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Decentralization: Panacea or Pandora's Box? Fiscal Perversity in Mexico*

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Abstract

Advocacy for decentralization has grown in Mexico at a rapid pace during the last decade. The gains of decentralization, however, are rather unclear and many times the assumptions and the outcomes of the process depart from the standard theory of fiscal federalism. There are serious drawbacks that should be considered before fully endorsing any decentralization program. As decentralization has progressed in Mexico, for instance, it has become evident that most of Mexican states have incurred in large fiscal deficits, majorly due to excessive overspending. This paper explains the reasons why such a trend has been observed in recent years based on a simultaneous equation model of state revenues and expenditures. The results suggest that increases in fiscal deficits are significantly associated with more intense political competition at the subnational sphere, the stage of the political business cycle, and fiscal perversity caused by political decentralization. This implies that regions expect to be bailed out by the federal government in case of financial trouble and thus do not have an incentive to observe fiscal discipline.

Keywords*: decentralization, fiscal perversity, Mexico.*

Resumen

El impulso al proceso de descentralización en México se intensificó rápidamente durante la última década. Sin embargo, los beneficios de la descentralización son inciertos, y en numerosas ocasiones los supuestos y resultados del proceso departen de la teoría tradicional del federalismo fiscal.

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Los procesos de descentralización presentan serias limitaciones que deben ser tomadas en cuenta antes de apoyar políticas que los favorezcan. Por ejemplo, mientras que la descentralización se consolidaba en México, era evidente que la mayoría de las entidades federativas incurrían en mayores déficit fiscales, principalmente ocasionado por un excesivo gasto público. Con base en un modelo de ecuaciones simultáneas para el ingreso y gasto de las entidades federativas, este trabajo explica las razones por las cuales esta tendencia ha sido observada en años recientes. Los resultados sugieren que mayores déficit fiscales están estadísticamente asociados con mayor competencia política en la esfera subnacional, la fase del ciclo político de negocios, y la perversidad fiscal ocasionada por la descentralización política. Esto implica que las regiones esperan ser rescatadas por el gobierno federal en caso de encontrarse en problemas financieros y, por tanto, no tienen incentivos para observar disciplina fiscal.

Palabras clave*: descentralización, perversidad fiscal, México.*
Clasificación JEL*: H72, H77, R51.*

Introduction

Advocacy for decentralization has grown throughout the world in the last decade. Public policies and institutional political processes worldwide have been biased by multilateral organizations, among them the World Bank and the International Monetary Fund, which tend to support decentralization processes with uncharacteristically strong and enthusiastic propaganda. Even though it is well documented that centralization, done badly, is the source of economic and social problems, the argument that intergovernmental agencies have always attempted to demolish the proposition for centralization is also valid; probably because it is considered a main source of corruption and inefficiency (World Bank, 2000).

It is often claimed, and rightly so, that centralization is embedded with difficulties, both in nature and implementation. Conversely, decentralization appears as an advantageous scheme due to the more efficient provision of services and its contribution to strengthening democracies (Tiebout, 1956). In theory, decentralization, properly designed and implemented, certainly has an enormous potential to improve the efficiency of the public sector bureaucratic apparatus. Yet, in practice, the gains of decentralization are rather unclear and many times the assumptions and the outcomes of the process depart from the standard theory of fiscal federalism. Just like centralization is not a flawless process, there are serious drawbacks that should be considered before fully endorsing any decentralization program.

Full or "pure" decentralization has proved to be a theoretical panacea in the fiscal federalism theory (Tiebout, 1956). In its design stage, and usually in practice, nonetheless, decentralization lacks the clarity, transparency, stability and well-defined rules of the game that are paramount for its success (Prud'homme, 1995; Dabla-Norris, 2006). Mexico's record, it will be evidenced, is a noticeable testimony that decentralization has failed to become the vivid panacea for public finance that Tiebout envisioned; rather, it is the opened Pandora's box that unchained the evils of fiscal perversity of subnational governance.

The conception of this paper emerges from the large fiscal deficits of the Mexican states, majorly due to excessive public spending. It determines how increasing political competition at the subnational sphere has affected the fiscal behavior of states and municipalities alike. My purpose here is not to characterize an ideal society, but rather to investigate how society is. Thus, the normative study of the assignment of responsibilities between the federal, state and local governments is beyond the scope of the present analysis. In this particular case, institutions should be regarded as given and hence the analysis should focus on their effect on the stats' fiscal balances.

For one to comprehend the fiscal behavior of the Mexican states, it is essential to acknowledge that their fiscal balances are heterogeneous, that is, fiscal deficits differ in magnitude amongst states. Based on the methodology of Velázquez (2002), and in order to analyze the specific political and economic factors that influence state fiscal behavior in Mexico, a simultaneous equation model of state revenues and expenditures using data from 1989 to 2005 will be estimated. It is not uncommon to find in the public policy and fiscal literatures numerous attempts to determine the sources of revenues, expenditures and fiscal crises. Research, however, has failed to investigate the subnational component, particularly the role that politics plays in the fiscal behavior of states and municipalities (Calsamiglia, X. et al., 2004).

Two relevant reasons become apparent for the study of fiscal behavior at the local and state levels: first, Mexico is under an ongoing decentralization process (World Bank, 2000), and second, state fiscal deficits exert pressure on the federal government (Prud'homme, 1995). In the last two decades, decentralization in Mexico may be characterized as a process beginning in the earlier 1990s with the implementation of Solidaridad's Municipal Funds for local project developments, under the administration of Carlos Salinas De Gortari. The consolidation stage of Mexican decentralization efforts, however, took place under the "New Federalism" agenda of Ernesto Zedillo, which aimed to increase the amount of federal revenue allocated to state governments, reform the health sector to give states new responsibilities in terms of medical services, continue the Solidaridad Municipal Funds (now

known as Municipal Social Development Funds), and give municipalities resources for the creation of social infrastructure, education, and health after the creation of a new law for fiscal coordination in 1997, which created the well-known Category 33 of the national budget[2]. In 2000, the regulatory role and policymaking autonomy of the local governments was strengthened after an amendment of the Article 115 of the Constitution. The Fox administration continued to support decentralization, and implemented his so-called Program for Authentic Federalism, aiming to improve intergovernmental relations and increase transfers to local governments, given the commencement of a true political liberalization process (Grindle, 2007).

