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MAYORAL FISCAL PERFORMANCE AND REELECTION SUCCESS

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INTRODUCTION

This article analyses the electoral performance of incumbent mayors who were candidates for reelection in 2000. Its purpose is to determine if there is a relationship between the fiscal performance of Brazilian municipalities and the reelection chances of their mayors. In order to do so, we will try to answer the following questions:

- ? Does the electorate punish the incumbent mayors who augment expenses and the public deficit?
- ? Do increased revenue transfers from the Federal Government augment the probability of reelection?
- ? Are there differences between municipalities depending on the size of their population or on their geographic region?

It is important to observe that the mayor is the main manager of the public utilities directly provided to the population. He/she is the political figure more easily identified as responsible for the holes in and the garbage on the streets, the success of a new expressway, or the lack of vacancies in public schools. The voter observes his/her performance more easily than that of the President of the Republic, who deals with complex subjects such as foreign affairs and macroeconomics, or parliamentarians, who do not have direct responsibility for public policy management.

There is extensive literature in economics and political science that discusses the efficiency of democratic institutions and, in particular, the efficiency of the electoral process in selecting political representatives. Finding that a bad (good) financial management decreases (increases) the probability of reelection of an incumbent mayor would be an indicator that the Brazilian electoral process is relatively efficient in selecting the best politicians. The proposed study not only shows empirical evidence on this subject, but also offers an opportunity to deepen our

knowledge about the movement toward fiscal and administrative decentralization observed since the middle of the 1990's. After all, one of the pillars of the decentralization theory is the hypothesis that the local manager is chosen through an efficient electoral process. If it is not the case, the arguments in favor of decentralization lose much of their strength.

We will bring on econometric estimates based on data provided by the Secretariat of the National Treasury (STN), the Superior Electoral Court (TSE), and the Brazilian Institute of Geography and Statistics (IBGE) about the financial management of Brazilian municipalities, their social and geographical characteristics, and their electoral outcomes.

Several tests will be made. Firstly, are the growth rate of public expenses and the probability of reelection positively correlated? Secondly, is the same correlation observed between the probability of electoral success and the increase in received transfers? In other words, does an increase in available financial resources make reelection easier?

Furthermore, it is appropriate to check if mayors from newly created municipalities are reelected more easily, since these municipalities have more opportunities for expanding their expenses, because they do not have accumulated debts, already have guaranteed federal transfers and can hire new workers for the local bureaucracy, as well as buy and rent buildings and equipments for the new administration.

It is also appropriate to analyze the possible existence of different electoral behaviors in the Center-West, North and Northeast regions and the South and Southeast ones, because it can be expected that the most developed regions are better at monitoring the performance of the incumbent mayor, punishing those who follow irresponsible fiscal policies.

The database used contains information about 3,590 of the 5,561 Brazilian municipalities (*i.e.*, 64.6% of the total).¹ A model of binary choice (*i.e.*, *probit*) will be estimated.

After this introduction, section 1 will summarize existing theoretical and empirical literature (see also the bibliography). Section 2 will deal with the institutional details of mayoral elections in Brazil and will define the econometric model that will be estimated. Section 3 will describe the employed variables and the restrictions faced. Section 4 will present the estimated results. Finally, we will summarize our conclusions.

1. THEORETICAL AND EMPIRICAL LITERATURE

There is a growing literature on the existence of asymmetric information in electoral processes: the candidates to public offices know their own characteristics (*e.g.*, honesty, abilities, propensity to work etc.) better than the voters. Thus, the candidates can elude the voters about their actual personal characteristics through, for example, electoral marketing. Furthermore, after taking office, they can start shirking (*i.e.*, moral hazard) or use the office for personal advantage (*i.e.*, adverse selection) (Le Borgne and Lockwood, 2002).

There are divergences on the importance of such a problem. Wittman (1989), for instance, states that the elections are reasonably efficient as instruments of choosing the best representatives, minimizing any asymmetry of information.

Baron (1994) divides the voters between “informed” and “non-informed” and shows that higher the percentage of non-informed voters, weaker is the relationship between administrative performance and the probability of being reelected.

¹ Most of the database was kindly provided by Marcos J. Mendes.

The empirical literature contemplates the reelection for legislative offices (*e.g.*: Hall and van Houweling, 1995; Kiewiet and Zeng, 1993) or about the behavior of the voter in presidential elections (Cuzán and Bundrick, 2000).

It deserves to be mentioned the analysis of the correlation between fiscal variables and the reelection of U.S. Presidents. Peltzman (1992) is the most important reference on this subject. It concludes that voters are fiscal conservatives, punishing the Presidents who expand expenses and awarding those who cut them. Cuzán and Bundrick (2000) review the empirical literature that analyses the relationship between fiscal variables and presidential elections, and reach similar conclusions, in clear contrast with the “Political Business Cycle” model (Rogoff and Sibert, 1988), according to which increasing expenditure is an integral part of the electoral strategy of any politician.

We did not come up with analyses about mayors’ reelection in other countries. About the Brazilian experience, there are analyses about elections for legislative offices (Leoni, Pereira and Reno, 2001). Recently, Mendes (2004) explored, using a selection model, the relationship between, on one side, the candidature and reelection probabilities and, on the other side, how well the incumbent mayors publicized their efforts and how well they performed as public managers, based on the outcome of several social policies concerning health and education. The present work will explore a more restricted dimension of this problem, dealing with the relationship between reelection chance and a set of fiscal variables.

2. THE CASE IN ANALYSIS AND THE CHOSEN MODEL

Brazil offers adequate conditions for the econometric evaluation that we intend to do. In the first place, the great number of municipalities provides a huge amount of information. In addition, there are institutional characteristics that facilitate this study: the municipal elections (*i.e.*, for mayor and town councilors) happen at the same date in the whole country, for four years terms. Until 1996, the legislation did

not allow reelection for executive offices (*i.e.*, President of Republic, governors and mayors). Reelection for one additional term was authorized by a June 1997 amendment to the Brazilian Federal Constitution.²

Actually, since most Brazilian parties do not have well defined identities and the elections are often decided by commitments little-related to declared programmatic objectives, the mayoral reelection of 2000 offers optimal conditions for the present research.

Firstly, at that moment, all mayors could, theoretically, run for reelection, because the limit of a single reelection would start being effective only in the election of 2004. Therefore, the election of 2000 alone allows more than 5,000 observations – a very important characteristic if we consider how much data the *probit* models require. In any subsequent election the researchers will face a more diversified scenario: a few mayors finishing their first mandates and hence capable of running again, while others will be finishing their second mandates, thwarting a new candidature and substantially reducing the sampling space.

Secondly, owing to reelection, two key aspects of the political process can be controlled: the subjective characteristics of the candidate (*e.g.*, empathy) and the political dimension of any electoral dispute (*e.g.*, commitments well regarded by the electorate). Since these aspects were tested (and approved by the electorate) in the mayoral election of 1996, they can be treated as revealed preferences, bringing to the forefront of our analysis the fiscal variables that are our main concern.

It is important to stress that the mayors knew, since almost the very beginning of their first terms that they could run for reelection. Therefore, they could design government strategies toward this purpose. Furthermore, the Brazilian municipal elections do not occur at the same time as the federal and state elections. The latter are carried out simultaneously and there is a two-year interval between them and the municipal elections.

² Constitutional Amendment n. 16, of 1997.

By the end of his/her term, the mayor faces the following choices:

1. Abandoning politics;
2. Running for town councilor (a municipal office of minor importance);
3. Being up for reelection;
4. Remaining two years without mandate, waiting for the chance of running for an office in the federal or state government.

