | *2,29* | 2,30 | 2,30 | 2,31 | *2,31* |
| PDS, PP | *7,09* | 7,07 | 7,05 | 7,03 | *7,01* | 6,93 | 6,85 | 6,76 | *6,68* | 6,56 | 6,45 | 6,33 | *6,21* | 6,26 | 6,31 | 6,35 | *6,40* |
| PDT | *2,84* | 2,90 | 2,95 | 3,01 | *3,06* | 3,18 | 3,30 | 3,41 | *3,53* | 3,50 | 3,47 | 3,43 | *3,40* | 3,43 | 3,46 | 3,49 | *3,52* |
| PFL, DEM | *6,90* | 6,87 | 6,84 | 6,80 | *6,77* | 6,74 | 6,71 | 6,67 | *6,64* | 6,60 | 6,56 | 6,52 | *6,48* | 6,61 | 6,74 | 6,87 | *7,00* |
| PMDB | *4,69* | 4,78 | 4,86 | 4,95 | *5,03* | 5,04 | 5,05 | 5,05 | *5,06* | 4,98 | 4,89 | 4,81 | *4,72* | 4,81 | 4,89 | 4,98 | *5,06* |
| PSB | *2,48* | 2,52 | 2,55 | 2,59 | *2,62* | 2,70 | 2,79 | 2,87 | *2,95* | 2,98 | 3,01 | 3,03 | *3,06* | 3,08 | 3,09 | 3,11 | *3,12* |
| PSD | | | | | | | | | | | | | | | | | *5,68* |
| PSDB | *4,98* | 5,01 | 5,04 | 5,07 | *5,10* | 5,05 | 5,00 | 4,95 | *4,90* | 4,87 | 4,83 | 4,80 | *4,76* | 4,86 | 4,97 | 5,07 | *5,17* |
| PR, PL, PRB | *6,44* | 6,30 | 6,17 | 6,03 | *5,89* | 5,92 | 5,95 | 5,97 | *6,00* | 5,90 | 5,80 | 5,70 | *5,60* | 5,65 | 5,70 | 5,74 | *5,79* |
| PT | *1,78* | 1,87 | 1,96 | 2,04 | *2,13* | 2,36 | 2,59 | 2,81 | *3,04* | 3,01 | 2,98 | 2,94 | *2,91* | 2,92 | 2,93 | 2,94 | *2,95* |
| PV | | | | | | | | | | | | | *3,74* | 3,77 | 3,81 | 3,84 | *3,87* |
| Dilma | | | | | | | | | | | | | | | | | *3,42* |
| Lula | | | | | | | | | | | | | | | | | *3,24* |
| FHC | | | | | | | | | | | | | | | | | *4,98* |

Source: Zucco (2014) and Lopez, Bugarin and Bugarin (2015)
Note: italics correspond to Zucco (2014) estimates and non-italics correspond to Lopez, Bugarin and Bugarin (2015)'s interpolations.