A typical phenomenon observed mainly in less developed federative systems is the unbalance between revenue and expenditures of the subnational governments. Needless to say, in the long term, such imbalances may generate fiscally troublesome adjustments and affect national macroeconomic stability (Dabla-Norris, 2006). Prud'homme (1995) provides a good illustration of the effects of large state deficits in Argentina, Brazil and former Yugoslavia. Mexico is not immune to large state fiscal deficits, yet it should be acknowledged that, at least for now, state fiscal deficits in Mexico do not threat the national macroeconomic management because their share in the portfolio of the financial system is still relatively small (Giugale, Hernández Trillo, and Oliveira, 2000).

The 1980s were a period of fiscal stability (World Bank, 2000). Yet, from 1989, state fiscal deficits rose significantly. A few years later, the crisis of 1994-1996 further increased them. In fact, from 1989 to 1996, per capita state fiscal deficits (in 2002 Mexican pesos) grew in average 10,195 percent. This can be translated into an annual rate of 66 percent.

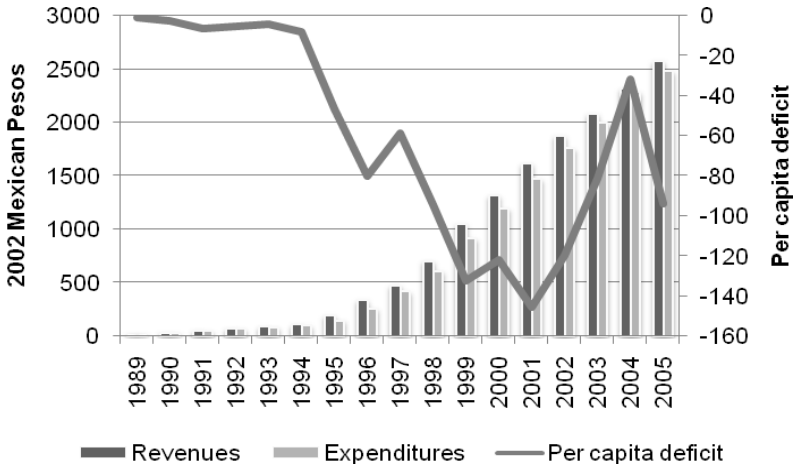
This paper is organized as follows: first, a succinct descriptive fiscal analysis of the Mexican states is presented. From this analysis, two important conclusions can be drawn: on the one hand, the last decade has been one of large increases in state fiscal deficits; on the other hand, Mexican states have proven to show divergent fiscal trends. The second section reviews the current literature on fiscal imbalances. In the third section, an empirical model of fiscal behavior of the Mexican states will be constructed, based on political-economy determinants of fiscal behavior at the subnational level. The last section concludes.

[2] Through the Category 33 (Ramo 33) mechanism, the federal government committed to allocating significantly more resources to the local governments.

1. Fiscal Deficits in the Mexican States: an Increasing Trend

Starting in the earlier 1990s, Mexican states experienced large fiscal deficits after a period of relative stability (World Bank, 2000; Velázquez, 2002). Furthermore, the Mexican states reached in 2001 their worse financial situation to record. Graph 1 shows that by 2001 the aggregate per capita deficit was 145 Mexican pesos, quite a different situation from 1989, where the aggregate per capita deficit was 77 cents. It is straightforward that expenditures during the 1990s grew at higher rates than revenues, while in 1989 fiscal equilibrium was practically attained. Notice that due to the crisis of 1994-1996 skyrocketed state fiscal deficits. In fact, from 1989 to 1996, per capita state fiscal deficits in 2002 Mexican pesos grew in average 10,195 percent, an annual rate of 66 percent. By 1996, the large amount of outstanding debt in 25 states (out of 32) led the federal government to carry out an emergency stabilization program. Hernández Trillo, Díaz Cayeros, and Gamboa González (2002a, p. 25) describe succinctly and accurately the timeline of events prior and after the emergency stabilization program: "by 1994 many states were highly indebted. On average total debt represented 80 percent of the total annual disposable income of the states. When the financial crisis of December 1994 erupted, interest rates more than quintupled, from a one-month Certificados de la Tesorería rate of 13.8 in November 1994 to 74.8 in April 1995, and subnational governments simply could not keep servicing their debts. This was partially due to a lack of financial instruments to absorb external shocks. At the same time, commercial banks were experiencing liquidity and capitalization problems. For these reasons, the federal government came under pressure from the states and commercial banks to provide a major bailout. As a result, the federal government implemented a program called Financial Strengthening Program for States (Programa de Fortalecimiento Financiero de los Estados, or PFFE). This program cost around 7 billion pesos in 1995, representing more than 17 percent of the transfers for the year and about 10 percent of non-contingent subnational government debt. This program continued until 1998 with about the same annual figure in real terms".

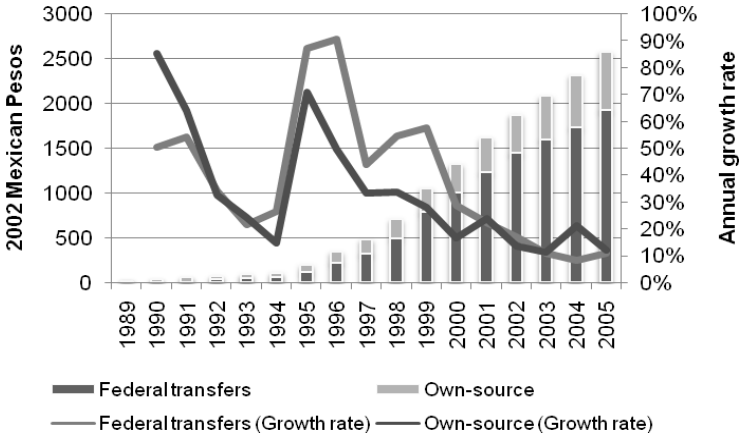
Graph 1. Aggregate Revenues, Expenditures and Fiscal Balance of the Mexican States
(2002 Mexican Pesos Per Capita)



Source: The author, based on the National Institute of Statistics, Geography and Information (Mexico) and Ministry of Finance of Mexico City.
Note: Per capita revenues are own-source revenues only. Per capita expenditures exclude debt-related expenditures.