Choice 4 will be considered as dominated by choice 3 since the incumbent mayors may, at any moment, run for another office. As a result, it will be discarded from the menu. If the mayor aspires to move ahead in the political realm, looking for federal or state office, the best choice is running for reelection as a mayor (*i.e.*, choice 3) and, two years later, use his/her status as incumbent mayor (*e.g.*, media coverage, administrative accomplishments, public budget etc.) to launch his/her candidature for a more prominent position. Staying two years in limbo and then returning to the political scene in search of a higher office is not a common procedure in Brazilian politics.

Choice 2, by its turn, is practically equivalent to abandoning politics (*i.e.*, choice 1), because a town councilor is much less valued than a mayor. This choice, in addition to being empirically irrelevant (only ten cases in a sample space of more than five thousand observations), indicates that the incumbent mayor has envisaged very few chances of being reelected and of progressing in the political realm. Thus, only choices 1 and 3 are relevant: to be up or not for a new term.

The decision of running for reelection, by its turn, depends on three aspects:

- ? Chance of being reelected;
- ? Cost of the electoral campaign;
- ? How well the mayoral office is valued by the incumbent mayor.

As for the chance of being reelected, our hypothesis is that it is affected by the mayor's performance during his/her first term (*i.e.*, the outcome of his/her

public policies), by the characteristics of the municipality he/she rules (*e.g.*, education level, degree of urbanization and geographical region) and by the mayor's personal characteristics (*e.g.*, facing an old age mayor, the voters may choose not to reelect him/her).

The campaign costs are affected also by the characteristics of the municipality (*e.g.*, geographical area to be covered by the campaign, size of the population to be reached through electoral advertisement, percentage of people less educated and more easily convinced through marketing strategies) and the mayor's performance (*e.g.*, a successful manager may spend comparatively less in advertisement).

At last, we will consider the mayoral office as equally valued by all incumbent mayors.

The actual success in the reelection process is made of two steps:

- ? Succeeding in being up for reelection;
- ? Succeeding into being reelected.

Our main behavioral hypothesis is that the incumbent mayor wishes to be reelected. In order to attain it, however, he/she will first need to guarantee his/her candidature, preventing that his/her political party indicates a more powerful or less worn out candidate, and that the legislative or the judiciary branch does not revoke his/her mandate as a consequence of some crime or unethical behavior.

Once established the key ideas, the probability of success in looking for a second term may be modeled as a *probit* model of the type:³

$$REEL_i^* = \begin{cases} 1 & \text{if } CAND_i = 1 \\ 0 & \text{if } REEL_i^* = 0 \text{ and } 0 \text{ otherwise} \end{cases}$$

The dependent variable REEL is a binary variable. It shows whether the mayor was reelected (REEL=1) or not (REEL=0). We consider that the chance of being reelected is influenced by the mayor's performance during his/her first term.

³ For *probit* models, see Greene (2000), ch. 19, or Johnston and Dinardo (1997), ch. 13.

Certainly other factors affect it, such as the characteristics of each municipality and the mayor's personal characteristics. These other variables will be included in the model as control variables. Furthermore, it is assumed that ϵ_i has normal distribution with mean 0 and variance 1: $\epsilon_i \sim N[0, 1]$.

The CAND variable indicates whether the mayor was a candidate (CAND=1) or not (CAND=0). We can only estimate the reelection equation in the cases in which the mayor was a candidate (CAND_i = 1). And, in this subset of mayors-candidate, the distribution of the explanatory variables for the set of mayors who actually run for reelection (*i.e.*, those who were successful in the first step) is not equal to the one observed for the set of all mayors, for the decision of standing for reelection previously selected the mayors with better chances of being reelected.

3. THE VARIABLES

The dependent variable, as shown above, is REEL – a binary variable. The explanatory and control variables are explained below. Annex I summarizes them all.

3.1 PERFORMANCE

The main variables measure the mayor's fiscal performance during his/her first term. For this set of variables, there are data for 3,590 municipalities.

RFISC9897 compares the fiscal performances of 1998 and 1997. The year of 1998 (*i.e.*, the second year of the first term) represents the "mayor's actual fiscal intention" based on the following reasons: in 1997, the mayor managed a budget designed by the former administration, and also had to cope with expenses left by his/her antecessor. Only in 1998, the mayor had the opportunity to implement the fiscal policy he/she deems appropriate. In the last two years of his term (*i.e.*, 1999 and 2000), the fiscal decision might have been affected by the perspective of being

reelected. Therefore, a mayor who is more sure of his/her reelection will likely conduct a more austere fiscal policy in order to avoid problems during his/her second term. As for the mayor who does not expect to be reelected or plans to retire, he/she will likely be more lenient in allocating public resources. Consequently, the use of fiscal data for the last two years of the mayor's term implies an endogeneity risk: the chance of being reelected determining the fiscal behavior instead of the opposite.⁴

We also analyze the specific impacts of public revenues and expenses on the electoral outcome, always comparing 1998 to 1997. As for revenues, we use the variation rates of current revenues (RCOR9897), current transfers received (TCOR9897) and tax revenues (RTRIB9897). As for expenses, we use the variation rate of current expenses (DCOR9897). Total expense is not examined because its other component (*i.e.*, capital expenses) represents huge amount of public resources spent during short periods of time, generating temporary "expense bubbles". In *cross-section* analyses, such bubbles would distort the results.⁵

3.2 PERSONAL AND LOCAL CHARACTERISTICS

The estimations based on the performance variables need to be controlled for the specific characteristics of each municipality and each mayor. Accordingly, we use several control variables. In the first place, we control for the income and literacy levels through the Human Development Index (HDI) for the year 2000, constructed by the United Nations.

The characterization of the municipalities is also made by the percentage of the local population living in urban areas (URBAN), the ratio between the local population and the state population (PERCENTPOP), which reflects the relative

⁴ Meneguín and Bugarín (2001) analyses the reelection of Brazilian governors and shows that, in fact, those more likely to be reelected conducted more conservative fiscal policies by the end of their terms.

⁵ Annex II details the accounts that make up the budget of Brazilian municipalities.

importance of the municipality in the state, the population density (DENSITY) and the rate of population growth between 1991 and 2000 (GROWTHPOP).

REELMICRO, by its turn, points out the percentage of mayors that were candidates and reelected in municipalities belonging to the same micro region of the municipality in question. Its aim is to capture the influence of common factors that could be affecting all neighboring municipalities. A micro region facing an economic crisis would likely present a smaller rate of reelection, while another one, where there was a large investment by the federal government, would likely present higher ones.

We also use binary variables: CAPITAL indicates if the municipality is the capital of the state; METROPO points out if the municipality belongs to metropolitan areas (except capitals); N, NE, CW, S and SE show, respectively, if the municipality belongs to the Center-West, North, Northeast, South or Southeast region of the country. In all cases, the variables are equal to 1 if the municipality belongs to the corresponding category or to 0 otherwise.

In addition, a very important characteristic is whether the municipality is NEW. It is a binary variable. It assumes value 1 in the case of the municipalities that were created between 1993 and 1996, and had their first election for mayor in 1996. In 2000 the first mayor of a NEW municipality would be submitted to the reelection test. It is a common place that individuals that lead successful emancipationist movements start enjoying great political prestige, opening the doors for their candidature for the mayor office. Such prestige may be kept throughout the mandate and facilitate a new candidature and, ultimately, the reelection. In addition, a new municipality did not have debts or administrative problems inherited from previous administrations, received from the start transfers of federal and state revenues, and could benefit a great number of voters through the installation of the new town hall and of the new town council, and the provision of jobs, thence the expectation of a higher rate of reelection in new municipalities.

Contrasting with the variable NEW, the foundation of new municipalities may hamper the electoral chances of mayors whose municipalities lost

any district. For this reason, we use the binary variable DIVIDED. It assumes the value 1 if the municipality lost part of its territory through emancipation during the first term of the mayor elected in 1996 (in short, between 1997 and 2000).

As for personal characteristic of the mayor, the main one is his/her AGE at the moment of the election of 2000. We assume that very old mayors will probably retire. Furthermore, the voter themselves may have restrictions to his/her reelection.

The objective of the control variable STRENGTH96, by its turn, is to isolate the effect of the candidate's political strength. As recognized by the political economy literature, the candidates differ among themselves; each has his/her "ideological mark", his/her charisma. As a matter of fact, candidates are not perfect substitutes among themselves. The more emphatic candidates may capture more revenue without losing as much votes as less emphatic ones under the same circumstances. Consequently, the electoral result will no longer coincide with the median voter's preference (Persson and Tabellini, 2000). In other words, one may say that the politician's performance in office is only accounted for by those voters who do not have a previous preference for a particular candidate.

STRENGTH96 represents the mayor's electoral performance in the election of 1996 (*i.e.*, when he/she was elected for his/her first term). It is made up by the percentage of votes obtained by the mayor when he/she was elected, pondered by the number of adversaries. The adversaries who obtained less than 2% of the votes were excluded. This variable provides a measurement of the politician's personal prestige.

3.3 RESTRICTIONS FACED AND STRATEGIES TO OVERCOME THEM

Two relevant variables were omitted from the model owing to the nonexistence of information: campaign expenditures and the mayor's years of study.

We did not consider any measure of the costs incurred by the mayor-candidates and by their adversaries in our estimations. However, other variables

included in the model partially capture this effect. An increase in current expenses (DCOR) may improve the reelection chances of the incumbent mayor – a campaign cost funded by the public sector.

As for the mayor’s educational level, the higher it is, the easier it will be for him/her to find another job. Accordingly, it could affect his/her decision on staying or not in politics. On the other hand, better-educated mayors can avoid administrative mistake that could hinder their political careers. Therefore, the mayors’ education level has an ambiguous effect.

The mayor’s age at the end of the mandate is not available for 881 mayors. Including the age variable in the model would mean losing these observations. Then we opted for not explicitly including the age variable in the model, but excluding from the sample those mayors who were over 70 years old (134 cases).

Table 1 shows that, in fact, for the cases in which age is available, the candidature and the reelection are much less frequent when the incumbents are older than 70 years. Only 48% of the mayors belonging to this group ran for reelection, while 75% of the remaining mayors did the same. As for the election outcome, 15% of the older ones and 44% of the younger ones succeed.

**TABLE 1 – CANDIDATES WITH AVAILABLE DATA ABOUT AGE:
PERCENTAGE OF MAYORS WHO WERE CANDIDATES AND WHO
WERE REELECTED, BY AGE GROUP**

	CANDIDATE	REELECTED
Older than 70 Years	48%	15%
Up to 70 Years Old	75%	44%

Table 2 summarizes the descriptive statistics of all variables employed.

TABLE 2 – DESCRIPTIVE STATISTICS

VARIABLES	OBS.	AVERAGE	STANDARD DEVIATION	MINIMUM	MAXIMUM
REEL	5,360	0.395709	0.489048	0	1
CAND	5,360	0.678172	0.467221	0	1
CAPITAL	5,360	0.004851	0.069485	0	1
DCOR97	3,590	9369299	9.14E+07	316017.7	5.06E+09
DCOR98	3,590	1.17E+07	1.01E+08	270944.5	5.44E+09
DCOR9897	3,590	0.306455	0.20806	-0.5036197	2.694427
DENSITY	5,360	98.71576	528.5969	0.131609	12901.89
DIVIDED	5,360	0.013246	0.114338	0	1
GROWTHPOP	5,360	0.010633	0.022624	-0.07817	0.292721
GINI	5,360	.5599198	.0583835	.36	.82
HDI	5,360	0.701807	0.08253	0.4668039	0.919049
METROPO	5,360	0.078918	0.269636	0	1
CW	5,360	0.082276	0.274811	0	1
N	5,360	0.078731	0.269344	0	1
NE	5,360	0.3125	0.463556	0	1
S	5,360	0.216045	0.411584	0	1
SE	5,360	0.310448	0.46272	0	1
NEW	5,360	0.09291	0.290334	0	1
PERCENTPOP	5,360	0.004851	0.022197	2.15E-05	0.62857
RCOR97	3,590	1.01E+07	1.02E+08	686765.7	5.69E+09
RCOR98	3,590	1.26E+07	1.13E+08	564323.7	6.12E+09
RCOR9897	3,590	0.309089	0.210043	-0.3241642	1.393503
REELMICRO	5,360	0.395709	0.150181	0	1
RFISC97	3,590	704882.6	1.15E+07	-8.66E+07	6.27E+08
RFISC98	3,590	916129.7	1.24E+07	-6.49E+07	6.80E+08
RFISC9897	3,590	2.684024	22.30555	-266.4984	525.7004
RTRIB97	3,590	2552851	5.00E+07	13.74	2.90E+09
RTRIB98	3,590	2820940	5.25E+07	4	3.03E+09
RTRIB9897	3,590	0.419299	1.620802	-0.8923846	31.63066
STRENGTH96	5,360	178.4072	56.59404	92.50422	435.2473
URBAN	5,360	0.591696	0.23299	0	1

The mayors older than 70 years, who were elected for federal or state offices in the election of 1998 (3 cases) and, therefore, left the dispute for the

reelection, and who died during their mandates (21 cases) were excluded.⁶ After all these exclusions, 5,206 observations remained in the database. Table 3 contains a candidature and reelection matrix for the sub sample of 5,206 municipalities. It shows that 31.4% of all mayors did not run for reelection and also that 40.4% of them succeed.

TABLE 3 – MATRIX OF CANDIDATURE AND REELECTION^(*)

	NON-REELECTED	REELECTED	TOTAL
Non-Candidate	31.4%	–	31.4%
Candidate	28.2%	40.4%	68.6%
Total	59.6%	40.4%	100.0%

(*) Mayors older than 70 years were excluded whenever there were data about age.

At last, it is suitable to observe that unlike the U.S. literature, in which the analysis of the reelection process is usually made in terms of political parties (*i.e.*, Democratic *versus* Republican)⁷, in the Brazilian case the analysis needs to focus on the individual (*i.e.*, the mayor). The fluidity and mutability of the Brazilian party system do not allow parties with clearly contrasting propositions facing each other in successive elections.

Thence a restraint comes up: we cannot analyze the reelection effect during a long period of time, through a panel-data analysis. As the analysis has to focus on the politician and not on the party, and as an individual's reelection is only allowed once, it is not possible to build up a panel in order to observe the electoral performance of a politician along several elections: he/she will be present at most in two successive elections for mayor, generating only one observation.

⁶ Since the death reports were gathered through research in newspaper files, it is possible that a few deaths were missed.

⁷ As, for example, in Peltzman (1992).

Hence, we can only make a cross-section analysis, submitting the results to the economic-political conditions at the moment in which that *cross-section* has been observed (*i.e.*, “time-effect”). It is not possible to isolate the “fixed-effect” from the municipalities either, being necessary to use control variables that try to isolate, for analytical purpose, the specific characteristics of the municipalities and mayors.