In Graph 2, aggregate state per-capita revenues in 2002 Mexican pesos are presented and broken down by own-source revenues and federal transfers. In general, according to the data, federal transfers grew faster than own-source revenues during the period of study. Note that after decreases in 1990 and 1993, the ratio of federal transfers over total revenue increased from 55.4 percent in 1993 to 74.8 percent in 2005. Conversely, own-source revenue (state taxes, charges and fees) declined from 44.6 percent to 25.3 percent, mainly due to a decline in tax collection. Tax collection as a percentage of total revenue decreased from 23.5 percent in 1993 to 12.2 percent in 2005.

Graph 2. **Aggregate State Revenues (Absolute Values in 2002 Mexican Pesos), and Annual Per Capita Growth Rate**



Source: The author, based on the National Institute of Statistics, Geography and Information (Mexico) and Ministry of Finance of Mexico City.

A valid inquiry is to know whether this aggregate behavior was not driven by a few outlier states with excessively high fiscal expenditures. According to the data, this is not likely to be the case. In general, all states presented a similar evolution of their fiscal conditions. If the fiscal situation of states before and after the financial crisis of 1995 is compared, 26 of 32 states presented more sound fiscal balances in the period 1989-1995 than in the period 1996-2005. Similarly, Velázquez (2002) shows that the fiscal behavior of states was fairly homogeneous during the period 1983-1992.

Table 1. **Per Capita Fiscal Balance, by State, 1989-2005**
(2002 Mexican Pesos Per Capita)

STATE	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
AGS	0.11	4.02	0.63	-1.46	-4.40	-4.08	-11.95	-13.30	-14.20	-22.68	-30.12	2.82	57.76	-38.95	41.20	-41.76	38.29
BCA	0.02	6.19	0.96	-1.48	9.28	2.16	0.69	8.25	-22.19	5.54	39.33	-2.82	2.92	14.05	51.71	-6.63	8.02
BCS	0.08	-0.57	-4.12	-1.75	29.07	7.86	17.53	-17.68	24.45	-45.43	-19.32	-60.86	38.02	-10.95	39.05	-94.18	-344.99
CAM	0.81	-1.62	-0.87	3.09	-1.86	-2.80	-7.00	7.00	-8.59	-9.01	-13.28	-44.41	17.20	-48.83	-23.65	48.95	-41.19
COA	0.38	-0.46	0.96	1.32	-1.05	5.92	4.34	-9.45	-13.87	-12.23	2.20	6.50	-26.22	10.26	6.50	20.48	22.66
COL	-0.70	-0.22	-1.93	-1.76	-0.19	-2.10	-2.28	3.48	-39.82	-48.85	-11.62	18.52	86.44	105.13	-91.26	-54.84	-42.52
CHS	-0.08	0.69	1.34	-0.16	0.06	1.06	2.24	-6.77	-4.46	3.31	-17.66	-50.76	15.34	-77.49	-38.22	133.20	-155.64
CHI	-1.47	1.85	2.26	-2.90	10.12	-1.00	-0.12	-5.18	-10.59	-38.40	-37.31	-32.50	-27.57	-42.72	-50.29	-32.49	-48.44
DFE	-7.94	-32.58	-70.78	-48.43	-69.30	-97.26	-488.11	-821.13	-532.81	-779.73	-1211.1	-1104.1	-1411.0	-1074.0	-804.59	-423.45	-663.62
DGO	0.06	0.05	-0.57	-0.76	2.44	2.64	-1.10	-3.48	-7.51	-4.86	-41.34	-13.52	-11.27	11.60	-3.62	-24.31	11.90
GTO	0.02	0.32	0.85	-0.15	0.47	3.28	-1.36	-1.65	4.55	-39.52	-25.79	-16.09	-94.12	-68.98	29.58	-35.46	-95.72
GRO	-0.05	0.29	0.13	-1.14	9.15	7.01	13.65	22.67	-14.90	-41.25	-10.97	-116.27	-66.06	-129.20	-97.49	-32.56	-157.58
HGO	-0.01	-0.01	-0.67	-0.02	-1.34	-1.29	-0.27	-0.21	-9.96	6.76	-73.96	-19.33	-6.30	-18.02	-13.12	-3.44	0.15
JAL	-1.31	-0.45	0.03	-5.63	3.02	1.90	-8.03	-7.10	-19.70	-56.71	-32.72	-0.98	-26.87	-11.64	20.95	-114.91	88.25
MEX	0.25	2.57	0.62	0.81	3.76	6.61	-5.82	3.08	-0.16	-20.27	-23.15	-67.32	-62.57	-100.39	-5.93	18.59	93.19
MIC	0.31	0.05	0.94	0.42	1.16	-0.23	-1.11	-6.16	-1.49	-14.93	-41.57	-4.66	39.49	21.23	-49.03	29.39	-46.35
MOR	0.01	0.14	-1.19	0.13	0.74	-1.64	1.47	-6.71	2.04	-9.65	-13.68	2.57	-20.84	10.72	-13.84	13.03	-78.73
NAY	0.68	0.84	5.18	3.95	6.39	2.88	-5.48	-18.47	-21.46	-9.69	-35.43	-27.64	85.08	4.57	31.93	27.86	-108.19
NLE	-0.55	-0.65	-1.39	-1.43	-0.17	-3.83	-4.17	4.92	-3.16	-48.83	-12.19	33.92	-49.41	62.42	101.21	360.13	-231.22
OAX	0.02	0.05	-0.17	-1.13	-1.75	-0.30	-0.11	-3.86	-6.26	3.80	-23.08	-19.90	-16.68	-49.87	-144.63	43.35	-18.79
PUE	0.04	0.00	0.68	3.13	2.34	0.04	1.10	0.01	5.83	-14.23	-18.37	-21.77	-47.01	-91.56	-74.23	70.60	-294.15
QUE	-0.21	-0.20	0.14	-0.55	-3.42	5.00	-4.04	-6.76	1.68	-7.52	-39.63	-24.55	24.17	16.33	76.80	-27.07	91.23
QUR	0.94	1.72	5.10	3.04	22.47	-5.75	-13.70	-37.18	-60.76	-36.16	-35.03	-8.50	-39.93	63.83	230.65	22.13	113.15
SLP	0.06	-0.09	-0.49	-0.10	-2.68	-0.76	0.99	-7.13	-17.21	-10.79	-20.16	-83.77	-12.34	9.51	-238.94	-18.23	-15.05
SIN	0.83	-0.61	-0.11	1.87	4.17	1.22	2.37	-5.17	-7.09	-15.66	2.38	11.96	-31.71	20.50	38.09	7.53	13.71
SON	1.66	1.74	3.07	-4.14	7.63	10.05	7.36	-8.24	-12.78	-10.36	-69.97	-59.42	-51.81	-27.78	-122.48	-1.00	-138.32
TAB	1.79	1.68	6.31	-0.51	1.23	-1.10	-4.48	-110.41	-116.71	-296.37	-225.58	-76.97	-213.38	40.11	9.64	-62.96	-100.12
TAM	-0.14	0.25	-0.42	0.82	5.85	5.52	6.11	-13.79	-10.16	-40.02	-53.18	9.01	87.24	14.00	69.09	-340.35	-17.64
TLA	0.05	0.09	0.75	1.11	0.45	1.68	6.28	-10.02	2.27	-16.66	-39.12	-22.45	22.91	-4.35	-33.81	11.09	-47.69
VER	0.00	0.09	0.02	1.08	0.93	-4.27	-0.67	-3.34	-23.00	-3.50	11.94	-14.98	17.18	-2.84	-5.32	-15.91	-32.44
YUC	0.85	-1.58	-0.75	-1.14	-0.80	-2.02	-3.15	-6.18	-6.94	0.38	-13.78	0.79	-0.49	-0.88	32.90	15.71	-48.96
ZAC	0.14	-0.09	-0.67	-0.57	0.33	-1.93	0.84	-7.68	-12.34	-15.33	-38.69	9.93	18.30	62.56	-0.81	-14.83	-92.86
Mean	-0.77	-2.69	-6.49	-4.95	-4.33	-7.78	-46.27	-80.10	-58.22	-93.92	-132.19	-121.82	-145.22	-119.27	-81.07	-31.48	-93.39
Standard deviation	1.58	6.05	12.78	8.77	14.62	17.80	86.46	145.17	94.79	142.73	212.75	194.09	254.46	195.12	163.03	124.84	149.93

Source: The author, based on the National Institute of Statistics, Geography and Information (Mexico) and Ministry of Finance of Mexico City.
Note: Per capita revenues are own-source revenues only. Per capita expenditures exclude debt-related expenditures.

Understanding the differences in fiscal behavior amongst states is necessary in order to make sense of the fiscal model to be introduced in the next section and comprehend the effect of state revenues and expenditures. From Table 1, differences at the subnational are clear: whereas some states exhibit large deficits, others have shown fairly sustained, albeit rather modest, surpluses. Notice that fiscal behavior has become more divergent over time, as reflected by larger standard deviations. For instance, whereas in 2005 the state of Quintana Roo had a fiscal surplus of over 113 pesos per capita, the Federal District had an outstanding fiscal deficit of 664 Mexican pesos per capita. Likewise, whereas the standard deviation of fiscal balances was of 1.58 pesos in 1989, in 2005 it rose to almost 150 pesos.

2. Fiscal Perversity

Fiscal behavior, both at the national and subnational scales, has been studied to detail in the economic and sociopolitical literatures. Yet, due to the persistent state and local fiscal crises that have taken place in developing countries, a new body of literature has emerged in the last few years focusing on what is defined as "fiscal perversity". A region is said to be "fiscally perverse" when it expects to be bailed out by the federal government in case of financial trouble. Dabla-Norris (2006), Hernández Trillo, Díaz Cayeros, and Gamboa González (2002a), and Prud'homme (1995) point out that states do not have an incentive to observe fiscal discipline once they know that the federal government will rescue them in case of debt default.

Two phenomena may explain why Mexican states are likely to be fiscally perverse. On the one hand, the Mexican Fiscal Coordination Act forces the federal government to absorb potential debt of federative entities via transfer deductions (Fiscal Coordination Act, 2006, Giugale, Hernández Trillo, and Oliveira, 2000)[3]. In other words, as Velázquez (2002) points out, "if a state cannot pay its debt, the lender bank just has to tell the federal government [which] will deduct from the federal transfers of that state the amount necessary to pay the debt. Thus contrary to the normal case where borrowers get out of the credit market if they repudiate their debt, states in Mexico do not suffer from this consequence since the banks always recuperate their money". On the other hand, the Fiscal Code, among other fiscal laws, forces the federal government to give additional transfers to states in budget trouble (as in years 1994-1996; see Graph 2) instead of punishing them for defaulting on their debt (Fiscal Code, 2007)[4]. As pointed

[3] Congress of the Union, Ley de Coordinación Fiscal (last update as of December 27, 2006), *http://www.cddhcu.gob.mx/LeyesBiblio/pdf/31.pdf*.
[4] Congress of the Union, Código Fiscal de la Federación (last update as of January 30, 2007), *http://www.cddhcu.gob.mx/LeyesBiblio/pdf/8.pdf*.

out before, in Mexico federal transfers represent over 70 percent of state revenues (approximately 75 percent in 2005) and thus are fiscally relevant for the states' expenditures (see Graph 2).

Now I proceed to define the major political and economic drivers of the divergent fiscal behaviors observed in Table 1.

2.1. Political Determinants of State Fiscal Deficits

As pointed out by Prud'homme (1995), those politicians that are not able to secure the election and face strong political competition are more often than not induced to surpass the limits of conscious public spending and misuse the budget for propagandistic purposes. Another recent political phenomenon to factor in, which is probably more idiosyncratic to the Mexican experience, is that after the Zedillo administration, the intergovernmental power relation changed. Today state governors are not as intensively scrutinized by or subject to the president (Velázquez, 2002).