4. ESTIMATIONS

Our sampling comprises 2,333 municipalities. These were the municipalities that fulfilled the basic requirements to be part of the present estimation:

- a) Their mayors were less than 70 years old;
- b) Their fiscal accounts were available to general public;
- c) Their mayors actually tried to be reelected in the election of 2000.

Since not all municipalities made their fiscal data available (even though it is required by the Fiscal Responsibility Law) and most of the non-reporting municipalities belong to the Center-West, North and Northeast regions, the final sampling is biased in favor of the coefficients of the municipalities belonging to the South and Southeast regions.⁸ We minimize this bias through the dummies for the Center-West, North and Northeast regions.

Table 4 shows the first set of results. Notice that models with binary dependent variables generate estimates of the coefficients of the independent variables that are non-linear. Therefore, their values do not represent the marginal impact of the explanatory variable on the explained one. As illustrated by the text books, the impact depends on the values of the other dependent variables. As a consequence, at the present stage, the statistical significance of the coefficient and its

⁸ 69% of the municipalities belonging to the North and 54% of those belonging to the Northeast did not made available their fiscal data. On the other hand, 8.6% of the municipalities belonging to the South and 40% of those belonging to the Southeast incurred in the same omission.

corresponding signal (positive or negative) are the main objective of our analysis. For each estimation, the table exhibits the coefficient of each independent variable. The values in small type, below each estimate, specify the probability that the coefficients are equal to zero according to a “*t*” test. The non-binary variables are used in logarithm, so that their marginal effects may be interpreted as elasticity. The coefficients of the binary variables indicate the probability change, in percentage points, whenever the variable changes from zero to one.

TABLE 4 – PRELIMINARY ESTIMATIONS

VARIABLES	FISCAL PERFORMANCE	TAX REVENUE	CURRENT EXPENSE	CURRENT TRANSFERS	CURRENT REVENUES
Constant	-3.5389 0.0690	-4.9506 0.0000	-5.2461 0.0000	-5.1544 0.0000	-5.1575 0.0000
N	0.7512 0.0180	0.7411 0.0200	0.8748 0.0070	0.7845 0.0140	0.7817 0.0140
NE	0.5624 0.0050	0.5390 0.0080	0.5727 0.0050	0.5294 0.0090	0.5205 0.0100
CW	0.5759 0.0150	0.5810 0.0140	0.6618 0.0060	0.5999 0.0120	0.5975 0.0120
S	0.2632 0.0560	0.2680 0.0510	0.2829 0.0410	0.2292 0.0980	0.2331 0.0920
<i>ln</i> ReelMicro	6.1687 0.0000	6.1594 0.0000	6.1193 0.0000	6.2015 0.0000	6.1932 0.0000
<i>ln</i> Density	0.1245 0.0190	0.1261 0.0180	0.1295 0.0150	0.1181 0.0270	0.1198 0.0240
<i>ln</i> GrowhtPop	0.5262 0.8360	0.3764 0.8830	-0.0784 0.9760	0.0803 0.9750	0.1261 0.9610
<i>ln</i> PercentPop	-0.1302 0.0120	-0.1293 0.0120	-0.1591 0.0030	-0.1475 0.0050	-0.1457 0.0050
<i>ln</i> Urban	-1.3361 0.0010	-1.2969 0.0020	-1.2034 0.0040	-1.2999 0.0020	-1.2757 0.0020
Metropo	-0.1971 0.2620	-0.2032 0.2470	-0.1832 0.2970	-0.1894 0.2820	-0.1911 0.2780
Capital	2.0723 0.0590	2.0774 0.0580	2.0602 0.0650	2.1090 0.0550	2.1412 0.0510
New	0.9520 0.0000	0.9238 0.0000	0.7775 0.0000	0.9238 0.0000	0.9195 0.0000
Divided	-0.0891 0.7920	-0.0872 0.7980	-0.0914 0.7860	-0.0931 0.7830	-0.0949 0.7790
<i>ln</i> Strength96	0.4763 0.0020	0.4749 0.0020	0.4527 0.0030	0.4768 0.0020	0.4770 0.0020
<i>ln</i> Gini	-0.5868 0.2440	-0.5733 0.2550	-0.5835 0.2470	-0.6216 0.2180	-0.6114 0.2250
<i>ln</i> HDI	1.5267 0.0590	1.5150 0.0610	1.9376 0.0180	1.7760 0.0290	1.7941 0.0280
<i>ln</i> RFisc9897	-0.2478 0.3890				
<i>ln</i> RTrib9897		0.1457 0.1200			
<i>ln</i> DCor9897			1.2120 0.0010		

VARIABLES	FISCAL PERFORMANCE	TAX REVENUE	CURRENT EXPENSE	CURRENT TRANSFERS	CURRENT REVENUES
<i>lnTCor9897</i>				0.6679 0.0250	
<i>lnRCor9897</i>					0.7352 0.0200
Wald Chi ² (17)	234.39	236.19	243.48	238.59	239.07
Prob. > Chi ²	0.0000	0.0000	0.0000	0.0000	0.0000
Pseudo R ²	0.0906	0.0913	0.0944	0.0921	0.0922

The estimation shows, as expected, that the chance of being reelected is positively affected by the amount of votes the incumbent mayor got in the previous election (STRENGTH96). The variable has a positive sign and it is significant at less than the 1% level.

Another highly significant variable is the dummy NEW, for municipalities created between 1993 and 1997. The mayors of these municipalities were reelected more easily than the others. It may be a result either of the mayor's popularity, increased by the emancipationist campaign, or of the lack of past liabilities. Furthermore, the local residents usually approve the creation of new municipalities only when it is associated with increased transfers of federal and state level revenues. Therefore, from the start, any new municipality can count on an amount of revenue bigger than the one received when it was a mere district. Overall, it is easier to manage new municipalities, instead of old ones.

On the other hand, the fact that the municipality had lost one or more districts through emancipation (DIVIDED) is statistically non-significant for the explanation of reelection success or non-success – *a priori*, it could be expected that losing a district could damage the popularity of the mayor and, as a consequence, reduce, his chance of being reelected.

Other variables used to control local characteristics ended up being statistically significant. Firstly, there is the positive influence of the municipalities belonging to the same micro region (REELMICRO): higher the proportion of mayors of a given micro region being reelected, higher the chance of being reelected for any mayor of this region. In other words, factors influencing the whole region generate externalities that affect the electoral outcome. As an example, a good (bad)

performance of the regional economy, unrelated to any direct policy implemented by the mayor, could be misinterpreted as such by the voters. Alternatively, an investment made by the federal or the state level government in one micro region could generate political dividends for all mayors of this region.

It should also be mentioned that a high HDI increases the chance of being reelected. The corresponding variable is positive and significant at less than the 10% level. Table 5 will show that, after suppressing the variable GINI, which proved to be statistically non-significant, HDI will become significant at less than the 2% level. Since HDI and the Gini coefficient should be correlated, the improvement that will be observed in the HDI significance is entirely predictable.⁹

The estimation also shows that the fiscal performance (RFISC) is statistically not different from zero. The same result is obtained when the considered variable is the tax revenue collected by the municipality on its own (RTRIB).

The result changes when we consider the current expenses (DCOR) as an explanatory variable. As a matter of fact, increasing expenses raises the probability of reelection. Possibly, this outcome is a consequence of the fiscal federalism model adopted by Brazil.¹⁰ The municipalities get most of their funding through transferences of federal and state level revenues. Their own tax revenues are of much lesser importance.

Several theoretical and empirical analyses show that this kind of revenue sharing disincentivizes the fiscal responsibility and the full accountability of public managers.¹¹ Either the voters cannot establish a clear relationship between taxes paid and public services provided (“fiscal illusion”) nor they have sufficient power to compel the local political class to manage prudently the public budget.