In the last decade, elected governors have emerged from their own local or state political institutions, rather than from the Mexico City political scene. As Hernández Trillo, Díaz Cayeros, and Gamboa González (2002b) state, "the relative importance of local politicians, especially governors, has reshaped the financial relationship between the federal and state governments, weakening local fiscal discipline and increasing the likelihood of federal bailouts". This phenomenon became more recurrent once that major political parties opened their candidate nomination processes to the public in fairly democratic conventions. In contrast, two or three decades ago they were designated by "*dedazo*", or the point-fingering of the candidate. The term is symbolic, referring to the Institutional Revolutionary Party's tradition of allowing the incumbent president to appoint the nominees for state governorships, whereas voters were not allowed to take part in the nomination of any party's contender.

Cornelius (1996) points out that political parties realized that local candidates, because of their local knowledge and their more local support and regionalism, are more likely to win the election than *dedazo* candidates. Logically, this type of "local" governor does not entirely owe its position to the president, so as a consequence she is more independent from the center and more responsive to her constituency than to the president. Hence, assuming expenditures and taxes affect the well-being of citizens, a local governor will be more prone to run deficits if the fiscal federal system allows it. Also, state governors may promote excessive public spending given that they have more economic and political interests within the state. It is difficult to avoid a governor belonging to a prominent local elite from awarding major infrastructure projects that benefit this elite. Furthermore,

state governors who need to secure their position within the élite are often pushed to condone taxes or other payments to friends and allies. It is also true that state governors are likely to use expenditures to gain political support within their elite (Velázquez, 2002).

Fiscal deficits are also explained by the political business. The political business cycle is an alternative theory stating that when an administration of any hue is elected, it initially adopts a contractionary policy to reduce spending and gain a reputation for economic competence. It then adopts an expansionary policy in the lead up to the next election, hoping to achieve simultaneously growth in new infrastructure and low unemployment on Election Day. In Guerrero Compeán (2005), I concluded that political business cycles do exist at the state level in Mexico. In particular, I found that spending cuts and tax increases are smaller when state governments are about to stand for elections. I also showed that if opposition parties are very likely to win, state governments tend to increase their spending and thus incur in fiscal deficits. This logic is reflected by the data: after 1992, the year when decentralization started to gain momentum, fiscal deficits soared, and from 1997 to 1999, prior to the Institutional Revolutionary Party's electoral debacle and when political competition was severe, they grew at an even faster pace (Graphic 1).

2.2. Economic Determinants of State Fiscal Deficits

Economic factors also account for state fiscal deficits (Prud'homme, 1995). Of these factors, by far the most important are the economic characteristics of the states; variables such as per capita income, federal transfers, employment, federal public investment and transfers affect directly state revenues and expenditures. Likewise, Dabla-Norris (2006) also notes that demographic factors may affect the fiscal system. Yet, demography seems less relevant in the case of Mexico for the time horizon considered here, as states do not provide many public services and large welfare programs are controlled by the federal government. It should be pointed out, however, that large cities in Mexico have expanded their spending in public services over the past decade. The following is an explanation of the economic variables to affect the fiscal system.

Higher per capita incomes imply larger revenues. The richer the people, the larger the tax base for state governments. The mechanics is rather simple. As discussed by Netzer (2003), wealthier people usually demand more and better public services. If so, this theorizes that such people would agree to have their taxes increased to finance the improved supply of services.

Federal transfers affect both total revenues and own-source state revenue, yet they are exogenous because they do not depend on the fiscal

behavior of the state in question. Prud'homme (1995) and other scholars claim that federal transfers reduce the incentives of state governments to collect taxes and revenue. Similarly, federal transfers also affect expenditures. More federal transfers increase the resources to spend. In a country like Mexico where transfers represent over 70 percent of state revenue (Graph 2), this is an important factor.

Employment rates also affect the economic system. High unemployment is translated into fewer taxes collected. Velázquez (2002) underscores that in Mexico there is no unemployment insurance, nor large welfare benefits at the state level (the few welfare programs in Mexico's history like Solidaridad or Oportunidades are federal initiatives), thus employment does not directly affect expenditures —as it may be in the United States— but it may reduce revenues.

Federal public investment affects state expenditures in two opposite ways. First, a crowding-out effect is observed because federal public investment may reduce the need of using state resources. Conversely, federal public investment generates a crowding-in effect because federal public spending may stimulate state expenditures by augmenting the marginal productivity of such state expenditures (Rodden et al., 2003).

Another variable that also accounts for state fiscal deficits is the interest rate (World Bank, 2000). Needless to say, this is a variable that does not vary across states. It tries to reflect the stance of the national economy and it serves to control for changes that affected all states through time, i.e., the financial crisis of 1995. Low interest rates should induce more public spending since it is less costly to get credit and projects become more profitable. Moreover, this variable is a proxy for the economic conditions at the national level, which might affect state behavior by changing the perception of subnational governments about possible bailouts by the federal government (Velázquez, 2002).

3. An Econometric Analysis of Fiscal Deficits

This section is based on the empirical analyses of the public expenditure decisions in large U.S. cities and the Mexican regions carried out by Hu and Booms (1971) and Velázquez (2002), respectively. Yet, whereas Hu and Booms (1971) carry out a cross-section analysis, I use a panel data framework. Likewise, Velázquez's (2002) analysis covers the period 1983-1992; whereas I focus on a most recent and probably more interesting time period, that of 1989-2005, when decentralization policies are already in action. My analysis consists of a simultaneous equation model of revenues

and expenditures with state individual data from 1989 to 2005, the last year with data available at the state level.