⁹ Annex III shows the correlation matrix of the variables considered.

¹⁰ For a description of the Brazilian model of fiscal federalism, see Afonso and Mello (2000).

¹¹ About the theoretical perspective, see Weingast, Shepsle and Johnsen (1981). For an empirical evaluation of the distortions provoked by intergovernmental transferences in the U.S., see Inman and Rubinfeld (1997). For an evaluation of the Brazilian case, see Mendes (2002), Cossio (2003) and Kee (2004).

Furthermore, since the tax revenues are mainly collected by the federal and state governments, to be later partially transferred to the municipalities, the rational behavior of the local voters and their representatives is to get as much revenue as possible for their municipalities. The mayors well evaluated by the voters tend to be those who successfully increase the capture of “outside” financial resources by the municipality. In this context, it is not the first best option for the mayor to control expenses or to reduce the fiscal deficit. The optimal strategy is to increase the local expenditures through increased transferences of federal and state level revenues.

This interpretation coincides with the results of the estimations for TCOR and RCOR. They both show that increased current transfers and increased availability of current revenues (*i.e.*, highly correlated variables) have significative impact on the mayors` chances of being reelected.

If such observations are correct, we can conclude, based on the estimations described above, that the fiscal federalism model adopted by Brazil promotes a continuing expansion of the public sector: the municipalities tend to be better off by increasing their public expenses and subsequently requesting new and higher transfers of federal and state level revenues. These entities, for their turn, are compelled to augment the tax burden in order to provide funding for the transferences.

Table 5 replicates Table 4 without the variables considered statistically non-significative. Except for the variables S and CAPITAL (significative at less than the 10% level), all other coefficients are highly significative (less than the 3% level). Notice that municipalities belonging to the Center-West and North, Northeast regions have an unambiguously higher chance of reelecting their mayor compared to the municipalities belonging to the Southeast one.

TABLE 5 – FINAL ESTIMATIONS

VARIABLES	CURRENT EXPENSE	CURRENT TRANSFERS	CURRENT REVENUES
Constant	-4.9828 0.0000	-4.8731 0.0000	-4.8797 0.0000
N	0.8940 0.0050	0.8065 0.0100	0.8038 0.0110
NE	0.6073 0.0030	0.5660 0.0050	0.5570 0.0060
CW	0.6670 0.0050	0.6067 0.0100	0.6038 0.0100
S	0.2908 0.0310	0.2371 0.0770	0.2400 0.0740
<i>ln</i> ReelMicro	6.0747 0.0000	6.1571 0.0000	6.1488 0.0000
<i>ln</i> Density	0.1284 0.0100	0.1178 0.0180	0.1190 0.0170
<i>ln</i> PercentPop	-0.1836 0.0000	-0.1727 0.0000	-0.1706 0.0000
<i>ln</i> Urban	-1.2014 0.0040	-1.2958 0.0020	-1.2709 0.0020
Capital	1.9539 0.0820	1.9910 0.0720	2.0228 0.0670
New	0.7711 0.0000	0.9203 0.0000	0.9165 0.0000
<i>ln</i> Strength96	0.4408 0.0040	0.4655 0.0030	0.4659 0.0030
<i>ln</i> HDI	2.0413 0.0110	1.8903 0.0180	1.9086 0.0170
<i>ln</i> DCor9897	1.2176 0.0010		
<i>ln</i> TCor9897		0.6626 0.0250	
<i>ln</i> RCor9897			0.7318 0.0200
Wald Chi ² (17)	241.27	236.26	236.83
Prob. > Chi ²	0.0000	0.0000	0.0000
Pseudo R ²	0.0937	0.0913	0.0914

Statistically speaking, since we can not compute the traditional R^2 coefficient for *probit* models, the statistical softwares provide the *pseudo R²*. In the present case, they are very low. It indicates that the models considered should be considered as a first approach to the problem. Other variables, probably from the political and administrative realms, should be evaluated in order to reach a more comprehensive model, capable of better explaining the variance of the available data. However, the test statistic distributed as χ^2 is analogous to the usual “*F*” test – a test against the null hypothesis that the slope coefficients are jointly equal to zero. At least in this test, the three models considered above are highly significant.

Therefore, we rest assured that the observed phenomena is at least partially explained by the set of variables selected.

Table 6 shows the marginal effects of the explanatory variables that proved to be significant for the current transfer model (the two other are similar). The estimation of the marginal effects, for each variable, is made based on the sampling average of the other variables.

TABLE 6 – MARGINAL EFFECTS

VARIABLES	CURRENT TRANSFERS
N	0.172856
NE	0.130746
CW	0.135266
S	0.056209
<i>lnReelMicro</i>	1.478167
<i>lnDensity</i>	0.028271
<i>lnPercentPop</i>	-0.04147
<i>lnUrban</i>	-0.31108
Capital	0.31849
New	0.196522
<i>lnStrength96</i>	0.111762
<i>lnHDI</i>	0.453806
<i>lnTCor9897</i>	0.159071

It is interesting to observe that, unlike the results summarized above on the fiscal variables, Peltzman (1992) shows that in the U.S. presidential, senatorial and state level elections the voters tend to punish the public managers who expand public expenses. It deserves to be mentioned that intergovernmental transfers there are of lesser importance. Therefore, the Governor who augments public expenditure has to charge accordingly his/her voters through new or higher taxes or increased indebtedness, to be paid by futures generations. In the Brazilian case, however, any

additional expense can be funded by through increases transfers of federal and state level revenues. Therefore, the local voters do not carry the full burden of the expenditure decisions of their representatives.

CONCLUSIONS

This article analyzed the relationship between fiscal performance and reelection chances of Brazilian mayors. The present approach allows an empirical evaluation of the theoretical arguments about how effective is the electoral process in selecting the best public managers.

Tentatively, the main conclusion is that the mayor's reelection chance is correlated with the expansion of public expending. This relationship can be seen, mainly, through two variables: current expenses (DCOR), current transfers (TCOR), and current revenues (RCOR). According to these variables, higher the expending capability of the local government, the easier the reelection of the incumbent mayor will be. Furthermore, the new municipalities (NEW), free of debt or other accumulated liabilities, with access to revenues transferred by the federal and state governments from their very beginning, and, as a consequence, with plenty fiscal space to build up the local bureaucracy, had higher than average chances of seeing their mayors reelected.

We also observed that the Center-West, North and Northeast regions differs from the Southeast region. Being poorer and, as a consequence, more susceptible to political manipulation through the allocation of public resources, the first regions are more prone to reelect their mayors than the last ones.

As already mentioned, the relationship between fiscal performance and reelection chance of incumbent mayors can be a consequence of the kind of fiscal federalism adopted by Brazil. In summary, public revenues are spent locally but mainly collected nationally or at the state level. Therefore, public resources are allocated asymmetrically: the local communities, specially the smallest ones, face

only a small portion of the burden of their expending decisions, generating a bias in favor of higher expenses.

The critic presented above refers to a period prior to the approval of Fiscal Responsibility Law (LRF).¹² It established ceilings for several expenditures of state and municipal governments. Hopefully, the bias in favor of higher expenses among Brazilian municipalities was dramatically diminished by this institutional change.

It deserves to be mentioned that, according to the LRF, the institution and effective taxation of all duties allowed by the Federal Constitution to each level of government (*i.e.*, the Union, states and municipalities) are essential for a fiscally responsible management of public assets. Furthermore, the LRF forbids voluntary transfers of revenues from one level of government to another whenever those duties are not properly collected.¹³ It shows that federal policy makers are aware of the risks of the Brazilian model of fiscal federalism. Therefore, they have been trying to make public managers more cost conscious, since at least a percentage of their expending decisions would weight on their constituencies. It is a trend that should be pursued more forcefully, even though it remains an open question how to enforce politically this kind of legal provision.