Assume that state *i* in each period *t* spends E_{it}, collects R_{it}, and borrows B_{it}, thus satisfying the budget constraint:

$$E_{it} = R_{it} + F + B_{it} \quad (1)$$

where *F* are federal transfers. The state *i* maximizes its utility based on the following function:

$$U_i = U(E_{it}, R_{it}, F, B_{it}, X_{it}, Y_{it}, \varphi_{it}) \quad (2)$$

Where **X** and **Y** are vectors representing exogenous variables affecting expenditures and revenues, respectively, and φ is a vector that captures institutional and political variables. In each period *t*, the state maximizes *U* subject to the budget constraint in Equation (1). The optimization process yields reduced-form functions for $E_{it} = (R_{it}, F, X_{it}, \varphi_{it})$ and $R_{it} = (E_{it}, F, X_{it}, \varphi_{it})$. Borrowing is determined once spending and revenues are chosen (Velázquez, 2002). This produces the following simultaneous equation model of revenues and expenditures:

$$R_{it} = \beta_0 + \delta_{(i)} + \beta_1 E_{it} + \beta_2 Y_{it} + \beta_3 F_{it} + \beta_4 e_{it} + \beta_5 S_{it-1} + \beta_6 \gamma_{it} + \beta_7 M_{it} + \beta_8 \varepsilon_{it} + \mu_{it} \quad (3)$$

$$E_{it} = \alpha_0 + \omega_{(i)} + \alpha_1 R_{it} + \alpha_2 \eta_{it} + \alpha_3 F_{it} + \alpha_4 I_{it} + \alpha_5 S_{it-1} + \alpha_6 \gamma_{it} + \alpha_7 M_{it} + \alpha_8 \varepsilon_{it} + \nu_{it} \quad (4)$$

Y_{it} is per capita income in 2002 Mexican pesos for state *i* in year *t*. For the period 1993-2005, the data were obtained from the National Institute of Statistics, Geography and Information of Mexico online database. Official state gross domestic product (GDP) estimations do not exist for the period 1989-1992. Yet, Germán-Soto (2005) derived state GDP estimates for the period 1940-1992 based on the sensibility coefficient of an ordinary least-squares regression adjusted by a cross-section conciliation method. I used his estimations for years 1989-1992.

r is the inflation-adjusted three-month Certificados de la Tesorería interest rate. This rate is the monthly average rate of three-month Federal Treasury bills. Notice that given this is a national variable, $r_{it} = r$.

F_{it}, S_{it} and I_{it} are federal transfers to the states, state fiscal balance and federal public investment in the states for state *i* in year *t*, respectively. These data were used in per capita terms and were obtained from the National System of Municipal and State Databases. As mentioned before, it is claimed that federal transfers reduce the incentives of the local government to collect revenue. A negative coefficient would confirm this idea. Similarly, a negative (positive) previous-year-fiscal-balance coefficient in the expenditure (revenue) equation would mean that states do not adjust for the previous fiscal balance. Finally, a positive sign in the federal public investment coefficient would mean that federal public investment induces more state expenditures.

e_{it} is formal employment for state *i* in year *t*. All state-level data on formal employment are from the Ministry of Labor.

γ_{it} is a set of dummy variables that measures how local or central a governor is. Following the same classification used by Velázquez (2002), I classified governors as "very local", "local", "central" and "very central"[5]. The variable can take the values of 0, 1, 2 and 3. A governor who never had a public position in the state or local level is classified as "very central" and has the value of 0. Governors who were federal congressmen once or worked less than six years at the state or local level had a mark of 1. Governors who occupied any kind of state or local public host for at least six years in addition to federal positions received a value of 2. Finally, governors whose public positions were all at the state or local level had a 3. This variable was constructed by reviewing the biographies of the governors. The main source of information was the government website e-local, *www.e-local.gob.mx*, which contains information for all the states and municipalities of Mexico

[5] This variable is a proxy for political decentralization. Often analysts claim that other proxies for political decentralization may include the relationship between the political affiliation of governors and the president, or whether the majority of the state congress belongs to the governor's political party. However, both proxies present deficiencies. The first proxy assumes that decentralization should be defined in terms of party favoritism. Even though such favoritisms have been observed in the Mexican political arena more often than not, such a proxy is limited in that it is unable to capture the effect of the governors' background, which is associated to political decentralization and fiscal perversity. As previously discussed, state governors may promote excessive public spending if they have more economic and political interests within the state. The second proxy fails to capture the interaction between the center and the state, which is by all means essential to understand decentralization processes.

for at least 40 years. The information obtained from e-local was complemented with information from the states' official government and transparency websites.

ϵ_{it} is a dummy variable that takes the value of 1 if there were elections for governor in the year of analysis. This variable was constructed by the author with information from the Federal Electoral Institute of Mexico online databases. M_{it} represents the Molinar index of political competition for state *i* in year *t* (Molinar, 1991). Designed for cases where there is a dominant party like the Institutional Revolutionary Party in Mexico, the Molinar index does not overstate the size of the largest party or the relevance of small parties. Mathematically, the Molinar index, or $M = 1 + N^2 \cdot \sum P_i^2$, where $N = \frac{1}{\sum P_i^2}$ is the sum of major political parties and $\sum P_i^2$ is the sum of all minority parties (Molinar, 1991). A higher index means more political competition.

The vectors $\delta_{(i)}$ and $\omega_{(i)}$ are sets of fixed effects. Except for Aguascalientes, which is the base state, there is one fixed effect for each state.

This model establishes that own-source revenues depend on expenditures, per capita income, federal transfers, employment, the fiscal balance of the previous year, and the political variables. Likewise, the model establishes that expenditures depend, in addition to the political variables, on revenues, the interest rate, federal public investment, federal transfers and the balance of the previous year.