At the same time, however, it is a source of concern that the same federal policy makers are trying to centralize even more the Brazilian tax system. The Proposed Constitutional Amendment (PEC) n. 255, of 2004, for instance, unifies the rules applicable to Tax on the Circulation of Goods and Services (ICMS).¹⁴ If approved by the Congress, the states and, in consequence, the municipalities would have to rely on transfers from the federal government to cope with their particular circumstances. In a federation, the autonomy to spend should be accompanied no

¹² Complementary Law n. 101, of 2001.

¹³ Article n. 11.

¹⁴ There would be only five tax brackets, established by the Senate of Brazil. The set of goods and services affected by each tax bracket would have to be agreed upon by a supermajority of all states.

only by the obligation to tax, as discussed before, but also by the prerogative to calibrate its tax system to peculiarities of the local economy.

ANNEX I

VARIABLE DESCRIPTION

ABBREVIATION	VARIABLE	DESCRIPTION	TYPE
AGE	Age in 2000	Age of the incumbent mayor in 2000.	Number
CAND00	Candidate to reelection	It shows if the mayor elected in 1996 was a candidate in 2000.	Dummy
CAPITAL	CAPITAL	It shows if the municipality is the capital of the state.	Dummy
DCOR9897	Variation of current expenses in the period 1998/1997	Variation rate of current expenses between 1998 and 1997: $DCOR98/DCOR97$.	Number
DENSITY	Demographic density	Population in 2000 divided by the geographic area of the municipality: $habitant/km^2$.	Number
DIVIDED	Divided municipality	It shows if the municipality lost any district through emancipation during the first term of the mayor elected in 1996. In other words, it concerns the emancipations that happened between 1997 and 2000.	Dummy
GINI	Index of Income Concentration in 2000	-	Number
GROWTHPOP	Population growth rate in the period 1991/2000	-	Number
HDI	Human Development Index in 2000	-	Number
METROPO	Metropolitan	It shows if the municipality belongs to the metropolitan area.	Dummy
N, NE, CW, S, SE	Geographic region	It shows if the municipality belongs to the North (N), Northeast (NE), Center-West (CW), South (S) or Southeast (SE) regions.	Name
NEW	Newly created municipality	It shows if in the election of the year 1996 the municipality was newly created, in other words, created between 1993 and 1996.	Dummy
PERCENTPOP	Percentage represented by the local population in the state population	Population of the municipality divided by the population of the state.	Number
RCOR9897	Variation of current revenues in the period 1998/1997	Variation rate of current revenues between 1998 and 1997: $RCOR98/RCOR97$.	Number
REELECTED	Incumbent reelected	It shows if the mayor elected in 1996 was reelected in 2000.	Dummy
REELMICRO	Proportion of well succeeded candidatures to reelection in the micro region	Percentage of the incumbent mayors reelected in the micro region the relevant municipality belongs to. It measures the neighborhood effect in the electoral process: the success of one incumbent mayor may be correlated with similar success nearby.	Number
RFISC9897	Variation of the fiscal performance in the period 1998/1997	Variation rate of the fiscal performance between 1998 and 1997, divided by absolute value of the 1997 fiscal performance: $(RFISC98-RFISC97)/ABS(RFISC97)$.	Number

ABBREVIATION	VARIABLE	DESCRIPTION	TYPE
RTRIB9897	Variation of tax revenues in the period 1998/1997	Variation rate of tax revenues between 1998 and 1997: $RTRIB98/RTRIB97$.	Number
STRENGTH96	Electoral strength in 1996	Index formed by the multiplication of the percentage of the votes of each candidate in the election of the year 1996 by the total number of candidates. For weighting purposes, the candidates with less than 2% of the votes were not considered. Those elected in the 2 nd round had their electoral strength measured by doubling the percentage of the votes obtained in 2 nd round, since the data concerning the 1 st round are not available.	Number
TCOR9897	Variation of current transfers received in the period 1998/1997	Variation rate of current transfers received between 1998 and 1997: $TCOR98/TCOR97$.	Number
URBAN	Degree of urbanization in 2000	Percentage of the population living in urban areas.	Number

ANNEX II

CODES OF MUNICIPAL REVENUES AND EXPENSES

CODES	DESCRIPTION
1	REVENUES = (2+45)
2	CURRENT REVENUES = (3+12+16+19+...+22+42)
3	Tax Revenues = (4+8+11)
4	Taxes = (5+6+7)
5	Tax on Urban Real States - IPTU
6	Tax on Services - ISS
7	Tax on Transfers of Property - ITBI
8	Fees = (9+10)
9	Power of Police
10	Provision of Services
11	Contributions for Betterment
12	Revenues from Contributions = (13+14+15)
13	Contributions from Civil Servants for Social Security
14	Financial Compensations Required by Paragraph 9 of Art. 201 of the Federal Constitution (FC)
15	Other Revenues from Contributions
16	Patrimonial Revenues = (17+18)
17	Financial Revenues
18	Others
19	Industrial Revenues
20	Revenues from Agriculture and Livestock
21	Service Revenues
22	Current Transfers = (23+33+41)
23	Intergovernmental Transfers - from the Union = (24+...+32)
24	Quota of the Fund for Sharing Revenue with Municipalities - FPM
25	Income Tax Directly Collected from the Payroll (Art. 158, I, FC) - IRRF
26	Quota of the Tax on Rural Real State - ITR
27	Quota of the Tax on Financial Transactions Concerning Gold - IOF Ouro
28	Financial Transfers - Complementary Law n. 87, of 1996
29	Quota of the Contribution for the Education Wage
30	Transfers to the Fund for the Development of Education - FUNDEF
31	Transfers to the Unified System of Health - SUS
32	Other Transfers from the Union
33	Intergovernmental Transfers - from the State = (34+...+40)
34	Quota of the Tax on the Circulation of Goods and Services - ICMS
35	Quota of the Tax on the Property of Vehicles - IPVA
36	Quota of the Tax on Industrial Goods Exported - IPI - Export
37	Quota of the Contribution for the Education Wage
38	Transfers to the Fund for the Development of Education - FUNDEF
39	Transfers to the Unified System of Health- SUS
40	Other Transfers from the State
41	Other Current Transfers
42	Other Current Revenues = (43+44)
43	Revenues from Active Debt
44	Others
45	CAPITAL REVENUES = (46+47+48+52)
46	Operations of Credit
47	Property Transfers
48	Transfers of Capital = (49+50+51)
49	Transfers from the Union
50	Transfers from the State
51	Other Transfers of Capital
52	Other Capital Revenues
53	EXPENSES = (54+74)
54	CURRENT EXPENSES = (55+64+73)
55	Maintenance Expenses = (56+62+63)
56	Expenses with Personnel = (57+58+59)

CODES	DESCRIPTION
57	Actives
58	Employer's Obligations
59	Other Expenses with Personnel = (60+61)
60	Subcontracting of Personnel
61	Others
62	Services Provided by Subcontractors/Obligations
63	Other Maintenance Expenses
64	Current Transfers = (65+70+71+72)
65	Transfers to Personnel = (66+...+69)
66	Retired
67	Dependents
68	Family Wage
69	Other Transfers to Personnel
70	Contributions for the Program for the Establishment of Assets for Civil Servants - PASEP
71	Interests and Obligations on Debt
72	Other Current Transfers
73	Other Current Expenses
74	CAPITAL EXPENSES = (75+76+77)
75	Investments
76	Financial Inversions
77	Transfers of Capital = (78+79)
78	Amortizations
79	Other Transfers of Capital
80	SURPLUS/DEFICIT = (1-53)