In order to estimate the effect of these variables on the states' fiscal balance, it is necessary to look at their complete effects on revenues and expenditures. In other words, it is necessary to look at the reduced form of equations (3) and (4). Algebraically,

$$R_{it} = \pi_0 + \delta_{(i)} + \pi_1 Y_{it} + \pi_2 F_{it} + \pi_3 e_{it} + \pi_4 S_{it-1} + \pi_5 r_{it} + \pi_6 I_{it} + \pi_7 \gamma_{it} + \pi_8 M_{it} + \pi_9 \epsilon_{it} + \sigma_{it} \quad (5)$$

$$E_{it} = \theta_0 + \omega_{(i)} + \theta_1 Y_{it} + \theta_2 F_{it} + \theta_3 e_{it} + \theta_4 S_{it-1} + \theta_5 r_{it} + \theta_6 I_{it} + \theta_7 \gamma_{it} + \theta_8 M_{it} + \theta_9 \epsilon_{it} + \tau_{it} \quad (6)$$

Where

$$\pi_1 = \frac{\beta_2}{\Delta};\ \pi_2 = \frac{\beta_2\alpha_4+\beta_3}{\Delta};\ \pi_3 = \frac{\beta_4}{\Delta};\ \pi_4 = \frac{\beta_4\alpha_5+\beta_5}{\Delta};\ \pi_5 = \frac{\beta_2\alpha_2}{\Delta};\ \pi_6 = \frac{\beta_2\alpha_3}{\Delta};\ \pi_7 = \frac{\beta_2\alpha_5+\beta_6}{\Delta};\ \pi_8 = \frac{\beta_2\alpha_7+\beta_7}{\Delta};\ \pi_9 = \frac{\beta_2\alpha_5+\beta_8}{\Delta};\ r_{it} = \beta_1\mu_{it} + v_{it};\ \theta_1 = \frac{\alpha_2\beta_2}{\Delta};\ \theta_2 = \frac{\alpha_2\beta_3+\alpha_4}{\Delta};\ \theta_3 = \frac{\alpha_2\beta_4}{\Delta};\ \theta_4 = \frac{\alpha_2\beta_5+\alpha_5}{\Delta};\ \theta_5 = \frac{\alpha_2}{\Delta};\ \theta_6 = \frac{\alpha_3}{\Delta};\ \theta_7 = \frac{\alpha_2\beta_6+\alpha_6}{\Delta};\ \theta_8 = \frac{\alpha_2\beta_7+\alpha_7}{\Delta};\ \theta_9 = \frac{\alpha_2\beta_8+\alpha_8}{\Delta};\ \tau_{it} = \frac{\alpha_2\mu_{it}+v_{it}}{\Delta};$$

and $\Delta = 1 - \beta_1\alpha_1$.

Once again, *i* refers to the different Mexican states, *t* refers to the different years of the sample, *R* is per capita own-source revenues of the states in 2002 Mexican pesos, and *E* is per capita expenditures excluding debt-related expenditures.

3.1. Main Findings

I estimated the parameters of equations (3) and (4) by Three-Stage Least-Squares (3SLS). I used 3SLS because it provides consistent estimates for linear regression models with explanatory variables correlated with the error term, as is the case. 3SLS extends ordinary least squares analysis to estimate system of linear equations with correlated error terms. Given the cross-equation logical covariation, 3SLS possess greater efficiency than Two-Stage Least-Squares (Belsey, 1988). The results of this model are in Table 3. Table 2 presents summary statistics of all the main values.

Table 2. **Summary Statistics**

Variable	Mean	Standard deviation	Minimum	Maximum
Revenue	818.37	873.99	20.29	2,483.36
Expenditures	878.96	905.38	21.06	2,576.75
Deficit	-60.59	51.5	-145.22	-0.77
Income	13,696.65	952.81	12,338.61	15,434.02
Federal transfers	654.01	693.65	13.09	1926.02
Employment	0.14	0.06	0.11	0.17
Federal public investment	0.03	0.06	0.08	0.31
Interest rate	0.21	0.13	0.05	0.72
Political competition	1.89	0.76	0.02	3.12

Source: The author, based on the National Institute of Statistics, Geography and Information (Mexico), Ministry of Finance of Mexico City, Ministry of Labor, National System of Municipal Databases, and the Bank of Mexico.
Note: Revenues, expenditures, the balance, income, federal transfers and federal public investment are expressed in 2002 Mexican pesos in per capita terms. Employment and interest rates are expressed in percentages.

3.1.1. Revenue Equation

The results of the analysis reinforce the findings of and Booms (1971) and Velázquez (2002). Per capita income, as expected, has a positive influence on revenues. An increase of one standard deviation of per capita income (952.81 Mexican pesos; see Table 2) produces 170.22 more pesos per capita in revenue (see non-reduced revenue equation in Table 3). The coefficient of federal transfers is negative and significant. This in turn reflects that an expansion of federal transfers is associated with a disincentive to state governments to collect taxes. The analysis shows that a one-standard-deviation increase in federal transfers to states is associated with a decline in revenues of 3,428.92 pesos per capita. This evidences that increasing federal transfers is not the optimal policy to reduce state fiscal deficits. As mentioned above, this analysis presents similar findings to those in of Velázquez (2002). On the one hand, it has been concluded that the coefficient of the previous year's fiscal balance is positive, yet not statistically different from zero. This means that revenues do not adjust for last year's fiscal results. On the other hand, the political variables present the correct sign and magnitude but they are not statistically significant at the usual levels. These results suggest that reducing state taxes or fees are not political strategies to get votes (Velázquez, 2002).

3.1.2. Expenditure Equation

The coefficient of revenues is positive, and so is the transfers coefficient. The coefficient of federal public investment is positive, meaning that federal expenditures do not generate a crowding-out effect. Conversely, from the estimated regression notice that current expenditures do not adjust to last year's balance. The interest-rate coefficient is negative and significant. Given the variability of the interest rates throughout the period of study, one should not be deceived by the apparently small coefficient (Interest rates ranged from 158 percent in January 1988 to 7.8 per cent in January 2006, according to the Banco de México). In fact, the real effect of interest rates is likely to help explain the increase in expenditures. Velázquez (2002) argues that "we observe high state fiscal deficits in situations where economic conditions are better, and sounder state fiscal conditions when the economy is not at its best. Hence, low interest rates and low inflation may have decreased the cost of possible bailouts, changing state expectations about them".

In terms of the political variables, the "central governor" variable coefficient is not significant, meaning there is no difference in the behavior of central and very central governors. In contrast, the "local governor" variable is positive and significant. This type of governor spends 2.96 pesos per capita more than very central governors, the base case. The "very local governor" coefficient is also positive and significant. A very local governor spends 3.48 pesos per capita more than very central governors. Similarly, the coefficient of the political competition variable is also positive and significant. The coefficient of the state election variable is positive and significant. In election years, state expenditures are increased by 2.30 pesos per capita. This shows that expenditures are used as an instrument to get votes. This was already evidenced in Guerrero Compeán (2005).