ANNEX III

CORRELATION MATRIX – CURRENT EXPENSE

	<i>lnDCor9897</i>	N	NE	CW	S	<i>lnReelMicro</i>	<i>lnDensity</i>	<i>lnGrowhtPop</i>	<i>lnPercentPop</i>	<i>lnUrban</i>	Metropo	Capital	New	Divided	<i>lnStrength96</i>	<i>lnGini</i>	<i>lnHDI</i>	Constant	
<i>lnDCor9897</i>	1																		
N	0.1102	1																	
NE	0.0267	0.4399	1																
CW	0.1336	0.4657	0.3015	1															
S	0.0651	0.2880	0.2336	0.3637	1														
<i>lnReelMicro</i>	-0.0238	0.0122	-0.1766	-0.0022	-0.0826	1													
<i>lnDensity</i>	0.0508	0.4478	0.0112	0.5107	0.1749	0.0378	1												
<i>lnGrowhtPop</i>	-0.0819	-0.1573	-0.068	-0.0417	0.1477	-0.0294	0.0029	1											
<i>lnPercentPop</i>	-0.1716	-0.5590	-0.4007	-0.4961	-0.3904	-0.0428	-0.4409	-0.0811	1										
<i>lnUrban</i>	0.1184	0.0391	0.0242	-0.0225	0.3130	-0.0776	-0.1891	-0.1302	-0.1477	1									
Metropo	0.0453	0.0211	0.0919	-0.0511	-0.0900	-0.0726	-0.2483	-0.2278	-0.0938	0.0301	1								
Capital	0.0461	0.0233	0.0854	0.0622	0.0969	-0.0648	-0.0354	0.0143	-0.1441	0.0231	-0.0279	1							
New	-0.2603	0.0246	0.0789	-0.0111	-0.0646	0.0344	-0.0471	-0.1312	0.1273	0.0875	0.0018	-0.0280	1						
Divided	0.0088	0.0078	-0.0213	-0.0542	-0.0746	-0.0364	-0.0208	-0.0131	-0.0502	0.0447	0.0827	0.0178	0.0163	1					
<i>lnStrength96</i>	-0.0237	0.1515	0.1432	0.1745	0.2721	0.0433	-0.0299	-0.0843	-0.1907	-0.0484	-0.0327	0.1614	0.0605	0.0185	1				
<i>lnGini</i>	0.0027	0.0953	0.1084	0.1165	0.1437	-0.0217	0.231	-0.0013	-0.3559	0.0402	0.1075	-0.0053	0.0247	0.0169	0.0071	1			
<i>lnHDI</i>	0.1088	0.1970	0.6092	0.0308	-0.2465	0.1128	-0.1198	-0.1407	-0.0441	-0.3617	0.0191	-0.0065	0.1158	-0.0732	0.0826	0.1206	1		
Constant	-0.1235	-0.3541	-0.0944	-0.3844	-0.4829	-0.1574	-0.2422	0.0164	0.5238	-0.2533	0.0595	-0.1706	0.0309	-0.0464	-0.7847	0.1305	0.2512	1	

CORRELATION MATRIX – FISCAL PERFORMANCE

	<i>lnRFisc9897</i>	N	NE	CW	S	<i>lnReelMicro</i>	<i>lnDensity</i>	<i>lnGrowhtPop</i>	<i>lnPercentPop</i>	<i>lnUrban</i>	Metropo	Capital	New	Divided	<i>lnStrength96</i>	<i>lnGini</i>	<i>lnHDI</i>	Constant	
<i>lnRFisc9897</i>	1																		
N	-0.0068	1																	
NE	-0.0339	0.4424	1																
CW	-0.0123	0.4531	0.2978	1															
S	-0.0383	0.2784	0.2326	0.3555	1														
<i>lnReelMicro</i>	0.0099	0.0146	-0.1685	-0.0017	-0.0861	1													
<i>lnDensity</i>	-0.0176	0.4440	0.0141	0.5035	0.1705	0.0399	1												
<i>lnGrowhtPop</i>	-0.0047	-0.1520	-0.0614	-0.0319	0.1518	-0.0252	0.0087	1											
<i>lnPercentPop</i>	-0.0118	-0.5452	-0.3988	-0.4808	-0.3768	-0.0483	-0.4424	-0.1013	1										
<i>lnUrban</i>	-0.0226	0.0217	0.0283	-0.0403	0.306	-0.0781	-0.2010	-0.1197	-0.1236	1									
Metropo	-0.0134	0.0138	0.0890	-0.0589	-0.0963	-0.0765	-0.2557	-0.2276	-0.0842	0.0225	1								
Capital	0.0018	0.0130	0.0794	0.0536	0.0825	-0.0572	-0.0389	0.0167	-0.1329	0.0165	-0.0348	1							
New	-0.0238	0.0663	0.0966	0.0219	-0.0339	0.0327	-0.0382	-0.1598	0.0871	0.1218	0.0088	-0.0157	1						
Divided	-0.0008	0.0069	-0.0228	-0.0545	-0.0776	-0.0337	-0.0214	-0.0177	-0.0491	0.0449	0.0860	0.0177	0.0185	1					
<i>lnStrength96</i>	0.0274	0.1517	0.1333	0.1723	0.2704	0.0411	-0.0340	-0.0924	-0.1917	-0.0449	-0.0268	0.1553	0.0587	0.0223	1				
<i>lnGini</i>	-0.0199	0.0897	0.1114	0.1175	0.1434	-0.0238	0.2356	0.0038	-0.3648	0.0361	0.1048	-0.0075	0.0231	0.0171	0.0095	1			
<i>lnHDI</i>	0.0112	0.1927	0.6114	0.0141	-0.2525	0.1226	-0.1229	-0.1296	-0.0274	-0.3725	0.0144	-0.0114	0.1518	-0.0755	0.0830	0.1236	1		
Constant	-0.8371	-0.1808	-0.0188	-0.1908	-0.2271	-0.0956	-0.1129	0.0095	0.2878	-0.1120	0.0466	-0.0891	0.0174	-0.0261	-0.4575	0.0880	0.1371	1	