3.1.3. Deficit Equation

Table 3 presents the coefficients for the deficit equation. The first result is that higher per capita incomes are associated with smaller fiscal deficits. A one-standard deviation increase in per capita income is associated with a 92.41 pesos-per-capita reduction of the fiscal deficit. In addition, an expansion of the federal transfers is associated with larger deficits. A one-standard deviation increase in federal transfers produces a decrease in the balance of 8,440.35 pesos per capita. Increases in the interest rates are associated with improvements in fiscal behavior: a one-standard deviation increase in interest rates reduces the deficit by 0.004 pesos per capita. States with local and very local governors exhibited larger per capita deficits (2.38 and 5.91 pesos per capita, respectively) than states ruled by very central governors. Notice that political competition is associated with larger deficits.

A one-standard deviation increase in the index of political competition is followed by a decline in the fiscal balance of 1.29 pesos per capita.

Table 3. **Three-Stage Least-Squares Estimation for the Revenue and Expenditure Equation and the Reduced Form**

Independent variables	Revenue equation	Expenditure Equation	Revenue (Reduced form)	Expenditure (Reduced form)
Expenditures	9.6354			
	(0.003)			
Revenue		9.6589		
		(0.000)		
Income	0.1787		0.3586	0.2616
	(0.002)		(0.003)	(0.002)
Federal Transfers	-5.2429	14.8899	11.1916	23.3596
	(0.000)	(0.000)	(0.000)	(0.000)
Employment	-0.4683		0.9189	-0.6459
	(0.097)			
Lagged balance	3.7609	-6.0308	-0.8006	-6.1169
	(0.123)	(0.008)	(0.001)	(0.001)
Central governor	-0.3219	0.1765	-0.4175	-0.1212
	(0.076)	(0.099)	(0.096)	(0.088)
Local governor	-2.3831	2.9550	-1.0804	2.3798
	(0.097)	(0.025)	(0.000)	(0.000)
Very local governor	-5.0778	6.4394	-1.0957	5.9063
	(0.062)	(0.010)	(0.000)	(0.000)
Political competition	-1.3236	1.5453	-0.4710	1.2272
	(0.183)	(0.003)	(0.004)	(0.011)
Elections	-1.5843	1.2168	-1.1502	0.3370
	(0.196)	(0.043)	(0.002)	(0.004)
Interest rate		-0.0145	-0.0216	-0.0524
		(0.000)	(0.000)	(0.000)
Federal public investment		1.0093		
		(0.099)		
3SLS System R squared	0.618			
N	544	544	544	544

Source: The author, based on the National Institute of Statistics, Geography and Information (Mexico), Ministry of Finance of Mexico City, Ministry of Labor, National System of Municipal Databases, and the Bank of Mexico.
Note: *p* values are in parentheses.

Table 4. **Effects on State Fiscal Balances, Based on a Three-Stage Least-Squares Estimation**

Variable	Revenues	Expenditures	Balance
Income	341.701	249.286	92.415
Interest rate	-0.003	-0.007	0.004
Federal transfers	7,763.029	16,203.380	-8,440.351
Local governor	0.000	2.380	-2.380
Very local governor	0.000	5.906	-5.906
Political competition	-0.358	0.933	-1.291

Source: The author, based on the National Institute of Statistics, Geography and Information (Mexico), Ministry of Finance of Mexico City, Ministry of Labor, National System of Municipal Databases, and the Bank of Mexico.

Conclusion

This paper concerns state fiscal deficits in Mexico during the 1990s and the beginning of the 2000s. Its goal is to show the dangers of decentralization in practice. Through this analysis, we demonstrated that Prud'homme's fears are real and indeed occur in developing countries like Mexico. From the analysis, it can be concluded that the decentralization process in Mexico jeopardizes fiscal stability and is often accompanied by state budget misuse and other corruption practices. The results of the simultaneous equation analysis suggest that fiscal behavior is negatively affected (i.e., fiscal deficits are likely) when political competition exists due to overspending. This association is reinforced in election years.

Also, the analysis shows that decentralization leads to fiscal perversity practices. States ruled by so-called "very local" governors exhibit larger deficits. Similarly, states receiving more federal transfers seem to collect fewer taxes, thus showing larger deficits. As shown by the interest rate coefficient, a proxy for good national economic conditions, economic bonanza is associated with larger fiscal deficits due to overspending. This is so because states expect to be bailed out by the federal government in good economic times, but not in bad (Velázquez, 2002).

This analysis is a contribution to the fiscal policy and public economics literatures in that it was evidenced that the decentralization process in Mexico is associated with state fiscal misbehavior and debt. Decentralization, notwithstanding, is an unlikely irreversible process, and the trend for the short and medium term is that states, for political purposes and ideological agenda, will gain more autonomy from the center. Thus, legal mechanisms should be implemented in order to disincentive fiscal perverse

and regional economic instability. The modification of the Article 9 of the Fiscal Coordination Act in 1997 to induce market discipline and avoid future bailouts along with the regulatory framework for subnational debt management enforced in 2000 were a necessary, albeit insufficient, step in the right direction. Further amendments to the Fiscal Coordination Act and the Mexican Fiscal Code, among other regulations, seem thus advisable. Other practices, such as limiting the borrower's maximum debt-service ratio and level of total indebtedness, as well as limiting banks' portfolio exposure to the public sector and passing and regulating public entity bankruptcy and fiscal accountability laws, are also much needed (Giugale, Hernández Trillo, and Oliveira, 2000).

Another relevant point to consider when assessing the expansion of the decentralization process in Mexico is related to the views of Prud'homme (1995) and Tanzi (1995), who argue that bureaucrats at the subnational levels are likely to be more corrupt than those of the center given that fewer people keep track of their actions and proceedings. Velázquez (2002) argues that politics at the local level may still be dominated by caciques and élite-influenced decision-making processes. This is particularly relevant for the rural regions of Mexico and deserves further study. It should be then emphasized that the analysis presented here concluded that states presided over "very local" governors are associated with evident fiscal misbehavior.

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