CORRELATION MATRIX – TAX REVENUE

	<i>lnRTrib9897</i>	N	NE	CW	S	<i>lnReelMicro</i>	<i>lnDensity</i>	<i>lnGrowhtPop</i>	<i>lnPercentPop</i>	<i>lnUrban</i>	Metropo	Capital	New	Divided	<i>lnStrength96</i>	<i>lnGini</i>	<i>lnHDI</i>	Constant	
<i>lnRTrib9897</i>	1																		
N	0.0106	1																	
NE	-0.0393	0.44	1																
CW	0.0285	0.4498	0.2952	1															
S	0.029	0.2767	0.229	0.3539	1														
<i>lnReelMicro</i>	-0.006	0.0163	-0.1682	-0.0011	-0.0853	1													
<i>lnDensity</i>	0.014	0.4422	0.0144	0.5011	0.1702	0.0399	1												
<i>lnGrowhtPop</i>	-0.0425	-0.1564	-0.0579	-0.036	0.1501	-0.0253	0.0073	1											
<i>lnPercentPop</i>	-0.0099	-0.5433	-0.3994	-0.4798	-0.3775	-0.0495	-0.4447	-0.0992	1										
<i>lnUrban</i>	0.0563	0.0251	0.0241	-0.0396	0.3076	-0.0763	-0.201	-0.1207	-0.1239	1									
Metropo	0.0031	0.0137	0.0868	-0.0595	-0.097	-0.0755	-0.2559	-0.2291	-0.0824	0.021	1								
Capital	-0.0019	0.0118	0.0784	0.0535	0.0825	-0.057	-0.0392	0.0169	-0.1323	0.0166	-0.0351	1							
New	-0.0929	0.0685	0.1004	0.0181	-0.0376	0.0309	-0.04	-0.1548	0.0883	0.115	0.0074	-0.0156	1						
Divided	0.018	0.0066	-0.0239	-0.0526	-0.0769	-0.0323	-0.0214	-0.0186	-0.0488	0.0448	0.0855	0.0177	0.0167	1					
<i>lnStrength96</i>	0.0001	0.1499	0.129	0.1734	0.2693	0.0426	-0.0324	-0.0947	-0.1887	-0.0451	-0.0269	0.1557	0.0586	0.0225	1				
<i>lnGini</i>	0.0132	0.0895	0.11	0.1189	0.1433	-0.0245	0.2412	-0.0003	-0.3651	0.0317	0.1021	-0.0084	0.0195	0.0177	0.0081	1			
<i>lnHDI</i>	0.011	0.1924	0.6119	0.0156	-0.2531	0.1217	-0.1195	-0.1294	-0.0277	-0.3717	0.0144	-0.0129	0.1508	-0.0752	0.0782	0.1243	1		
Constant	-0.0227	-0.3392	-0.0811	-0.3667	-0.4729	-0.162	-0.2327	0.0125	0.5062	-0.2414	0.0653	-0.1604	-0.0017	-0.049	-0.7941	0.1319	0.2709	1	

CORRELATION MATRIX – CURRENT TRANSFERS

	<i>lnTCor9897</i>	N	NE	CW	S	<i>lnReelMicro</i>	<i>lnDensity</i>	<i>lnGrowhtPop</i>	<i>lnPercentPop</i>	<i>lnUrban</i>	Metropo	Capital	New	Divided	<i>lnStrength96</i>	<i>lnGini</i>	<i>lnHDI</i>	Constant	
<i>lnTCor9897</i>	1																		
N	0.0651	1																	
NE	-0.0516	0.4357	1																
CW	0.0807	0.458	0.2921	1															
S	-0.0959	0.2703	0.2354	0.3456	1														
<i>lnReelMicro</i>	0.0241	0.0172	-0.1729	-0.0013	-0.085	1													
<i>lnDensity</i>	-0.0377	0.4401	0.0104	0.5024	0.1739	0.0376	1												
<i>lnGrowhtPop</i>	-0.1263	-0.1575	-0.0553	-0.0407	0.1629	-0.0339	0.0147	1											
<i>lnPercentPop</i>	-0.1613	-0.5493	-0.387	-0.486	-0.3599	-0.0519	-0.4248	-0.0772	1										
<i>lnUrban</i>	0.0595	0.0219	0.0206	-0.0373	0.2961	-0.0732	-0.203	-0.1288	-0.1328	1									
Metropo	0.0521	0.0185	0.0829	-0.0515	-0.099	-0.0685	-0.2525	-0.23	-0.0942	0.0257	1								
Capital	0.0351	0.0144	0.0765	0.0568	0.0884	-0.0604	-0.041	0.0143	-0.1398	0.0201	-0.0304	1							
New	-0.0154	0.0638	0.0938	0.0271	-0.0402	0.0293	-0.0344	-0.1589	0.0876	0.122	0.0139	-0.0189	1						
Divided	0.0011	0.0093	-0.022	-0.0523	-0.0751	-0.0341	-0.0181	-0.021	-0.0503	0.0451	0.0827	0.0176	0.0197	1					
<i>lnStrength96</i>	0.0154	0.1554	0.1362	0.1763	0.2694	0.0419	-0.0316	-0.0941	-0.1954	-0.0426	-0.029	0.1619	0.0589	0.0222	1				
<i>lnGini</i>	-0.0308	0.0908	0.1112	0.114	0.1493	-0.025	0.2316	0.0094	-0.3542	0.0353	0.1069	-0.0088	0.0231	0.0162	0.0073	1			
<i>lnHDI</i>	0.141	0.1986	0.5954	0.0241	-0.2643	0.1223	-0.1306	-0.1451	-0.0484	-0.3642	0.0199	-0.0106	0.1441	-0.0753	0.0843	0.1149	1		
Constant	-0.1145	-0.3462	-0.0814	-0.3752	-0.458	-0.1629	-0.2285	0.0272	0.5186	-0.2454	0.0584	-0.1692	-0.0044	-0.05	-0.7923	0.1337	0.2469	1	

CORRELATION MATRIX – CURRENT REVENUES

	<i>lnRCor9897</i>	N	NE	CW	S	<i>lnReelMicro</i>	<i>lnDensity</i>	<i>lnGrowhtPop</i>	<i>lnPercentPop</i>	<i>lnUrban</i>	Metropo	Capital	New	Divided	<i>lnStrength96</i>	<i>lnGini</i>	<i>lnHDI</i>	Constant	
<i>lnRCor9897</i>	1																		
N	0.0561	1																	
NE	-0.0686	0.4345	1																
CW	0.0668	0.4567	0.2917	1															
S	-0.0858	0.2716	0.2355	0.3478	1														
<i>lnReelMicro</i>	0.0167	0.0162	-0.1731	-0.0016	-0.0839	1													
<i>lnDensity</i>	-0.029	0.4412	0.0112	0.5032	0.1722	0.0377	1												
<i>lnGrowhtPop</i>	-0.119	-0.1562	-0.0534	-0.0404	0.1598	-0.0328	0.0117	1											
<i>lnPercentPop</i>	-0.1396	-0.5488	-0.3869	-0.4849	-0.3641	-0.0499	-0.4289	-0.0802	1										
<i>lnUrban</i>	0.0807	0.0229	0.0176	-0.036	0.2957	-0.0727	-0.2022	-0.1311	-0.1351	1									
Metropo	0.0466	0.0177	0.0818	-0.0528	-0.0992	-0.0698	-0.2522	-0.2307	-0.0919	0.0253	1								
Capital	0.0352	0.0155	0.0762	0.0568	0.0863	-0.0598	-0.0399	0.0135	-0.1394	0.0207	-0.0314	1							
New	-0.0269	0.0629	0.0951	0.0256	-0.0363	0.0284	-0.0343	-0.1548	0.088	0.1233	0.0115	-0.0183	1						
Divided	-0.0002	0.0089	-0.0223	-0.0528	-0.0752	-0.0337	-0.0179	-0.0198	-0.05	0.0447	0.0832	0.0177	0.0194	1					
<i>lnStrength96</i>	0.0122	0.1543	0.1353	0.1758	0.2697	0.0425	-0.0322	-0.0927	-0.1948	-0.0415	-0.0291	0.161	0.0593	0.022	1				
<i>lnGini</i>	-0.0246	0.0928	0.1125	0.1157	0.1482	-0.0258	0.2321	0.0061	-0.3569	0.0344	0.1054	-0.0083	0.0248	0.0164	0.0077	1			
<i>lnHDI</i>	0.1469	0.1973	0.592	0.023	-0.2636	0.1207	-0.1285	-0.1441	-0.0467	-0.3601	0.019	-0.0094	0.1415	-0.0756	0.0837	0.1165	1		
Constant	-0.1078	-0.3443	-0.0787	-0.3734	-0.4602	-0.163	-0.2291	0.0251	0.5169	-0.2487	0.0593	-0.1682	-0.0041	-0.0496	-0.7922	0.1332	0.2478	1	

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